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INVISIBLE PLACES

Sound, Urbanism and Sense of Place

7 – 9 April 2017

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Foreword

RAQUEL CASTRO & MIGUEL CARVALHAIS
Organizing Committee
Invisible Places 2017

It is with the utmost pleasure that we invite you to the Proceedings of the second edition of the Invisible Places International Symposium, that brought together researchers, academics, artists and professionals from all over the world to the beautiful island of S. Miguel, in the Azores.

These proceedings look at (and listen to) the soundscape as a complex system that is one of the means by which we connect with the world. The soundscape is, in essence, the life of a certain space as perceived through hearing. Our understanding results from a cognitive process that involves all the senses as well as our history, context, and culture. An integral part of this process is our acoustic perception, where noise is often overvalued. Although sound is a relevant parameter in human perception, it is often neglected by professionals involved in the planning and design of places. The political discourse at international level has shown a growing concern with the problems of the acoustic world, but this approach is often negative, focused on the quantitative and objective reduction of noise levels, which, although necessary, doesn't guarantee a significant improvement in the sound environment or in people's satisfaction and quality of life. A multidisciplinary approach is needed. One that among others, adds the contributions of the arts and the social sciences to the physical aspects of sound.

Since the first edition, Invisible Places has encouraged the interaction between the local community and an established group of artists and researchers working in the vast field of sound. We believe this approach is essential for the growth of new perspectives and methods. For this second edition, besides the traditional call for papers, we encouraged the submission of proposal for workshops, soundwalks and artistic residencies. The response was excellent, resulting in 187 paper submissions, 75 proposals for artistic residencies and 78 proposals for soundwalks and workshops, from authors representing 39 different countries. Our acceptance rate was around 26%, leading to an amazing program of 42 paper presentations, 5 artists in residence (one of them a duo), 8 workshops and 4 soundwalks, In addition to the contributed papers, three invited keynote presentations were given by Juhani Pallasmaa, Hildegard Westerkamp and Sam Auinger.

The conference program represents the efforts of many people. We'd like to express our deep gratitude to the Scientific Committee for their hard work in reviewing submissions and chairing sessions; to the University of Azores, who hosted our conference in its beautiful campus and involved its academic community in helping us articulate our program on site; to our local production team, Diana Diegues, Isabel Fernandes and Rita Freire, not only for their insights and deep knowledge of the island but for making every idea possible; to all our team made of friends, from graphic designers to field recordists; to Peter Cusack, who helped in so many ways; to all the artists in residence and to every author and artist who presented papers, workshops, concerts and soundwalks, who together brought an immense quality to the program we presented over those days.

In making use of language and also of aesthetics, sound studies have as much of art as of science. We all know that many of its precursors are - or have been - artists who have become socially conscious and acoustic designers of our daily life. But determining a methodology is a difficult task, which requires careful reflection, since any methodological option will define the entire research process.

With this book we hope to stimulate further study, experimentation, research and to contribute to a more holistic view of the sound environment, one that can act socially and politically within the world in which we live.

Therefore, it is with deep honour that we welcome you to these Proceedings.

São Miguel Soundscapes – Some personal thoughts and observations

PETER CUSACK

October 2017

During March and April 2017 I travelled to São Miguel to attend Invisible Places and to explore and record the sounds and soundscapes there. São Miguel is the largest island in the Azores Archipelago, located fifteen hundred kilometers off the coast of Portugal in the mid Atlantic. It was my first visit, not only to the place itself, but to such a remote spot surrounded by deep ocean. When the plane heads out from Lisbon and for two hours all that's visible is an endless expanse of white fleck blue grey water one does not know quite what to expect. However, on landing it turns out to be a unique and very special place. It does not take long to appreciate the stunning scenery with its archetypical volcanic peaks, the dramatic cliffs of the coastline, the vivid green of the vegetation in contrast to dark larval rock and the craziness of weather that – as everyone is quick to say – conjures four seasons in one day. In fact, it was a pleasure to be there and experience not only the island's scenery and soundscapes, but it's culture, history and present day lifestyle too.

Although constantly subject to power of the oceanic and geothermal forces that shape it, since the fifteenth century people have also had a major impact on São Miguel. The landscape has been transformed for farming and hundreds of new species, both flora and fauna, have been introduced from around the world. In effect it is an unplanned long-term experiment in biological colonialization, which today is the subject of considerable discussion. The changing ecology has had a consequent effect on the soundscape too. All the mammals, domestic and wild, heard are imports and the original vegetation has its own characteristic sound in wind and rain that has been lost from the areas where new species have taken over. In a short visit it is impossible to explore this properly but every now again a small example was noticeable.

I travelled around the island often in the company of fellow sound recordist Andre Pinto and cameraman Andre Laranjinha, who lives on the island and knows it well. In almost three weeks we covered a lot of ground. Personally I developed a fascination with the dominant sounds of the island – those of the ocean and the weather. They show so much variety and variation from one spot to another. But of course there are many other sounds as well. This article describes a few of the places visited and the soundscapes discovered there. Many of the recordings have been uploaded to the favouritesounds website and can be heard at http://favouritesounds.org/?projectid=57

Ferreria Soundscapes

Ferreria is an extraordinary and atmospheric place at the most westerly tip of São Miguel. It is a relatively level area of dark volcanic rock bounded by steep high cliffs on one side and exposed to the wild ocean on the other. Atlantic rollers break on the jagged shoreline and powerful white surf surges up through channels and gullies. Pounding waves fill the air with the sound of irregular bass thumps, fizzing highs and everything between. It is an ever-present backdrop. Ferreria is known for its hot springs. One emerges by the shore making the foaming water warm. This is for public bathing, very popular in calm weather. Another has been fenced off as a rectangular pool exclusive to the Ferreria Thermal Spa, restaurant and bar. Guests relax in the hot green water or walk around in snow white bathing robes - a very surreal image in this dark primal landscape.

On this day it was spectacularly stormy. Winds were gusty and strong. Spray rained unpredictably across the rocks soaking all in its path, myself and camera included. Sadly, the camera did not survive. At one spot, particularly large waves force their way through fissures creating a kind of blow hole, where every now and again sheets of water burst upwards with a deep rumble and fall back hissing onto the sharp rock. Everywhere the ocean's onslaught is relentless. At the public hot spring the high tide and storm driven breakers make it very dangerous to bathe. Instead visitors are busy videoing on their phones. The ac-

tion is certainly dramatic. Dazzling white surf crashes against the dark basalt and whirling foam skitters across the turbulent water. The sound is a constant barrage.

However, the ocean is not the only sonic interest. Human pleasures and ingenuities contribute too. Beside Ferreria's car park is an odd looking arrangement of old zinc and copper pipes, pumps and dials protected by transparent plexiglass. It is probably a mechanism for controlling the flow of hot spring water into the Thermal Spa, but such is the surreal nature of this spot that it can easily be regarded as an eccentric work of art. Nearby is a manhole with a large rusty cover below which running and dripping water resonates in some kind of metallic space. It is audible through a small gap around the cover's edge; the sound of human plumbing tinkling against the tempestuous ocean backdrop.

To walk into the Thermal Spa bar from the natural wildness outside is to enter a parallel universe. Sweet bland music plays to a room of tables and chairs in subdued lighting. Almost no one is there. Two friendly black suited barmen take orders for coffee and beer. Glasses and crockery chink as someone washes up, unseen, in the kitchen. Our bottle tops hiss open. The strangeness is heightened when the music hits a subtle glitch and the same repeating loop plays over and over again. Only myself and a companion seem to notice. It is a bizarre atmosphere where time lingers and a feeling of benign limbo settles in. If the corporate world was ever minded to rebrand purgatory the result could well be something like this.

Lombadas soundscapes

Lombadas is an isolated, unspoilt valley in the hills around one of the São Miguel's volcanic peaks. It is in the middle of the island where the ocean is not audible. Flowing water and the ever-present wind dominate the soundscape. The wind gusts through the small needle like leaves of the native pines here. It has a breath like quality, noticeably different to sounds produced from other trees. Over the centuries many exotic plants have been imported to São Miguel displacing the original species and Lombadas is one valley where the indigenous flora remains relatively intact. It is interesting to hear.

Fast rivers create the loudest sounds in the valley. While walking around you hear a huge variety of speeds and intensities. By placing a microphone very close - 5cm - to the bubbling water deeper musical tones can sometimes be heard. This is an intensely textural place, both sonically and visually. Shades of green, brown and grey are present in abundance. Other colours are more subdued. Spongy mosses and ferns cover the ground and banks with an incredible variety of intricately shaped leaves in different patterns and arrangements. Other mosses and lichens coat trees, bushes and rocks as if they were hair or fur. In close up the detail is amazing but stepping back the impression of texture rarely wavers. The sounds of wind and water too have this quality in their high and low rustling, trickling, bubbling, hissing and smooth airy backgrounds. It seems a very appropriate soundtrack for the misty atmosphere of the valley. Only occasionally are there brief interruptions – a raven croaks and a squeaky bird calls; a blue or yellow flower pushes through the brown and green.

At the bottom of the valley the ruins of an old bottling factory still stand. The water here is pure, naturally carbonated and very drinkable. For a while attempts were made to exploit this commercially but it is no longer economically viable. Two high metal lampposts also remain and are one of the unexpected sonic features of the place. By placing your ear directly against the pole it is possible to hear the wind, rain and rippling river water resonating inside the structure. Recordings can also be made using a contact microphone. The sound is a constant harmonic drone caused by the rushing stream spiked by wind blasts and sharp percussive hits from the spattering rain.

Geothermal soundscapes

On a spring afternoon by the Caldeiras Bar and Restaurant, on the road to Lombadas, sparrows chirp and starlings whistle at each other. A blackbird squawks. Not so much happens. It is a pleasant spot with colourful exotic flowers and a menu that promises such dishes as 'Hum and cheese' and 'Meet typical sandwich'. Nearby, small hot springs bubble busily from the ground, some into a pool of blue water. Different pigments are a feature of the springs around São Miguel. This pale blue is particularly nice. Some are orange indicating iron in the minerals. A mountain stream running through the village has provides water for stone washing tubs. From somewhere hidden in the drains of this two frogs croak loudly from time to time.

Hot springs and fumaroles are found in several places on São Miguel. The best known are at Furnas, which is the main spa town inside one of the beautiful green calderas. At one of the larger sites visiting has been organised with wooden walkways over thick mud and signs warning of the dangers of boiling water. Here there are many springs and each is different. They bubble or spurt with distinctive intensities and show a variety of colours. One fires out water that is inky black and generates clouds of sulphurous steam. The next, fifteen meters down the walkway, is milky white. Others are red or orange. Some of the springs are below the surface and bubble in concrete shafts built around them. Liquid sounds emerge from underground. At one point three small springs are right next to each and it's possible to record in such a way as to hear the slight differences between them. Placing a microphone very close often reveal sounds that cannot be heard with the ear alone.

Ponta Delgada port soundscapes

Ponta Delgada is the largest town on São Miguel and its capital. It is also the main port with a naval presence and water deep enough for the huge cruise liners that arrive daily to disembark hundreds of passengers into the town for a few hours before departing again.

Beside a small ship moored to the quayside in a quieter part of the port my friends and I explored the differences between soundscapes heard just above and immediately below the water level. Separate recordings were made at the same spot. They give quite different perspectives. Above water one hears waves slapping as the ship moves to and from, extending and relaxing the ropes that keep it in place. Drips fall from the ropes as they stretch. Tires holding the ship away from the quayside squeal and squelch under pressure. A plane coming into land at the nearby airport roars immediately overhead. A small fishing boat chugs slowly closer. Seagulls cry. It is a fluent combination of sounds heard against a backdrop of distant urban traffic and the, also distant, ocean waves breaking on the outer port wall.

Although only a meter apart from each other the sounds heard below water level using a hydrophone (underwater microphone) are intriguingly different and surprisingly musical. Water bubbles seem more liquid, deeper and perhaps more melodic. There is more detail. The boat motor is also changed; higher pitches are emphasized and some of the bass has gone. But there are sounds unique to the underwater environment. A constant backdrop

of sharp loud cracks and distant crackles can be heard underwater, which is not audible above. These are snapping shrimps, 'pistol shrimps', that use the intense burst of sound - produced by the snapping of a claw - to stun passing prey. They add a percussive element to the musicality of the water gurgles and rhythm of the fishing boat. Sounds missing underwater are the squelching tires, seagulls, passing planes and traffic. The hydrophone is only 10 centimeters down but it already reveals an intriguingly different sonic world to that above. Definitely interesting!

The 'Romeiros'

During the month before Easter São Miguel becomes a place of pilgrimage. Catholic 'Romeiros' set out in groups, sometimes 50 strong, to walk around the island, resting at churches on the route for the night. The journey takes a week. Many dress in brown cloth and chant for the distance. Their path is marked out in sound. We unexpectedly overtook one group whilst driving one afternoon and stopped half a kilometer down the road, set up the recorders and waited for them to pass by. It was an atmospheric and surprisingly affecting experience as they, their chants and steps approached, drew alongside and then moved away again without pause or a break, at a constant unwavering speed. Their commitment and determination was very clear; slightly scary to a non-believer like myself. I do not know what the nearby dog felt, but it started barking as a response.

For hundreds of years only men have been permitted to make the pilgrimage. Recently however, women have protested against this discrimination. They are now allowed to walk as pilgrims for one day but as women, not with the men. I heard the women's pilgrimage and their chanting in the town of Ponta Delgada and was able to make a brief recording beside a restaurant where guests stopped eating to go outside and watch. It was about 10pm at night.

Keynotes

Touching the World – Vision, Hearing, Hapticity and Atmospheric Perception

JUHANI PALLASMAA
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The hands want to see, the eyes want to caress.[1] (J.W. von Goethe)

The dancer has his ear in his toes.[2] (Friedrich Nietzsche)

1. Hegemony of the Eye

Architecture has been predominantly theorized, taught, practised and critiqued as an art form of the eye, emphasizing form, geometry and focused *Gestalt*. Until the early beginnings of modernity, architecture aspired to express the order of the world through symbolization and proportionality as an analogue of cosmic harmony. It was seen as an instrument of mediation between macrocosm and microcosm, divinities and mortals, myth and life, metaphysics and lived reality.

Despite the general hegemony of vision in architecture, there are historical studies suggesting that some of the earliest structures of man, built for ritual purposes were actually conceived to articulate sound rather than visual imagery. But hearing and vision could also be regarded as equal and interacting realms. Indeed, since the theoretical studies of Pythagoras in the 5th century B.C., harmonic principles of music were applied in architecture. This fusion was particularly important in Renaissance time for architecture in its attempt to be recognized as a field of knowledge among the *quadrivium* of the mathematical arts of arithmetics, geometry, astronomy and music, instead of a mere craft. The eye and the ear were understood to acknowledge the same principles of harmony mediating between man and cosmos.

I can confess that in my own design work since the 1960s 91I have used a Pythagorean system of harmonic proportions developed in the 1950s by my professor and mentor

1. As quoted in *Not Architecture But Evidence That it Exists. Lauretta Vinciarelli: Watercolors*, Brooke Hodge, editor. Harvard University Graduate School of Design, 1998, 130.
2. Friedrich Nietzsche, *Thus Spake Zarathustra*, Viking Press, New York 1956, 224.

Aulis Blomstedt (1906–1979) which he called Canon 60.[3] Blomstedt's ideas echo the contemporaneous studies in Pythagoreanism by Dr Hans Kayser (1891–1964) and his current successor Rudiolf Haase at the Music Academy of Vienna.[4] Also R.M. Schindler (1887–1953), the Vienna-born architect, developed a similar proportional system based on the harmonic principles of western music.[5] In our quasi-rational and secular age, however, architecture has abandoned its metaphysically mediating task, and it has turned into mere visual aesthetics, an art of the eye without any metaphysical or spiritual aspirations, and the senses have become strictly hierarchisized and separated from each other.

The hegemony of the visual realm has gradually strengthened in western perception, thought and action. This bias, in fact, has its origins already with the ancient Greeks. "The eyes are more exact witnesses than the ears", Heraclitus writes in one of his fragments expressing thus the view that has prevailed in philosophy as well as practical life until our time.[6] Through the history of western thought clear vision has been the metaphor of understanding. Plato connected vision with understanding and philosophy as he argued: "The supreme benefit for which sight is responsible is that through the cosmic revelations of vision man has acquired philosophy, the greatest gift the gods have ever given or will give to mortals".[7] In western thought, knowledge has eventually become entirely detached from the body and sensory experience, and we can historically discern a "treacherous and blind hostility of philosophers towards the senses", as Friedrich Nietzsche argued.[8] Max Scheler called this attitude bluntly "the hatred of the body".[9]

2. An Architecture of the Eye

In the modern times the hegemony of vision has been strengthened by countless technical inventions, which enable us to see inside matter as well as into deep space. The entire world is made visible and simultaneously present through modern technology. The obsession of vision and visibility has also created the gloomy society of surveillance, which has its philosophical beginnings in the *Panopticon*, Jeremy Bentham´s novel scheme for a prison that could be controlled from one single spot.[10] In the beginning of the third millennium, we

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3. See, Juhani Pallasmaa, *Aulis Blomstedt: Pensée et forme – etudes harmoniques*, Musée d'Architecture de Finland, Helsinki, 1977.
4. Hans Kayser, *Lehrbuch der Harmonik*, Occident Verlag, Zurich, 1950.
5. *R.M.Schindler: composition and Construction*, Lionel March and Jeudith Sheine, eds., Academy Editions / Ernst & Sohn, London and Berlin, 1993.
6. Heraclitus, Fragment 101 a as quoted in David Michael Levin, *Modernity and the Hegemony of Vision*. University of California Press, Berkeley and Los Angeles, California 1993, 1.
7. Plato, *Timaeus and Critias*, Penguin Books, London, 1977, 65.
8. Friedrich Nietzsche, *The Will to Power*, Book II, ed. Walter Kaufmann, Random House, New York, note 461, 253.
9. Max Scheler, *Vom Umsturz der Werte: Abhandlungen und Aufsätze*, 87–88. As quoted in David Michael Levin, *The Body´s Recollection of Being*, Routledge & Kegan Paul, London-Boston-Melbourne and Henley, 1985, 57.
10. See, Michel Foucault, *Discipline and Punish: The Birth of the Prison*, Vintage, New York, 1979.

seem to be doomed to live in a world-wide Panopticon. In fact, today´s instruments of vision and electronic control promote the strange dualism of surveillance and spectacle; we are objects of visual control and spectators at the same time. As many postmodern philosophers, such as David Harvey, Daniel Bell and Fredric Jameson have suggested, these developments have also dramatically altered our experience of space and time, as we now live in an era of "time-space compression"[11] and an imploded time horizon.

This development towards unrivalled retinality is also evident in architecture, to the degree that today we can identify an architecture of the eye, a mode of building, which supresses other sensory realms. This is an architecture of the visual image and optical presence that aims at instant aesthetic seduction and gratification. It is thought-provoking that especially the technologically most advanced buildings, such as hospitals, headquarters of high technology industries, international airports, and refined hospitals, tend to exemplify this distorted and reductive attitude. In the middle of unforeseen wealth and material abundance, the technological culture seems to be drifting towards increasing sensory detachment and distance and isolation. During the past few decades this tendency has been further reinforced by the cerebral and conceptual emphasis in the arts and architecture. We suppress particularly hapticity, the sense of nearness, intimacy, touch, and affection, regardless of the fact that all modes of sensing are forms of touching. "With vision we touch the sun and the stars", as philosopher Martin Jay poetically argues.[12]

However, for some time there has been a growing concern in philosophy and the arts that the uncontested visual dominance and repression of other sensory modalities is giving rise to a cultural condition that generates alienation, abstraction and distance, instead of promoting the positive experiences of belonging, rootedness and intimacy. It is paradoxical, indeed, that the age of communication has turned into an age of alienation and loneliness.

3. Oral Versus Visual Space

Man has not always been dominated by vision; in fact a primordial dominance of hearing has only gradually been replaced by that of vision. Regardless of the philosophical prioritization of vision, it did not dominate normal life until the modern era. In Lucien Febvre's view: "The sixteenth century did not see first; it heard and smelled, it sniffed the air and caught sounds. It was only later that it seriously and actively became engaged in geometry... It was then that vision was unleashed in the world of science as it was in the world of physical sensations and the world of beauty as well".[13] Robert Mandrou makes a parallel argument:

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11. David Harvey, *The Condition of Postmodernity*, Blackwell Publishers, Cambridge, Massachusetts and Oxford, United Kingdom, 1992, 260–307.

12. Martin Jay, as quoted in David Michael Levin, ed., *Modernity and the Hegemony of Vision*, University of California Press, Manchester, New York, NY, 1994.

13. As quoted in Martin Jay, *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*, University of Cali-

"The hierarchy (of the senses) was not the same (as in the twentieth century) because the eye , which rules today, found itself in third place, behind hearing and touch, and far after them. The eye that organizes, classifies and orders was not the favoured organ of the time that prefered hearing".[14]

Outside of the western development, anthropological literature describes numerous cultures in which our private and suppressed senses of smell, taste and touch continue to have collective importance. The roles of the senses in the utilization of space in various cultures was the subject matter of Edward T. Hall's seminal book *The Hidden Dimension*[15], which regrettably seems to be forgotten by architects today.

Walter J. Ong, who analyzes the transition from oral to written culture in his book *Orality & Literacy*, points out that "the shift from oral to written speech was essentially a shift from sound to visual space ...16[16] print replaced the lingering hearing-dominance in the world of thought and expression with the sight-dominance which had its beginning in writing (...)[17]This is an insistent world of cold, non-human facts".[18]

Ong analyses thought-provokingly the changes that this shift from the primordial oral culture to the culture of the written, and, eventually, the printed word, has caused on human consciousness, memory, and understanding of space. The writer argues that as hearing-dominance has yielded to sight-dominance, situational thinking has been replaced by abstract thinking. And this fundamental change in the perception and understanding of the world seems irreversible to him: "Though words are grounded in oral speech, writing tyrannically locks them into a visual field forever ... a literate person cannot fully recover a sense of what the word is to purely oral people", he argues.[19]

It is my understanding, however, that poetry has the capacity of bringing us momentarily back to the oral world. The re-oralized words of poetry bring us back to the center of a interior world again. In my view, it is the task of art and architecture in general, to reconstruct the experience of an undifferentiated interior world, in which we are not mere spectators, but to which we inseparably belong. Rainer Maria Rilke has a beautiful expression for this condition of belonging, *Weltinnenraum*, the interior space of the world.[20] This poetics of existence implies a re-sensualization, re-enchantment and re-eroticization of our relation with the world. And it implies a re-fusion of the sensory worlds.

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fornia Press, Berkeley and Los Angeles, CA, 1994, 34.

14. As quoted in ibid., 34–35.
15. Edward T. Hall, *The Hidden Dimension*, Doubleday, New York, 1969.
16. Walter J. Ong, *Orality & Literature – The Technologizing of the World*, Routledge, London and New York, 1991, 117.
17. Ibid., 121.
18. Ibid., 122.
19. Ibid., 12.
20. Liisa Enwald, editor, "Lukijalle" [To the reader], *Rainer Maria Rilke, Hiljainen taiteen sisin; kirjeitä vuosilta 1900–1926* [The silent innermost core of art; letters 1900–1926], TAI-teos, Helsinki, 1997,8.

4. Acoustic Intimacy

Sight isolates, whereas sound incorporates, vision is directional, whereas sound is omni-directional. I gaze at an object, whereas sound reaches me. The sense of sight implies exteriority, whereas sound creates an experience of interiority. "The centering action of sound effects man's sense of cosmos", Ong writes. "For oral cultures, the cosmos is an ongoing event with man at its center. Man is the *umbilicus mundi*, the navel of the world."[21] The tragedy of our contemporary life is that we do not dwell in the center of our existential world. "Things fall apart: the center cannot hold...", as W.B. Yates professed.[22]

Hearing structures and articulates space just as much as vision. We are not normally aware of the significance of hearing in spatial experience, however. But when the sound is switched off from a film, for instance, the scene looses its plasticity, meaning and sense of life. One who has momentarily woken up to the sound of a distant train at night and, through his sleep, experienced the space of the city with its countless inhabitants scattered in its dwellings, knows the power of sound to imagination; the nocturnal whistle of a train makes one conscious of the entire sleeping city. Anyone who has become entranced by the sound of water drops in the darkness of a ruin can attest to the extraordinary capacity of the ear to carve a volume into the void of darkness. The space traced by the ear becomes a cavity sculpted in the very interior of the mind.

We can also recall the acoustic harshness of any uninhabited and unfurnished house as compared with the affability of a lived home, in which sound is refracted and softened by the surfaces of numerous objects of personal life. Every building or space has its characteristic acoustic qualities and sounds of intimacy or monumentality, invitation or rejection, hospitality or hostility. A space is understood through its echo as much as through its visual shape.

Sight makes us solitary, whereas hearing creates a sense of connection and solidarity; the gaze wanders lonesomely in the dark depths of a cathedral, but the sound of the organ makes us realize our affinity with the space. The sound of church bells echoing through the streets makes us aware of our citizenship. The echo of steps on a paved street has an emotional charge because the sound bouncing off the surrounding walls puts us in direct interaction with space; sound measures space and makes its scale comprehensible. We stroke the boundaries of space with our ears. But, our contemporary city has lost its echo. The wide and open spaces and streets do not return sound, and the interiors of today's buildings absorb and censor the echo. Our ears have been blinded.

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21. Ong, op. cit., 73.
22. As quoted in Hans Sedlmayr, *Art in Crisis: The Lost Center*, Hollis & Carter, London, 1957, III.

5. Silence, Time and Solitude

The most essential auditive experience created by architecture is tranquillity. In our hectic and noisy world, we have lost the gift of silence; this is the message of Max Picard, the philosopher of silence in his poetic book *The World of Silence*.[23] Ultimately, architecture is the art of petrified silence. It presents the drama of construction silenced into matter and space. After the clutter of construction work ceases and the shouting of workers dies away, the building becomes a museum of a waiting, patient silence. In Egyptian temples we encounter the silence that surrounded the pharaohs, in the silence of a Gothic cathedral we are reminded of the last dying note of a Gregorian chant, and the echo of Roman footsteps has just faded on the walls of the Pantheon. Old houses take us back to the slow time and silence of the past. The silence of architecture is a responsive and benevolent silence with a memory.

A powerful architectural experience silences all external noise; it focuses attention on one's very existence. Architecture, as all art, makes us aware of our fundamental solitude. Buildings and cities are instruments and museums of time. They enable us to see and understand the passing of history, and to participate in time cycles that surpass the scope of individual life.

Architecture connects us with the dead; through buildings we are able to imagine the bustle of the medieval street, and fancy a solemn procession approaching the cathedral. The time of architecture is a detained time; in the greatest of buildings time stands firmly still. In the Great Peristyle at Karnak time has petrified into a timeless present; time and space are eternally locked into each other between these immense columns.

Experiencing a work of art is a private dialogue between the work and the viewer, and that excludes other interactions. 'Art is made by the alone for the alone', as Cyrille Connolly writes in *The Unquiet Grave*.[24] Melancholy lies beneath moving experiences of art; this is the sorrow of beauty's immateriality and temporality. Art projects an unattainable ideal, the ideal of beauty that touches the eternal.

6. The Art of Integration

It is evident, that "life-enhancing" (to use Goethe´s notion) art and architecture address all the senses simultaneously, and fuse our sense of self with the experience of the world. The task of architecture is to strengthen our sense of the real and the self, not to fabricate settings of mere fantasy. The essential mental task of the art of building is mediation and integration. Architecture frames and structures experience and projects a specific horizon of perception

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23. Max Picard, *The World of Silence*, Gateway Editors, Washington, 1988.
24. Cyrille Connolly, *The Unquiet Grave*, Penguine Press, Harmondsworth, 1967, quoted in Emilio Ambasz, *The Architecture of Luis Barragan*, The Museum of Modern Art, New York, 1976, 108.

and meaning. In addition to inhabiting us in space, it also relates us to time; it articulates limitless natural space and gives endless time a human measure. Architecture helps us to overcome "the terror of time", to use an expression of Karsten Harries, the philosopher[25].

Maurice Merleau-Ponty, whose stimulating writings establish a ground for the understanding of the complexities and mysteries of artistic phenomena, argues strongly for the integration of the senses: "My perception is [...] not a sum of visual, tactile, and audible givens: I perceive in a total way with my whole being: I grasp a unique structure of the thing, a unique way of being, which speaks to all my senses at once."[26] The true wonder of our perception of the world is its very completeness, continuity and constancy regardless of the fragmentary nature of our observations.

Architecture concretizes "how the world touches us"[27], as Merleau-Ponty writes of the paintings of Paul Cézanne. Paraphrasing another notion of this seminal philosopher, I wish to argue that meaningful architecture concretizes and sensualizes human existence in the "flesh of the world".[28] The philosopher explains the world-body relation with another poetic metaphor: "Our own body is in the world as the heart is in the organism: it keeps the visible spectacle constantly alive, it breathes life into it and sustains it inwardly, and with it it forms a system."[29]

7. The Primacy of Touch

I wish to return back to the importance of the sense of touch. The boundary line between ourselves and the world is identified and crossed by our senses. All the senses, including vision and hearing, are extensions of the tactile sense; the senses are specializations of skin tissue, and all sensory experiences are modes of touching, and thus related with tactility. "

The view of Ashley Montagu, the anthropologist, based on medical evidence, confirms the primacy of the haptic realm, "[The skin] is the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient protector [...] Even the

25. Karsten Harries, "Building and the Terror of Time", *Perspecta, The Yale Architectural Journal*, issue 19, The MIT Press, Cambridge, 1982.

26. Maurice Merleau-Ponty, "The Film and the New Psychology", in Maurice Merleau-Ponty, *Sense and Non-Sense*. Northwesten University Press, Evanston 1964, 48.

27. Maurice Merleau-Ponty, "Cézanne´s Doubt", in Merleau-Ponty, ibid., 19.

28. Merleau-Ponty describes the notion of the flesh in his essay "The Intertwining – The Chiasm" (*The Visible and the Invisible*, ed. Claude Lefort, Northwestern Univeristy Press, Evanston, 1969): "My body is made of the same flesh as the world [...] and moreover [...] this flesh of my body is shared by the world [...]" (248), and; "The flesh (of the world or my own) is [...] a texture that returns to itself and conforms to itself " (146). The notion of "the flesh" derives from Merleau-Ponty´s dialectical principle of the intertwining of the world and the self. He also speaks of the "ontology of the flesh" as the ultimate conclusion of his initial phenomenology of perception. This ontology implies that meaning is both within and without, subjective and objective, spiritual and material. See Richard Kearney, "Maurice Merleau-Ponty", *Modern Movements in European Philosophy*, Manchester University Press, Manchester and New York 1994, 73–90.

29. Maurice Merleau-Ponty, *Phenomenology of Perception*, Routledge, London, 1992, 203.

transparent cornea of the eye is overlain by a layer of modified skin [...] Touch is the parent of our eyes, ears, nose, and mouth. It is the sense, which became differentiated into the others, a fact that seems to be recognized in the age-old evaluation of touch as 'the mother of the senses'"[30]

Touch is the sensory mode that integrates our experiences of the world and of ourselves. Even visual and auditory perceptions are fused and integrated into the haptic continuum of the self; my body remembers who I am and how I am located in the world. In Marcel Proust´s *Combray*, the protagonist, waking up in his bed, reconstructs his identity and location "by the memory of the sides, knees and shoulders".[31] My body is truly the navel of my world , not in the sense of the viewing point of a central perspective, but as the sole locus of reference, memory, imagination and integration.

The visual-biased culture of our time, and the consequent retinal architecture, are giving rise to a quest for a haptic and multi-sensory architecture, an architecture of invitation and reconciliation. Today´s culture of control and speed, efficiency and rationality favours an architecture of the eye with its instantaneous imagery, and distant yet immediate impact. Haptic architecture, conversely, promotes slowness and intimacy, appreciated and comprehended gradually as images of the body and the skin. Montagu sees a wider change taking place in western consciousness, that certainly has immediate implications on architecture, art and design: "We in the Western world are beginning to discover our neglected senses. This growing awareness represents something of an overdue insurgency against the painful deprivation of sensory experience we have suffered in our technologised world."[32]

8. The Unconscious Hapticity

We are not usually aware that an unconscious experience of touch is unavoidably concealed in vision and hearing. As we look, the eye touches, and before we even see an object, we have already touched it and judged its weight, temperature and surface texture. We hear and feel the qualities of space before we consciously understand them. We hear volumes, sizes, scales, materials surface structures, etc. We hear specific ambiences, such as the differences of night, morning, day and evening as the meterological facts (temperature, moisture, etc.) condition acoustic qualities. In darkness we touch the world with our ears and skin. Even in normal sensing, touch is the unconsciousness of vision and hearing, and this hidden tactile experience determines the sensuous qualities of the perceived space or object. The unconscious sense of touch mediates messages of invitation or rejection, nearness or distance, pleasure or repulsion. It is exactly this unconscious dimension of touch in vision that is disastrously

30. Ashley Montague, *The Human Significance of the Skin*, Harper & Row, New York, 1986, 3.
31. Marcel Proust, *Kadonnutta aikaa etsimässä: Combray* (Remembrance of Things Past), Otava, Helsinki, 1968, 8.
32. Ibid., Montagu, XII.

neglected in today´s visually biased hard-edge architecture. Our architecture may entice and amuse the eye, but it does not provide a domicile for our bodies, memories and dreams.

9. Integrating the Senses

"We see the depth, speed, softness and hardness of objects – Cézanne says that we see even their odour. If a painter wishes to express the world, his system of colour must generate this indivisible complex of impressions, otherwise his painting only hints at possibilities without producing the unity, presence and unsurpassable diversity that governs the experience and which is the definition of reality for us"[33], Merleau-Ponty writes emphatically.

"The senses translate each other without any need of an interpreter, and are naturally comprehensible without the intervention of any idea", Merleau-Ponty claims.[34] Also every profound piece of architecture has its auditive, haptic, olfactory and gustatory qualities, and those qualities even give the visual percept its sense of fullness and life, in the same way that a painting of Claude Monet, Pierre Bonnard or Henry Matisse evokes a full sense of lived reality.

Confirming the philosopher's assumptions, today's research in the neurosciences provides swiftly increasing information on the extraordinary interconnectedness and interactions of the various sensory areas of the brain.[35] The unexpected flexibility of our sensory system has become especially evident in studies of the sensory capabilities of the blind. "The world of the blind, of the blinded, it seems, can be especially rich in such in-between states – the intersensory, the metamodal – states for which we have no common language", argues Oliver Sachs. And he continues: "And all of this (...) blend into a single fundamental sense, a deep attentiveness, a slow, almost prehensible attention, a sensuos, intimate being at one with the world which sight, with its quick, flickering, facile quality, continually distracts us from".[36] This argument of an esteemed medical doctor suggesting that vision rather prevents our intimate union with the world instead of enabling this fusion, is most remarkable and thought-provoking for us architects.

The true miracle of our perception of the world is its very completeness, continuity and constancy regardless of the fragmentary and discontinuous nature of our perceptions, mediated by the different, seemingly incommensurable sensory channels. Normally we manage

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33. Maurice Merleau-Ponty, "Cezanne's Doubt", in Maurice Merleau-Ponty, *Sense and Non-Sense*, Northwestern University Press, Evanston, Ill., 1991,15. For a discussion of the image, see Juhani Pallasmaa, *The Architecture of Image: Existential Space in Cinema*, Rakennustieto, Helsinki, 2001, and; Juhani Pallasmaa, *The Embodied Image: Imagination and Image in Architecture*, John Wiley & Sons, London, 2011.
34. Maurice Merleau-Ponty, source unidentified.
35. See, *Mind in Architecture*, Sarah Robinson, Juhani Pallasmaa, eds., MIT Press, Cambridge, Mass., scheduled for publication in the end of 2014.
36. Oliver Sachs, source unidentified.

to live in a unified and continuous world, whereas in certain sensory and mental failures this integration is lost.

10. The Fusion of the World and the Mind

The quality of a space or place is not merely a visual perceptual quality as is usually assumed. The judgement of environmental character is a complex multi-sensory fusion of countless factors which are immediately and synthetically grasped as an overall atmosphere, ambience, feeling or mood. "I enter a building, see a room, and – in the fraction of a second – have this feeling about it", Peter Zumthor, one of the architects who have acknowledged the importance of architectural atmospheres, confesses.[37]

This experience is multi-sensory in its very essence. In his book *The Experience of Place*, Tony Hiss uses the notion "simultaneous perception" of the system we use to experience our surroundings".[38] This is, however, also the way we normally observe, with all the senses at once. An atmospheric perception also involves judgements beyond the five Aristotelian senses, such as sensations of orientation, gravity, balance, stability, motion, duration, continuity, scale and illumination. Indeed, the immediate judgement of the character of space calls for our entire embodied and existential sense, and it is perceived in a diffuse, peripheral and unconscious manner rather than through precise, focused and conscious observation. This complex assessment also includes the dimension of time as experiencing implies duration and the experience fuses perception, memory and imagination. Moreover, each space and place is always an invitation to and suggestion of distinct acts: spaces and true architectural experiences are verbs.

Paradoxically, we grasp the atmosphere before we identify its details or understand it intellectually. In fact, we may be completely unable to say anything meaningful about the characteristics of a situation, yet have a firm image, emotive attitude, and recall of it. In the same way, although we do not consciously analyze or understand the interaction of meteorological facts, we grasp the essence of weather at a glance, and it inevitably conditions our mood and intentionality. As we enter a new city, we grasp its overall character similarly, without having consciously analysed a single one of its countless material, geometric, or dimensional properties. John Dewey even extends processes that advance from an initial but temporary grasp of the whole towards details all the way to our processes of thinking: "All thought in every subject begins with just such an unanalysed whole. When the subject matter is reasonably familiar, relevant distinctions speedily offer themselves, and sheer qualitativeness may not remain long enough to be readily recalled".[39]

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37. Peter Zumthor, *Atmospheres – Architectural Environments – Surrounding Objects*, Birkhäuser, Basel-Boston-Berlin, 2006, 13.
38. Tony Hiss, *The experience of Place*, Random House, Inc., New York, 1991.
39. John Dewey, *Art As Experience*, as quoted in Mark Johnson, *The Mean:ing of the Body: aesthetics of Human Undertsanding*,

This is an intuitive and emotive capacity that seems to be biologically derived and largely unconsciously and instinctively determined through evolutionary programming. "We perceive atmospheres through our emotional sensibility – a form of perception that works incredibly quickly, and which we humans evidently need to help us survive", Zumthor suggests.[40]

11. Atmospheres in the Arts

Atmosphere seems to be a more conscious objective in literary, cinematic and theatrical thinking than in architecture. Even the imagery of a painting is integrated by an overall atmosphere or feeling; the most important unifying factor in paintings is usually their specific feel of illumination and colour, more than their conceptual or narrative contents. In fact, there is an entire painterly approach, as exemplified by William Turner and Claude Monet, which can be called "atmospheric painting", in the two meanings of the notion; atmosphere being both the subject matter and expressive means of these paintings. "Atmosphere is my style", Turner confessed to John Ruskin as Zumthor reminds us.[41] The formal and structural ingredients in the works of these artists are deliberately suppressed for the benefit of an embracing and shapeless atmosphere, suggestive of temperature, moisture and subtle movements of the air. "Colour field" painters similarly suppress form and boundaries and utilize large size of the canvas to create an intense immersive interaction and presence of colour.

Music of the various art forms is particularly atmospheric, and has a forceful impact on our emotions and moods regardless of how little or much we intellectually understand musical structures. Music creates atmospheric interior spaces, ephemeral and dynamic experiential fields, rather than distant shapes, structures or objects. Atmosphere emphasizes a sustained being in a situation rather than a singular moment of perception. The fact that music can move us to tears is a convincing proof of the emotive power of art as well as of our innate capacity to simulate and internalise abstract experiential structures, or more precisely, to project our emotions on abstractly symbolic structures

12. Unconscious Perception, Emotion and Creative Thought

Against the common understanding, also creative search is based on vague, polyphonic and mostly unconscious ways of perception and thought instead of focused and unambiguous attention.[42] Also unconscious and unfocused creative scanning grasps complex entities and

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The University of Chicago Press, Chicago and London, 2007, 75.

40. Peter Zumthor, op.cit., 13.
41. Ibid., title page.
42. See, Anto Ehrenzweig, *The Hidden Order of Art*, Paladin, London, 1973, and; Juhani Pallasmaa, "In Praise of Vagueness:

processes, without conscious understanding of any of the elements, much in the way that we grasp the entities of atmospheres.

I wish to underline the fact that we have unexpected synthesizing capacities that we are not usually aware of, and, besides, which we do not regard as areas of special intelligence or value. The biased focus on rational logic and its significance in human mental life is a major reason behind this unfortunate rejection.

We have traditionally underestimated the roles and cognitive capacities of emotions in comparison with our conceptual, intellectual and verbal understanding. Yet, emotional reactions are often the most comprehensive and synthetic judgements that we can produce, although we are hardly able to identify the constituents of these assessments. When we fear or love something, there is not much scope or need for rationalization.

Mark Johnson assigns emotions a crucial role in thinking: "There is no cognition without emotion, even though we are often unaware of the emotional aspects of our thinking".[43] In his view, emotions are the source of primordial meaning: "Emotions are not second-rate cognitions; rather they are affective patterns of our encounter with our world, by which we take the meaning of things at a primordial level".[44]

13. Atmospheric Intelligence – A Capacity of the Right Hemisphere

Recent studies on the differentiation of the human brain hemispheres have established that regardless of their essential interaction, the hemispheres have different functions; the left hemisphere is oriented towards the processing of detailed observation and information whereas the right hemisphere is dominantly engaged in peripheral experiences and the perception of entities. Besides, the right hemisphere is also oriented towards emotional processes while the left deals with concepts, abstractions and language.

It seems that the recognition of atmospheric entities takes place in a peripheral and subconscious manner primarily through the right hemisphere. In his challenging and thorough book on "the divided brain" *Master and His Emissary* Iain McGilchrist assigns the task of peripheral perception and the integration of the multifarious aspects of experience to the right hemisphere: "The right hemisphere alone attends to the peripheral field of vision from which new experience tends to come; only the right hemisphere can direct attention to what comes to us from the edges of our awareness, *regardless of the side* (...) So it is no

Diffuse Perception and Uncertain Thought", in *Encounters 2: Juhani Pallasmaa – Architectural Essays*, Rakennustieto Publishing, Helsinki, 2012.

43. Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, The University of Chicago Press, Chicago and London, 2007, 9.

44. Ibid., 18.

surprise that phenomenologically it is the right hemisphere that is attuned to the apprehension of anything new (...)"[45] The right hemisphere, with its greater integration power, is constantly searching for patterns in things. In fact its understanding is based on complex pattern recognition.[46]

14. Space and Imagination

Our innate capacity to grasp comprehensive atmospheres and moods is akin to our capacity of imaginatively projecting the emotively suggestive settings of an entire novel, as we read it. When reading a great novel, we keep constructing all the settings and situations of the story at the suggestion of the words of the author, and we move effortlessly and seamlessly from one setting to the next, as if they pre-existed as physical realities prior to our act of reading. Indeed, the settings seem to be there ready for us to enter, as we move from one scene of the text to the next. Remarkably, we do not experience these imaginary spaces as pictures, but in their full spatiality and atmosphere. The same fullness applies to our dreams; dreams are not pictures as they are spaces, or quasi-spaces, and imaginatively lived experiences. Yet, they are entirely products of our imagination. The sensory imagery evoked by literature seems to be a kind of an imaginative sensory atmosphere.

Experiencing, memorizing and imagining spatial settings, situations and events, all engage our imaginative skills; even the acts of experiencing and memorizing are embodied acts in which lived embodied imagery evokes an imaginative reality that feels like an actual experience. Recent studies have revealed that the acts of perception and imagining take place in the same areas of the brain and, consequently, these acts are closely related.[47] Even perception calls for imagination, as percepts are not automatic products of our sensory mechanisms; perceptions are essentially creations and products of intentionality and imagination.

I suggest that we may well become more interested in atmospheres than individually expressive visual forms . Understanding atmospheres will most likely teach us about the secret power of architecture and how it can influence entire societies, but at the same time, enable us to define our own individual existential foothold.

Our capacity to grasp qualitative atmospheric entities of complex environmental situations, without a detailed recording and evaluation of their parts and ingredients, could well

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45. Iain McGilchrist, *The Master and His Emissary: The Divided Brain and the Making of the Western World*, Yale University Press, New Haven and London, 2009, 40.
46. Ibid., 47.
47. Ilpo Kojo, "Mielikuvat ovat todellisia aivoille (Images are real for the brain), *Helsingin Sanomat*, Helsinki 16.3.1996. The article refers to the research at Harvard University in the mid 1990s by a group of researchers under the supervision of Stephen Rosslyn.

be named our sixth sense, and it is likely to be our most important sense in terms of our existence, survival and emotional lives.

> As the grip of the visual-analytical world weakens and is replaced by intuition and sensation, we will begin to discover again the true tuning of the world and the exquisite counterpoint of its voices. We will find a center.[48]
> (R. Murray Schafer)

> If the body had been easier to understand, nobody would have thought that we had a mind.[49] (Richard Rorty)

48. R. Murray Schafer, "I Have Never Seen a Sound", *Environmental and Architectural Phenomenology*, Vol. 17 No 2, Spring 2006, 15.
49. Richard Rorty, Philosophy and the Mirror of Nature, Princeton University Press, Evanston, 1979, 239.

The Practice of Listening in Unsettled Times

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ABSTRACT: The seemingly simple act of listening to the environment often leads to unexpected complexities of thoughts, sensations and emotions that are not quantifiable or measurable. When we listen for example on a soundwalk, we simultaneously take in the current conditions of the acoustic environment and those of our innermost sound world, our thoughts and emotions. The nature of this fluidity between our inner and outer sound worlds is both highly personal and at the same time universal. It is here where the real journey of listening starts.

Once we learn that listening in itself is a grounded and grounding place, which nevertheless is always in motion, we recognize its inspirational nature. Its inherent motion forms the real base for grappling with the deeply personal in ecology and culture, for moving beyond self-absorption and navel gazing, and finally facing, accepting and integrating the complexities of listening as a type of depth approach towards caring ecologically for the health of our soundscapes and the beings within it.

The complexities of 'just listening' will be traced throughout this presentation by dipping into examples of soundwalk experiences, as well as into a personal case study of sorts that I have conducted throughout much of my adult life, as a way to reach that which we share universally between us.

Thank you Raquel Castro for inviting me to this conference in this rather special location. Often there are other powers at play when we hear something, when we then make subsequent decisions and act on what we heard. You could not have known what other powers lead me to stand here today. But by the end of this talk you will. I invite you all – while listening to this talk – to trace your own journey to these islands and your motivations to be here, aside from being attracted to this intense and wonderful event

In the world of listening and acoustic ecology, context is everything. Understanding as much of the context as possible alters our listening and our comprehension of what we hear. It also makes abundantly clear that we cannot be aware of everything at all times. But let's at least be conscious that each one of us, who presents work at this conference, does so from a unique perspective that evolved from unique contexts, whether we choose to address this directly or not.

For today's talk I have chosen to address some of these more personal contexts that have informed my work, my listening and composing, and my choices. Once we take listening seriously in the context of acoustic ecology and soundscape studies, we know, that the personal is always implicated. Our responses to sounds and soundscapes are never objective, can never be converted into scientific data without the loss of the subtle nuances that make each person's listening impressions unique.

Listening is never static and implies constant shifting and perceptual movement. Michael Stocker describes this beautifully when he says that "our experience with sound unfolds as a *continuous now*," (my italics).[1] Not only does our perception move its attention through the multitude of sounds that it encounters in the environment, but it also shifts from those to our inner sound world and thoughts and back again to the outside. This seemingly random movement back and forth occurs in highly individualistic ways for each one of us. If we become conscious of this, we can witness and perhaps learn to notice when, how much and for what reason our listening attention is captured by our thoughts on the one hand or by the outside world on the other. I am interested precisely in this transition from one to the other, that rather hard to grasp, ephemeral in-between moment of perception. It is there where I suspect we can find clues about the relationship between our personal innermost world and the larger issues we are facing regarding acoustic ecology and balance in the acoustic environment.

This movement between inner and outer sound worlds in our listening practice is symbolic in my mind for a similarly fluid movement between our personal and professional lives. Much as we may try to separate them, at a certain point in our lives and usually when the extraordinary occurs – such as births, deaths, falling in love, accidents, political upheavals,

1. Stocker, Michael. *Hear Where We Are, Sound, Ecology, and Sense of Place*. Springer, New York Heidelberg Dordrecht London. p. xiii

and so on – it is more obvious that the personal and professional flow together and influence each other.

In many of our minds and in many professional contexts the personal has been relegated into a place of lesser value, as if it somehow smudges the work with dirt, destroys its purity. It is precisely for this reason that I want to highlight today how certain experiences in my personal life have always informed and influenced my professional activities and creative work and vice versa. I am approaching it as a type of personal case study that may resonate with the universal and archetypal in all of us.

Sound Example: 1. Familie mit Pfiff_Theme.wav

Listen at: https://soundcloud.com/invisible-places/1-familie-mit-pfiff-theme

You just heard a door being unlocked, someone whistling, and a piece of music that you may have recognized as an excerpt from a Schubert Symphony. *I* heard a whistle tune that my father used to whistle every time he came home. Or whenever I heard someone whistle this tune in other places, I knew some family member was calling out to me, was saying hello. These were joyful and connecting moments. One could perhaps say that the whistle tune was our soundmark that signified a sense of belonging within the Westerkamp clan.

I learnt early on that this tune was also the beginning of the third movement of Franz Schubert's Symphony No. 9 in C major, known as The Great.[2] In 1976 I decided to bring the whistle and the Schubert theme together in a composition created for the occasion of a family reunion. Its title *Familie mit Pfiff* was chosen because of its inherent pun in the German language: literally translated it means "family with a whistle tune", but figuratively it means "family with zest".

In the years leading up to the reunion I had worked with the World Soundscape Project and discovered a deep enthusiasm and passion for the world of listening. All this led me to think of my wider family and the reunion from a fresh perspective. I realized that the whistle tune, that had played such a big role in my childhood and youth, may be in danger of disappearing. Increasingly noisy ambiences could mask it and discourage any attempts to whistle it. But perhaps more significantly, the increased mobility symbolized by transportation noise in the piece, had already created a deeper interference in family connectedness – many of us had moved away, even emigrated, and lived a very different life than our parents and grand parents. So, while the theme of the composition that you just heard, *celebrates* the whistle tune, the subsequent variations seriously *question* its survival possibilities in the environment of contemporary society.

2. For the musicologists among you I should mention that it was published in 1840 as "Symphony No. 7 in C Major" but is listed as No. 8 in the Neue Schubert Ausgabe. See for more details: https://en.wikipedia.org/wiki/Symphony_No._9_(Schubert)

Sound Example: 2. Familie mit Pfiff_2ndVariation.wav

Listen at: https://soundcloud.com/invisible-places/2-familie-mit-pfiff

Nevertheless, the composition was received with enthusiasm and the family welcomed it as a reminder of the spirited bond that the whistle tune represented in our clan. Prompted by the preparations for this talk I recently inquired with a cousin whether the whistle tune had perhaps found its way into the world of cell phone signals. He said no, but proposed immediately that we should initiate such a move at our next family reunion this coming Fall and perform an ad hoc cell phone whistle chorus! Our family soundmark might survive after all, via the disembodied digital domain back to the embodied!

The title I gave to today's talk is *The Practice of Listening in Unsettled Times*. But actually it should be *The Practice of Listening and Soundmaking in Unsettled Times*. In my Master's thesis from 30 years ago, I argued that

> ... a balance between listening and soundmaking (sound input and sound output) is essential to the health of the human acoustic psyche, and that the perceptive immediacy of childhood and the cultural work of artists offer strategies by which such a balance can be regained—even as contemporary urban soundscapes attempt increasingly to erode it.[3]

The impetus for wanting to research and explore what it means to achieve a balance between listening and soundmaking both on a personal and a wider social and cultural level, was rooted in a deep-seated imbalance that I had felt for a large part of my life. Classical music was powerfully beautiful in my childhood ears and often made me cry. For a long time I interpreted this as a terrible weakness. Years later when I was in my mid-thirties and found myself in tears for the umptiest time, but on this occasion sitting in a restaurant crying to some schlocky muzak tune in a minor key, I decided: enough already, I have to look into this! So I set out to research the phenomenon of what I called *music-as-environment* in my thesis. Paralell to that when I needed a break from my academic endeavours, I created a satirical performance piece entitled *Cool Drool*. Here is a short excerpt from a live performance during a Vancouver New Music concert in the mid-80s:

Sound Example: 3. Cool Drool_excerpt3a.wav

Listen at: https://soundcloud.com/invisible-places/3-cool-drool-excerpt3a

3. Westerkamp, Hildegard. *Listening and Soundmaking, A Study of Music-As-Environment*, Master's Thesis, School of Communications, Simon Fraser University, January 1988. Abstract, page iii

But like any good satire, the issues brought up in this piece were also deadly serious – both socially and personally. My vulnerability, symbolic here for *every* human beings' vulnerable spots, was the perfect target for a profit-seeking corporation. The thesis and the performance piece did not stop my tears altogether, but they helped for a new resilience to emerge in me. I had learnt,

> ...that the creative process is a balancing agent against an overload of sound input, and that one's own sound output or creative expression not only lessens the authority of externally imposed voices, but also offers a new voice of vitality and energy.
> The discussion [in my thesis] focuses finally on the human body as the soundmaking/listening "instrument", and concludes that sound experienced (produced and received) *as physical process* can be an effective counterbalance to attempts by commerce and technology to transform it into product or commodity.[4]

That was thirty years ago. Now we are faced with an American president whose life blood was made in the corporate world, whose sport it is to target human beings' vulnerable spots for his personal profit and for winning an election, and for whom the environment – let alone the acoustic one! – and global warming are unprofitable and therefore of no concern whatsoever. His random twitter words and public remarks – which really are the internal noise of a confused mind externalized – have become weapons of attack (or defence depending on the context), daring the ahgast listener; enabling others to practice the same arbitrariness; and worst of all finding power in it, precisely by NOT listening to the heart or to reasoning, common sense, justice and fairness.

In the face of daily unsettling news and such non-listening it has become an urgent matter to strengthen our listening. And as it happens a rather fitting Zen Quote landed in my email inbox right at the start of my trip to the Azores:

> Listening to another perspective doesn't necessarily mean we agree with it. We sometimes fear that if we take in another point of view, it will be mistaken for concession. But if we are clear in our own mind that listening doesn't mean agreement, we can open with confidence to other points of view. We can practice just listening with an open, curious, and not-knowing mind. We literally join with the perceptions of the other and become the same with them. Usually, when we listen, we still have boundaries in our mind. We want to share

4. Ibid. page iii/iv.

> our experience, we are waiting to give advice, or we are holding a set of quiet opinions. Open listening is free from the usual barrage of unnecessary judgments and disapprovals that create divisions in our open field of sameness.[5]

A few months ago a totem pole was erected on Pigeon Square in Vancouver's Downtown Eastside (DTES), an area notorious for open-air drug trade, sex work where many are homeless.

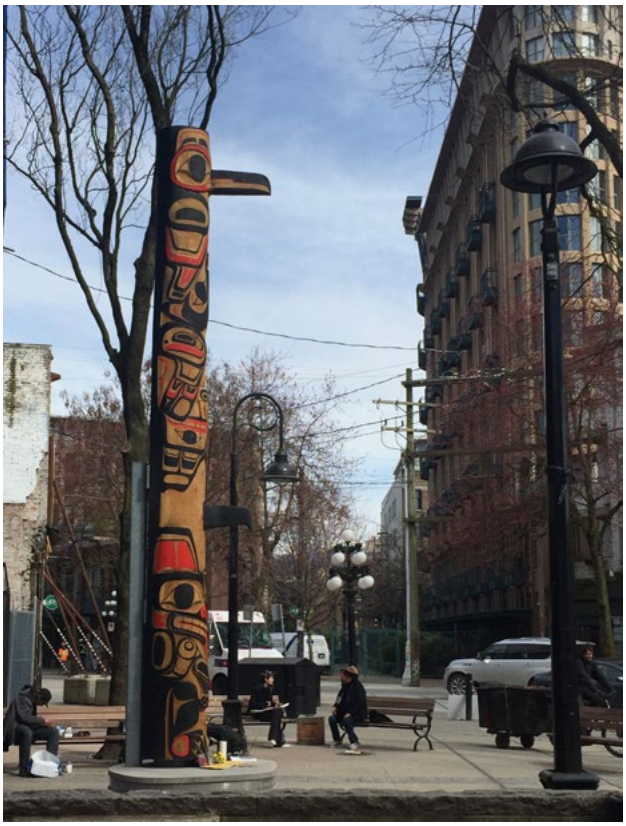

Figure 1. Survivors Totem Pole. Photo: Hildegard Westerkamp.

On the base of the pole an inscription reads:

Sing your song friend
Tell your story
The map we inherited
Isn't any good
The old roads mislead
We need a new map[6]

5. Musho Hamilton, Diane. *The Zen of You and Me: A Guide to Getting Along with Just About Anyone*. Shambala Publications, p. 43.
6. These words were written by Sandy Cameron, a Canadian poet, teacher, logger, and prospector. He died in 2010 and left many articles and poems addressing issues of social justice today.

Figure 2. Base of Totem Pole. Photo: Hildegard Westerkamp.

These words speak to all of us really, in these unsettled times. And indeed as the totem pole's carver Bernie Williams says,

> This pole is for everybody: it represents the resilience of everyone who has faced racism, colonialism, sexism, LGBTQ-bashing, gentrification, and more... These things have really affected this whole community. We want to let people ...know that... we are here to stay, and this pole is a lasting legacy for ...all the people.[7]

The *Survivors Totem Pole*, as it is called, creates hope for healing. Its mere presence is the beginning of making such a new map. It is both a witness or listening presence and an encouragement to find a voice, "sing your song friend, tell your story."

In the late 1970s when I broadcast my program *Soundwalking* on Vancouver Co-operative Radio, I would cross this same Pigeon Square on my way to and from the radio station.

Sound Example: 4. Soundwalking_Intro_MicPigeonSquare.wav

Listen at: https://soundcloud.com/invisible-places/4-soundwalking-intro

7. http://www.straight.com/arts/821626/bernie-williamss-survivors-totem-pole-will-be-symbol-hope-residents-downtown-eastside

At that time Pigeon Square – like the entire DTES – was a relatively harmless scene, compared to what it is today, then consisting mostly of single men with alcohol problems. You can hear some of these men's voices from that time in this excerpt from my composition *A Walk Through the City*:

Sound Example: 5. A Walk_excerpt_mens voices.wav

Listen at: https://soundcloud.com/invisible-places/5-a-walk-excerpt-mens-voices

Life is *always* unsettled. We often choose not to notice it, though, not to attend to it. But the approach I learnt from Murray Schafer, Pauline Oliveros and John Cage is to listen to everything, including Muzak that never *wanted* to be listened to, or including that which unsettles, such as disturbing sounds and voices, uncomfortable information, issues we like to avoid. Listening in such a way requires courage, as it disrupts comfortable habits and routines. That in itself can feel threatening and elicit inner anxiety. Pema Chödrön, a Tibetan Buddhist spiritual teacher puts it this way:

> Whenever there is a sense of threat, we harden. And so if we don't harden, what happens? We're left with that uneasiness, that feeling of threat. That's when the real journey of courage begins. This is the real work of the peace-maker, to find the soft spot and the tenderness in that very uneasy place and stay with it. If we can stay with the soft spot and stay with the tender heart, then we are cultivating the seeds of peace.[8]

The seemingly simple act of listening to the environment often leads to unexpected complexities of thoughts, sensations and emotions that are not always comfortable. On a soundwalk we may become aware of that fluid listening between inner and outer sound worlds that I mentioned earlier, and might find ourselves in a state of uneasiness as a result. But if we stay with this soft spot, as Pema Chödrön would call it, then we can experience a sense of groundedness, what she calls peace. The nature of this fluidity between our inner and outer sound worlds is both highly personal and at the same time universal. It is here where the real and deeper journey of listening occurs.

Sound Example: 6. Excerpt2_IDEAS showsStereo.wav

Listen at: https://soundcloud.com/invisible-places/6-excerpt2-ideas-showsstereo

8. Chödrön, Pema. Practicing Peace in Times of War, Based on Talks Edited by Sandy Boucher, Shambhala, Boston & London, 2006. P. 29.

That was an excerpt of a recent interview with Paul Kennedy on CBC Ideas. An occurrence after a recent soundwalk with a class of students in the School for the Contemporary Arts (SCA) at Simon Fraser University demonstrates the points made here further. Most of the students had iPods or cell phones, and I asked them to bring them on the walk. They were to experiment with their habits of listening, but never to listen longer than 3 minutes at any given time and most importantly, they were to listen consciously to the transitional moments of putting the ear buds in and taking them out. A few days later I received an email from the instructor of the course:

> I wanted to share with you comments from one of the students who was deeply moved by the experience. She normally wears her headphones and listens to music on her way to the School for the Contemporary Arts and after the sound walk experience a few days later, she decided to follow her normal route without headphones and attend to the sounds in the environment. She had discovered a new world of sound and image. It's a testimonial of sorts.[9]

This student challenged herself and changed her daily routine – always a subtle often unnoticed moment of unease. But the result is usually inspiration, discovery and a new freedom. Soundwalks give us that chance to practice listening to the unraveling of that *continuous now*, as we are grounded in the movement of walking and at the same time are learning to be mindful about our own soundmaking in this world.

Recently I heard about a performance that seemed to be a true expression of what I called earlier a balance in listening and soundmaking. It was entitled *Music for Natural History* and was created by Canadian sound artists Tina Pearson and Paul Walde. Although I was not able to attend the live performance I was struck by the incredibly skilled soundmaking I heard when Tina played to me recently the same excerpt that I will play to you in a minute.

9. from Cheryl Prophet, instructor of the course, private email communication, February 18, 2017.

Figure 3. Forest Diorama: bird. Photos: Tina Pearson and Paul Walde.[10]

In the late 1970s the Royal British Columbia Museum in Victoria, Canada created a Natural History Gallery with exhibits of taxidermied birds and mammals, human-made trees, painted landscapes and an accompanying soundtrack of environmental sounds.

Figure 4. Shoreline and Crow.

This was rather advanced for its day with some unusual special effects, all in order to draw the visitor into a sensual experience of the Pacific West coast environment.

10. Photo credit for the next five photos also goes to Tina Pearson and Paul Walde.

Figure 5. Shoreline-birds.

Figure 6. Shoreline Puffins.

Music for Natural History was a live performance in that space, replacing the existing soundtrack with the live sounds of sixteen vocalists, sound artists and music instrumentalists that spent weeks learning to viscerally replicate the sounds of wind, birds, mammals and ocean surf of the Pacific Northwest. The creators of this performance called the piece "part tragic love song for the wilderness, part performative sound art."[11]

11. From program notes of the performance.

Figure 7. Shoreline Performance Group

Sound Example: 7. Audio3'30-Dawn-Burble-Surf-SL-Puff.wav12

Listen at: https://soundcloud.com/invisible-places/7-audio330-dawn-burble-surf-sl

Figure 8. Shoreline Sea Lion Duo.

The artists say further that

> *Music for Natural History* is part of a growing global movement of art projects that intend to foster renewed connections with the biosphere. The project blurs boundaries between sonic mimicry, soundscape composition, classical music, and dada-ist sound poetry within the already paradoxical setting of the Museum's exhibitions. ...*Music for Natural History* might also be interpreted as a longing for remembering what we no longer hear, and what we no longer sing.[13]

12. *Music for Natural History*, Tina Pearson and Paul Walde multichannel sound and video installation 2012–2017.
13. From program notes of the performance.

The soundscape can be analyzed scientifically with sound level meters and a multitude of other measurement tools and data collection. Imagine if scientists would also learn to vocally reconstruct the soundscapes they measure and study! This might seem rather too radical if we consider how recent it is that our listening perception has been deemed important enough to be included in such analyses. The huge reluctance to be open in such studies to individual people's listening responses may be understandable because inevitably they will throw wrenches into the smooth and clean results of data collection. And of course this is precisely the difficult, uneasy part that Pema Chödrön addresses when she talks about that feeling of threat and when she proposes to stay with and attend to it. In practical terms this means that we who have acquired knowledge and expertise in environmental listening, take courage and offer our experience to those involved in academic and scientific studies of sound, acoustics and soundscapes.

If we are serious about wanting to affect real changes in our soundscapes and by extension in us, we must never forget the practice of listening as a firm, if complicated foundation for all our teachings, for our efforts to study and research the soundscape and to understand the significance of acoustic ecology on our planet.

Today, thanks to Raquel Castro's invitation to the Azores, I am coming full circle via the family whistle tune and other sonic connections, remembering another event in my life that unsettled me and my family to the core, when I was quite young. Times of crises tend to stop us in our tracks and remind us of what is important in life. Listening when taken seriously is exactly like that. I would call this the invisible forces of listening, one of those *Invisible Places* that Raquel Castro is perhaps addressing in her overall title for this conference.

The *name* of the Azores, *die Azoren* in German, has acquired what I would call, an iconic ring in my ears. Its sound conjures up a traumatic time in my life. Accepting Raquel's invitation meant that I needed or wanted to listen to this ring again – this uneasy place as Pema Chödrön calls it – and listen to it more consciously *and* in this professional context of acoustic ecology and soundscape studies.

And now, being right here on the Azores, seeing the Atlantic, feeling its mild, mellow, often very windy, humid air, and hearing its powerful waves, is actually very moving!

Figure 9. Waves at Ferreria, Sao Miguel, Azores. Photo: Hildegard Westerkamp.

Sound Example: 8. churning waves foam stereo Ferreria.wav14

Listen at: https://soundcloud.com/invisible-places/8-churning-waves-foam-stereo

Figure 10. The *Pamir* in a storm. Photo: Norman M. MacNeil.

14. Recording by Peter Cusack, April 2017.

On September 21, 1957 the German tall ship, the *Pamir*, sank in a hurricane 600 nautical miles west south west of the Azores.

Figure 11. Location of the Sinking of the Pamir.

I was 11 years old then and heard the sound, die Azoren, repeatedly on the many news-casts after the sinking of the ship and during the week of searching for survivors. Newspaper headlines – the most intense media presence at the time – although silent, sounded like aggressive screams to me. My 22 year old brother was on that ship and was among the 80 men lost at sea. Miraculously, there were six survivors.

Figure 12. The *Pamir* in full sail.

It took me many years to understand that my brother's death also left a gift behind for me: this deeply unsettling event had given me early guidance in recognizing which situations in life would ground and inspire me, who would be supportive and who would not be. I did not realize it then that my listening towards the outside and towards my own inner sound world had received a first and tough training lesson and actually became my guide in unexpected ways. Eventually – through various detours studying classical music and never feeling right there – I became conscious of a deep sense of belonging and home in the world of sound and listening, when I discovered Murray Schafer's work and the World Soundscape Project, and shortly after Pauline Oliveros' sonic meditations and deep listening, and when later a group of us founded and developed the now 24-year old World Forum for Acoustic Ecology.

Perhaps many of you here also have had such a moment of recognition that landed you in these invisible places of listening that carry much meaning and do the connecting work between inner and outer worlds, listening and soundmaking, between the personal and professional, the artistic and scientific. Knowing this invisible place is inspirational and should be celebrated, precisely because it often may have involved difficult and unsettling times in our lives.

As it happens, yesterday was my brother's birthday. He would have turned 82. Today is my birthday. I am 71. There is much for us to celebrate in this amazing confluence of events and realities here on the Azores. So, in conclusion I will play you a short excerpt of my composition the *Harbour Symphony* that was originally performed by over 100 boats at Expo 86 for the opening of the Canada Pavilion in Vancouver.

Figure 13. *Harbour Symphony* performance as seen from above. Photo: Rick Elkin.

I had dedicated this piece to my brother at the time. Its performance was a big coming together party for the seafaring community in Vancouver and sounded – as Stephen Godfrey from the Globe and Mail newspaper described it so poignantly – "like a herd of happy elephants caught in a traffic jam!"[15]

Sound Example: 9. HarbourSymphony and Fanfare_excerptBeg.wav

Listen at: https://soundcloud.com/invisible-places/9-harboursymphony-and-fanfare

Thank you for listening!

15. Godfrey, Stephen. Expo Opening draws the bizzare – 100 vessels join fanfare of bells, whistles, sirens. The Globe and Mail, May 3, 1986.

Quiet Is the New Loud

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Sonic thinker, composer and sound artist

ABSTRACT: The project QINL in it's four parts as a whole was an invitation to a broad audience to - think with the ears - a knowledge-generating practice that exercises personal perception of the auditory qualities of spaces and places.

This practice creates new approaches for every architectural and urban planning design process, and it allows us to discuss the complex auditory interactions of our life worlds and public spaces together. Thinking with the ears also means going beyond the concept of noise as an undesired externality and perceiving sonic emissions in a differentiated way instead: as a source of information that helps us to better understand the processes and infrastructures that we otherwise accept unquestioningly.

Thinking with the ears is not about our everyday, knowing and orientating hearing ("Yes, I hear a train."). It involves, for example, the course of a sound, the perception of the rising and falling of a sonic event, the associated occupation of space, the release of the sound environment, and the questions: How do I feel here? What kind of atmosphere does this place have? What is its mood?

As the exercise of this different hearing progresses and sound memory for (spatial) sound forms along with it, we develop a qualitative sound consciousness and a language for it. And what is most important: we begin to link our hearing with our own personal history and the momentary mood situation. We begin to understand and sense our hearing as being culturally shaped.

This short text gives an overview and sketches out the main stages of a project by O+A (Bruce Odland/Sam Auinger) for the Triennial for Contemporary Art and Architecture 2015 in Bruges. O+A´s central theme is "hearing perspective". Their work is known for large scale, public space sound installations which transform city noise into harmony in real-time. 2009 O+A started on the "Sonic Commons" questioning the dominance of the visual culture in our perception of the world.

The medieval city center of Bruges was declared a World Heritage Site by the UNESCO in 2000. More than five million people visit the city every year.

What would happen, if they suddenly all decided to stay? What would be the impact on a protected historical city like Bruges if it became a megapolis over night?

This was the premise for the Bruges Triennial for Contemporary Art and Architecture 2015. The triennial contrasted two opposing narratives: the static image of Bruges as a protected medieval city that was restored and preserved from the 19th century onwards and a hypothetical 21st century megapolis version of the city.

In 2014 O+A were invited to develop a project for this festival. After longer stays and studies on site, it became clear that the historical center of Bruges is an urban space with a unique acoustic and auditory atmosphere. This is largely due to the situation that no industrialization took place in Bruges for historical reasons. The medieval architecture with its winding alleys, squares, and passages is still retained in its substance, and therefore no urban space has been developed for motorized individual traffic. The soundscape of the city is thus still completely determined by human activity, and in the "quiet hours" it is actually quiet. In technical terms, the noise level of the city is under 20 decibels: in other words, best concert house quality.

In addition to the unique quietness that can still be experienced in this city at certain times, and due to the absence of the permanent noise of traffic and infrastructure systems (also as a consequence of the low basic noise level), a number of unique acoustic phenomena arise, which can otherwise not or no longer be experienced in urban spaces.

To be able to transfer this unique atmospheric quality into a discourse, the project QNL was developed as a four-part work, whereby the individual project parts can operate independently or mutually enhance one another. The artistic intention was to induce residents and visitors to the city and the festival to listen closely with a series of interventions. Personal listening experiences were to be provoked in this way, thus creating discourse material for future urban planning discussions. These interventions will be explained in more detail in the following.

1. song lines
2. earmarks
3. tuning bruges
4. sounding bruges

1. Songlines

Figure 1.

Figure 2.

O+A composed three song lines, allowing visitors an experience of discovery with a specially developed instrument while walking along one of three pre-defined paths through the city, experiencing the special and always changing auditory situation. A floating loudspeaker was developed for this, which in combination with a portable technical bag emits acoustic signals attuned to the respective place. This made it possible to sensually experience the interdependency between open space and materiality, architectural proportions and facade design, the paths and the surrounding built environment. This part of the project impressively underscored the special auditive quality of the city, because something like this only works in an urban environment with a very low noise floor on the one hand, and one that is, on the other hand, not permanently encumbered by motorized professional and individual traffic in the close surroundings.

2. Earmarks

During a six-month research stay, we explored and investigated the auditory quality of historical Bruges. From this artistic research and the resultant material, we developed a map of listening sites in Bruges, called “Earmarks” .This special map enables residents and visitors to seek out various listening sites and become consciously acquainted with their inherent auditory qualities. This part of the project has gone beyond the Triennial 2015 and is still present in the city’s offers for tourists.

3. Tuning bruges

Figure 3.

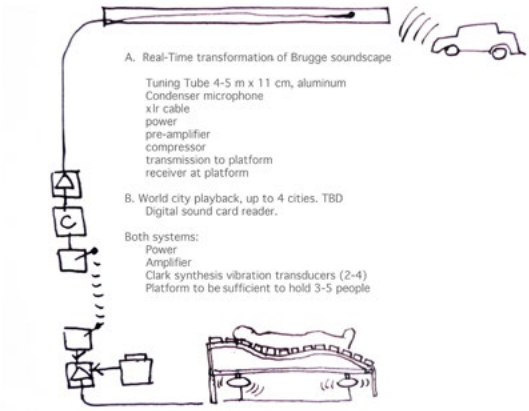

Figure 4.

O+A set up a small red ramp in the Jan van Eyck Square, which made it possible to experience the noise of passing cars and buses as a bodily vibration, transformed and musically tuned to a D. (Fig. 3, 4) For this installation a resonance tube was used, which picked up the surrounding sound, tuned it (D), and transmitted it in its transformed form back to the ramp in real time using two transducers. This part of the project was intended to bring into the discussion that existing urban sound can also be transformed and tuned. In this way it became musically perceptible.

4. Sounding bruges

Figure 5.

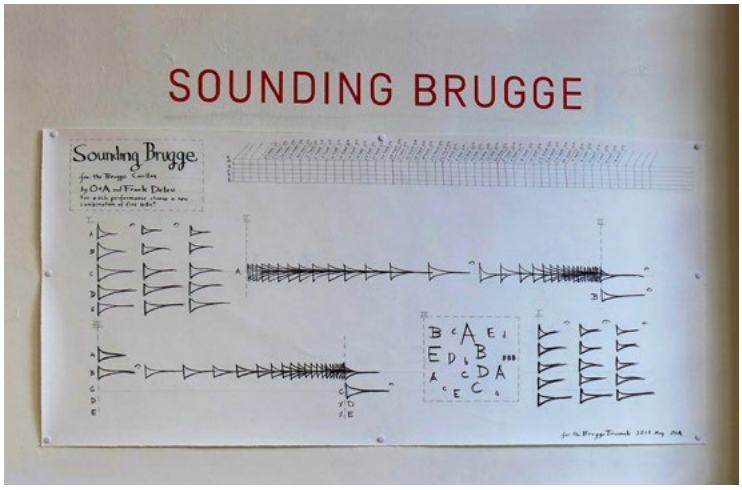

Figure 6.

In the late Middle Ages and the Renaissance, towers, large glas windows, and chimes were a sign of wealth in the Europe of merchants. The worldly power and wealth of a commercial city was demonstrated particularly with a carillon, a set of large, playable bells, typically

found in a tower or an especially constructed edifice. Bruges has one of the largest carillons in the world (Fig. 5) Forty-seven bronze bells are mounted in a tower eighty-three meters high from the seventeenth century. It is played by a machine at fixed times every day with secular songs and classical themes.

The city carillonneur gives a concert three to five times a week. Because of the height of the tower, the bells with their different tunings are ideal actors for activating the acoustics of the city and making it possible to experience the various echoes, reverberations, and resonance phenomena. Sounding bruges is a composition created by O+A in collaboration with the carillonneur Frank Deleu. On the one hand it breaks through the musical style of secular songs and classical themes with its permutative form, and on the other makes the acoustic features of the various architectures of the city audible, especially through the timing structure of the composition. The piece was performed forty-three times during the triennial in 2015 and sparked discussions among residents and visitors alike.

ACKNOWLEDGEMENTS. This project and piece of art was only possible to achive with the help and support from: Roland Babl, Frank Deleu, Katrin Emler, Wolfgang Galler, Imanol Gomez, Werner Lorke, Daniel Scheffler, Gerd Thaller and the Team of the Brugge Triennale 2015.

Papers

Soundscape Design of Motorway Parkland Environments – Transformation, Cancellation, and Ethnography

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ABSTRACT: This paper reports on a practice-led research project investigating the design of parkland soundscapes affected by motorway noise. The project, entitled Acoustic design innovations for managing traffic noise by cancellation and transformation, is funded by the Transurban Innovation Grant. Transurban is a transport infrastructure company operating in Australia and the USA that builds and manages tolled motorways. Car-dependent cities require extensive road networks, and traffic noise can impact those who live adjacent to motorways. We have based our project on three approaches – Cancellation, Transformation, and Ethnography. Since the writing of the paper, research was tested along the M2 motorway in Sydney and the Citylink in Melbourne. Future papers, and an industry report will compare the newly designed environments with community perceptions, to reveal new noise management approaches that infrastructure companies can incorporate in their planning and design phases. This papers draws on early fieldwork and laboratory tests, including descriptions of the three methodologies involved and some preliminary observations.

KEYWORDS: urban soundscape design.

1. Background

Road noise, like all sound, is the transference of energy through a medium. The notion that noise is annoying comes as a consequence of human perceptions, including its cultural and historical influences.[1] Our research seeks to reshape noisy roadside acoustic environments – the unused, often neglected grassy areas located on the non-roadside of motorway noise walls – to facilitate more desirable listening experiences that successfully meet community needs for improved urban livability. Our study aims to improve urban livability in these areas by creating information-rich, diverse listening experiences through the application of electroacoustic technologies. This is consistent with recent lab-based studies that have created models to "implement the soundscape approach in urban planning and design, with the objective to create (urban) environments of high acoustic quality" (Aletta 2016). This project investigates the possibility of implementing similar soundscape approaches as described in these lab-based studies, except through practice-based research and ethnographic community engagement.

Without total road enclosure, full noise attenuation is impossible. To date, the primary solutions for motorway noise issues are sound attenuating walls and acoustic insulation of adjacent buildings. Acoustic insulation is costly and ineffective in the outdoors, and installing noise barriers – the primary noise management approach – can only partially attenuate motorway noise. According to VicRoads, who plan, develop and manage the state of Victoria's arterial road network, noise barriers reduce traffic noise by 5–10 dB(A) in outdoor areas (VicRoads 2003). As such, acceptable levels of noise are determined quantitatively by SPL meters, which ensure noise levels do not exceed a pre-determined threshold. The extent of urban sound planning typically reduces urban soundscape design to mere noise mitigation (Cobussen 2016; Kamin 2015). This research will advance the effectiveness of existing noise management and urban planning approaches by exploring the possible integration of two electroacoustic approaches – cancellation and transformation – into existing noise wall infrastructures.

At the root of this project's innovation is a new understanding of noise as a design material (Hellstrom 2003; Lacey 2016). Effective noise design can positively impact sensory perceptions (Pink 2015; Kang 2011) for the recreation of urban listening experiences. By developing, testing and calibrating noise cancellation and transformation methods independently and in combination, the research aims to generate new soundscapes that might ameliorate noise issues by offering new listening experiences for residents exposed to ongoing traffic noise. To achieve these aims, an interdisciplinary research team has been

1. As with tuning in musical acoustics, sounds that constitute noise differ across cultures and through history. For a study of this concept, see Bailey, 1996.

formed involving RMIT University (Melbourne), UTS (Sydney) and Northwestern University (Chicago) that combines acoustic engineering, sound design, and ethnographic expertise. Specifically, Active Noise Cancellation (ANC) technology (Qiu 2014) will target the low frequency component of motorway noise, while an electroacoustic soundscape system (Harvey 2013) will transform motorway sounds with microphones providing a live feed to custom-built audio processing software written in the programming environment Max. From August to December 2016, we conducted a series of laboratory and field tests providing crucial information that will inform the on-site testing in February and March of 2017. While the findings of the laboratory tests are reported below, we first describe the key disciplinary approaches involved in this study. Future papers (Lacey 2017) and an industry report will describe in detail the final test-site installations along the M2 and Citylink.

2. Primary Disciplines and Approaches – Cancellation, Transformation, and Ethnography

2.1. Cancellation – Removing Noise

Cancellation refers to the application of an Active Noise Control system comprising of hardware – including microphones and speakers – and a processor housing an adaptive algorithm, which is able to cancel environmental sounds within a specific frequency range. Active noise control (ANC) is a method for reducing existing noise via the introduction of controllable secondary sources to affect generation, radiation, transmission and reception of the original primary noise source. ANC systems can provide better solutions to low frequency noise problems than current passive noise control methods – like sound barriers – when there are weight and volume constraints. ANC also provides an alternative noise control solution for applications where current passive noise control methods cannot be applied. The fundamental theories and methods of ANC have become well-established over the last 30 years. However, successful industry and civil applications of this technology are still limited to some specific cases, such as headsets, earplugs, propeller aircraft, and cars.

Active noise barriers (ANB) are a combination of ANC methods and passive noise barriers, where some loudspeakers are installed on the edges of the passive noise barriers to increase its performance, especially the insertion loss of the barriers in the low frequency range. After the first ANB research carried out by Omoto and Fujiwara in 1993, many researchers contributed to the field, and the first practical ANB system prototype along an expressway was established by Ohnishi et al. (2004) in Japan. Such experiments have demonstrated successfully that ANB can increase the low frequency performance or the equivalent height of passive noise barriers significantly and at low cost.

Virtual sound barriers (VSB) are a future method for controlling traffic noise along motorways. The VSB system is an array of acoustic sources and sensors forming an acous-

tic barrier that blocks direct propagation of sound without blocking air and light. The VSB system has been successfully applied on noise radiation from the opening of power transformers located inside enclosed rooms, which suffer from poor ventilation conditions and expensive built enclosure costs. The VSB system can be applied along motorways or the windows of residential housing to reduce traffic noise transmission (Qiu 2014).

The ANC system applied in this study could easily be expanded to have more impact on the sound environment, though at an increased cost. The cost depends on a number of factors, such as the size of the area to be controlled and the frequency to be controlled. It is most economical to combine the ANC system with existing passive noise control measures that have good middle to high frequency control effects but poor low frequency control performance. For a well-designed and constructed sound wall, the residual noise is usually dominated by low frequency components. ANC systems installed on the top edge of a barrier will have a significant perceptual effect *and* a measurable noise reduction. For example, the noise reduction (≤300 Hz) on the non-roadside of a 3m sound wall with an installed ANC system is similar to the noise reduction provided by a 6m sound wall in the same frequency range. Adding more channels to the existing ANC system would be required to increase the effective frequency range. So, while the perceived impact may be minimal in this study, our research is suggestive of future projects that apply an upscaled ANC system.

2.2. Transformation – Sculpting a Soundscape

To experiment with altering the soundscapes adjacent to roadways in urban areas, we designed a system of microphones and speakers with a computer at the centre. The computer runs sound analysis and processing software written in the Max environment, and is capable of interfacing with other common tools like Ableton Live and the GRM Tools suite of plug-ins. Collectively, we refer to this as the "Transformation System," which is distinct from the "Cancellation System" described above. The Transformation System's microphones capture environmental sound directly and pass it to the processor to be analysed for its amplitude envelope and spectral content. The sound is then either passed through a set of transformational processes, or new sounds are produced in response to the analysis results. We refer to a set of these processes as a "Transformation." Determining the makeup of these Transformations – a process that combines electroacoustic music composition, algorithmic design (coding) and audio engineering – has been the primary exploratory activity of this part of the project.

The sound resulting from a Transformation is then passed out to a multi-channel speaker system, which distributes it back into the soundscape according to the location of the system's microphones. Speakers must be positioned such that they are *behind* the system's microphones and pointing away from them. The microphones, in turn, should have a polar pattern – cardioid, for example – that rejects sound from behind. In our case,

one speaker was used for every microphone, though other arrangements are possible. Transformation Systems are easily scalable when the ratio and relative placement of microphones to speakers can be fixed.

2.3. Design Considerations

The areas adjacent to roadways are noisy places, and the Transformation System, by definition, will introduce even more sonic energy into these soundscapes. Care must therefore be taken to ensure that the layer of added sound is applied as judiciously and sparingly as possible, so as not to create a nuisance greater than the one we intend to mitigate.[2] The realization of this constraint has guided us towards designing Transformations that are:

- closely tied to the actual environmental sounds: the contour of those sounds is reflected in the Transformation such that the two layers of sound merge in the listener's perception;
- dynamically constructed: capable of responding to variations in the average amplitude and spectral content of the soundscape as it passes from rush hour traffic levels to quieter times of day; and/or
- composed of middle-to-higher frequency sounds: so as not to compound the buildup of low frequency noise that is characteristic to motorway soundscapes, the transformation will impact specific frequencies (see 2.2.4 below).

During testing, we experimented with Transformations that have dynamically-activated layers of activity, and ones that sometimes fall silent or have periods of sparseness that occur in either direct or inverse relationship to the behaviour of the immediate soundscape. By way of example, we'll discuss two of the ten Transformations that were developed during laboratory tests – *Shimmer* and *Whistler* – in compliance with the above design principles. As with all the Transformations, they were not pre-determined but emerged from field and studio work during the Transformation design process.

The *Shimmer* transformation makes use of a kind of subtractive processing – instead of applying a resonant filter, it takes advantage of the FFT processing tool in Max. It periodically opens randomly selected single bins, allows sound to pass through them, and then gradually closes them again. There are two layers of activity – one with a fast-moving envelope that chooses bins pitched between 1000 and 3000 Hz, and another with a slower envelope that chooses bins with a centre frequency between 2000 and 6000 Hz. The resulting sound is a gentle, somewhat eerie collection of brittle tones that shimmer – the way stars

2. Consider a community living by an ocean where the soundscape is dominated by the sounds of waves and wind. The sounds of the ocean vary across the different time scales of a morning, a day, a week or a season. While the sound is always recognizable as an ocean, these variations ensure the variety, surprise or difference that provides new information about or from the environment. (See the *Handbook for Acoustic Ecology* online entries for "Keynote" and "Stationary Sound," acccessed February 14, 2017, available at https://www.sfu.ca/sonic-studio/handbook/Keynote.html and https://www.sfu.ca/sonic-studio/handbook/Stationary_Sound.html.)

shimmer in the night sky – whose presence relies on the sonic activity occurring within precise frequency ranges in the soundscape.

The *Whistler* transformation was created as an homage to Alvin Lucier's piece "Sferics," where antennae pick up radio-frequency signals in the ionosphere that result from lightning and other natural events. Some of these sounds, classified as "Whistlers," are high-frequency tones in the audible range that glissando at different speeds from one place to another. Using a tight bandpass filter at a variable (but always high) frequency, whistle tones are derived from the soundscape. Their pitch, sweep, and duration are all randomly determined, and as many as six may be active at once, though usually it is much fewer. This transformation introduces sonic activity into a part of the spectrum that is usually undistinguished in the roadside soundscape, with the result that this Transformation truly feels like it is operating alongside the soundscape it is active within, never masking its contents nor being occluded by it.

2.4. The Combination System – Connecting the Cancellation and Transformation Systems.

Part of the experimental process involved using Transformations in combination with the ANC system. A combination filter was built in Max that allowed us to combine the Transformation signals with the Cancellation signals. To be absolutely clear about the terminology:

1. The Combination filter is custom-built software designed in Max that combines the two incoming environmental signals.
2. The Combination system is the totality of the hardware, which is the physical system connecting the Transformation and Cancellation systems together (as shown in Fig. 1).

The Combination filter ensures that introduced sounds do not fall within the frequency range that the ANC system successfully removes. The strategy is to analyse the environmental sound both pre- and post-ANC processing and to compare these analyses to determine what effect the ANC system is having on the environment. This ongoing comparison forms the basis for a dynamic FFT-based filter, which we call the Combination filter. The Combination filter is then applied to all incoming ANC signals, to ensure that the Transformations augment the Cancellation system's influence by transforming *only* those sounds unaffected by the cancellation. In the case of the laboratory tests, these were frequencies above 300Hz. Whether or not the combination system is applied in the field depends on the capacity of the ANC system to create perceivable effects in the audible environment.

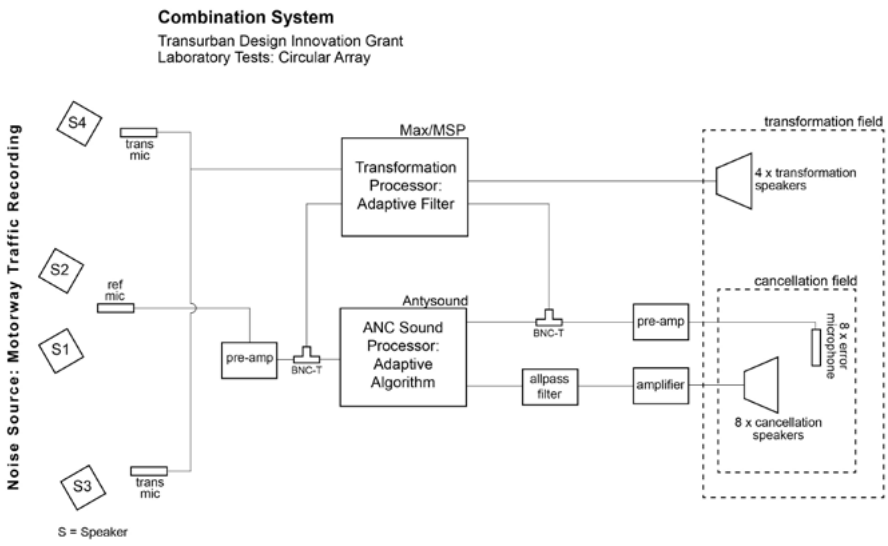

Figure 1. Diagram of the Combination System.

2.5. Ethnography – Community Perceptions of Cancellation-Transformation

For this project, we use a sensory ethnography (Pink 2015) approach to investigate how people experience existing and test-site sound experiences and how they imagine and anticipate possible auditory futures. Sensory ethnography goes beyond conventional interviewing and observational methods used in much qualitative research in order to attend to the unspoken and infrequently observed elements of mundane everyday life. They are important, because very often those seemingly mundane and non-glamorous everyday routines and habits that underpin the ways we live our lives determine the resources that we need and enable us to do other things. In the context of urban sound, we are interested in how people already live their lives in relation to sound, how they improvise in the context of traffic noise, and what this means for how they use their homes and the shared space around them spatially and temporally. We are interested in what people do to make the space they live in 'sound right,' the ways in which they value the comfort associated with such auditory experience, the relationship between this and other elements of sensory experience, and the things that sensory experience makes possible for them.

In the context of this project, we are specifically interested in how the use of sound transformation technologies enables people to experience their sensory environments differently, and what this means for possible future uses of their homes and everyday neighbourhoods. Through a series of video-based interviews and re-enactments with participants in their homes and neighbourhoods, we aim to understand how people improvise to create comfortable auditory environments. We intend to accompany participants and interview them as they experience the sound transformation technologies, and in doing

so develop a series of insights into how the auditory affordances of these technologies are experienced and the ways that they enable people to imagine new possibilities for the ways they might use and experience everyday spaces.

3. Observations and Reflections to Date

The project is being conducted in close collaboration with our industry partner Transurban. As such we have produced industry reports and briefing workshops to present work to date and initial findings, some of which are summarised below. The project is suggestive of new opportunities for sound artists beyond the typical public art funded project. In this instance, our corporate partner is interested in ways sound parks adjacent to motorways might improve social well-being. Our research suggests that those passionate about soundscape design as an aesthetic enterprise might consider similar corporate and government partnerships as a means for working towards the type of environments desired by sound arts practitioners, which often manifest through funded artistic processes (see Lacey 2016a for examples). The final section of this paper presents a series of observations and reflections to date, with each emerging theme captured as a sub-heading.

3.1. Transforming Sensory Perceptions.

The Transformations aim to impact sensory perceptions, which necessitates slight increases in overall sound level. This component of the project could be criticized as simply adding more sound to the environment. However, this is based on the incorrect assumption that listeners experience a sound environment solely in dB. This is like saying the sound design of a feature-length film is just a series of fluctuating dB levels. Just as a cinema experience is not about measurable changes in acoustic energy, neither is a soundscape just about changes in sound pressure levels over time. The emotive responses and feelings of interconnectedness are equally important. The Transformations that we have created – both independently and in combination with the ANC system – are but a small subset of the possibilities afforded by the system. We envision articulating future design processes that could be undertaken by teams of sound artists, composers, audio engineers, ecologists, urban planners, and ethnographers to create soundscapes responsive to the needs and desires of visitors and residents of roadside environments. This project and its antecedents expand on the concept of "Sonic Rupture" (Lacey 2016), which employs sound art as a means of active engagement with ecological and human concerns around urban noise.

3.2. Scale and Pockets of Change.

While the ambition of the project is to deploy both the Cancellation and Transformation components in urban parks, at present only Transformations can be delivered at that scale.

However, it is worth noting that the majority of technological innovations start or are initially proved at a small scale. Radio transmissions were initially applied over metres – not over 1000's of kilometres as they are today. Wi-Fi was similarly tested over a short distance; the Internet did not emerge on server farms over continents but between two computers in a single building. The point being that while the affected area of the Cancellation and Transformation systems is small, there is great capacity for the future upscaling of both systems to diversify urban soundscapes dominated by single noise sources.

3.3. Combining Two Methodologies

Combining the different methodologies practiced by the engineering team and the design team presents two significant challenges. Firstly, during testing (see Fig. 2), the engineering team reported a successful reduction in noise level – measured with SPL equipment – that was not always perceivable to the human ear. However, for the design team, perceptible changes to the sound environment are critical if the Combination system (Fig. 1) is to function effectively as a soundscape design artefact. Secondly, the engineering team had to strip their equipment back to first stages as a means to resolve any underlying performance issues. This created challenges for the design team, who are engaged in a constant process of immediately responding to perceived aesthetic conditions of the sound environment. To resolve this issue, for the 2017 field research we plan to install the two systems adjacent to each other on the same site, but approximately ten metres apart so that listeners can walk between the two different Cancellation-Transformation systems. The Combination system will constitute a live feed from the designed environments into the engineer's final Cancellation environment, via a live speaker feed.

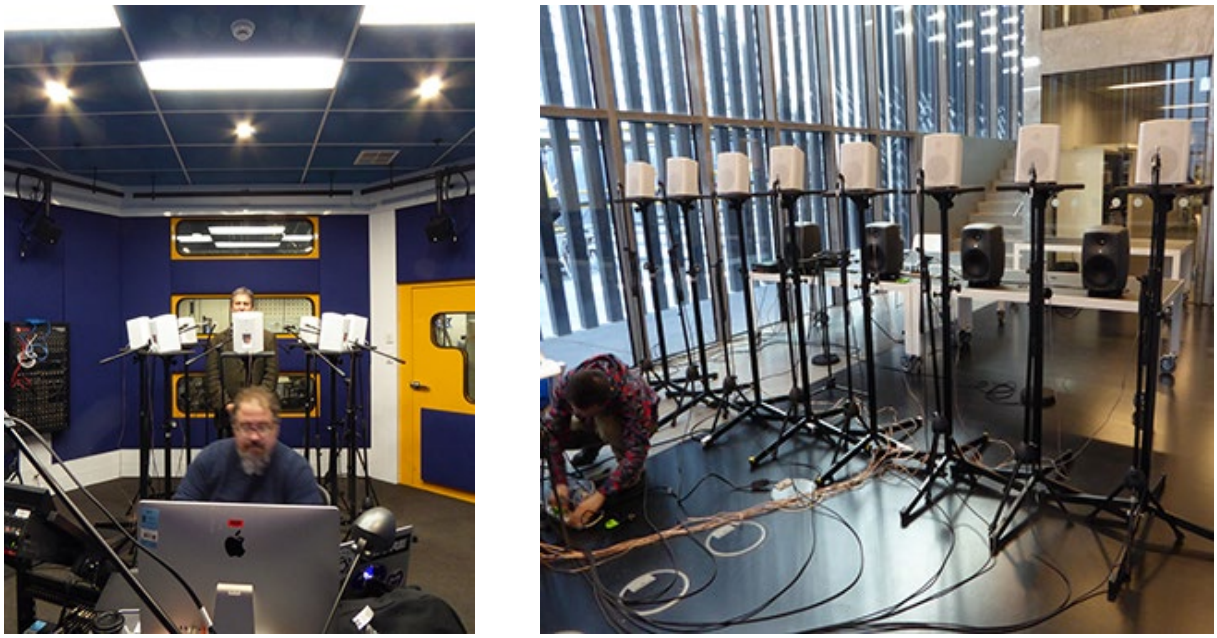

Figure 2: Left: Authors Stephan Moore and Jordan Lacey conducting sound transformation tests in The Pod, SIAL Sound Studios at RMIT University. Right: an experimental test of the cancellation system. A line of 4 dark-grey Genelec speakers play a multichannel soundscape recording of a Melbourne tollway. The line of 8 white loudspeakers are part of the cancellation system.

3.4. ANC Performance in Reflective Environments

The test was conducted in two spaces – the Pod, a small acoustically-treated sound environment with minimal reflections; and the Archive space, a large and highly reflective environment. The research team and visiting Transurban personnel could perceive the reduction in low frequency traffic sounds inside the Pod. However, although the same reduction of low frequency traffic sounds was achieved in the Archive space, the human ear could not perceive those changes. We suggest that the reason for this is that the highly reflective environment of the Archive space increased the volume of the mid and high frequencies, which masked the reduction in low frequencies achieved by the ANC system. We also suggest that the reason the reduction in low frequency sounds was perceivable in the Pod is because the highly absorbent walls of the Pod reduced the volume of the mid and high frequencies. This was useful, as it demonstrates that an inaudible outcome in the field may be a consequence of the mid-high frequency volume level rather that the ANC system's performance.

3.5. Refining the ANC

Also of note is that the successful Pod tests, in which the reduction in low frequency sounds could be perceived, was most efficient when the ANC system's reference microphone was pointed at a directive noise source (see S1&2, Fig. 1). However, when extra speakers were turned on to feed the Transformation speakers (see S3&4, Fig. 1) the perceivable cancellation effect was reduced. This suggests a reduced likelihood of a successful field result with the current available ANC system, given that the traffic sounds will come from multiple directions. If multiple reference sensors are used with better ANC systems, better noise reduction performance can be obtained. The ANC system is typically tested with still point sources such as generators and idling engines. The present research offers an excellent opportunity to test the equipment with moving point sources. Given that the system we are testing is limited to one reference microphone, it is predicted that upscaling will be required to provide audible outcomes for future infrastructure projects.

3.6. The Combination System as a Design Platform

The Combination system (see Fig. 1), as a soundscape design artefact, requires any change in the sound environment to be perceivable by the human ear. Because the ANC system effects are imperceptible to the human ear when higher frequencies are louder, the combination system may be redundant in the field. There is little purpose for a Combination system in environments where the impact of the ANC system cannot be perceived. Nevertheless, the Combination system will be tested in the field in preparation for future improved performance of the ANC technology. In fact, the research team sees the benefits of the ANC system not only as an engineering tool but also as a soundscape design tool. If the ANC system can

cancel low frequency sounds, which are associated with anxiety (Berglund 1996; Leventhall 2004) and fatigue (Foraster 2016), then the residual mid-high frequencies can be used as design material for the development of more diverse and sensorial-enriching listening experiences. This combination system represents first stages in bringing together two separate methodologies in an effective way.

3.7. Benefits for Human Health

The research team recognizes that even if the human ear cannot perceive a change in low frequency sound, it doesn't mean that change isn't beneficial to human health. There is much research showing that low frequency sounds have adverse mental, physical, and psychological health effects (Berglund 1996; Bluhm 2004; Passchier-Vermeer & Passchier, 2000). While outside the scope of this study, this insight suggests that the attenuation of low frequency sounds could warrant further studies regarding possible health impacts of an installed ANC system. In an earlier study, Qiu (2014) tested "a prototype natural ventilation ANC window installed in a glass room [consisting] of two layers of glass with a space of 0.1m." It was found that the performance of the open window was equivalent to that of a closed window and that people approved of the changed acoustic environment. This demonstrates that ANC can produce desirable audible environments – even if the effects can't be perceived, as tested in an outdoor environment, it is still possible that beneficial health outcomes are being achieved.

4. Conclusion

Future combination systems might be exclusively focused on park environments as a soundscape tool to augment existing motorway noise management. Rather than relying exclusively on mitigation via noise wall technology and acoustic insulation of buildings, soundscape design might discover effective ways to transform listening perception. By combining Cancellation systems with Transformation systems this research allows an expansion of thinking in relation to existing technologies, which can both reduce noise levels and change perceptions of residual noise. This is an effective means to locate design within existing noise policy strategies. For instance, a soundscape design approach might target improvements in the liveability and walkability of spaces adjacent to urban motorways, which should be of significant interest to local councils and health agencies. This is a direct response to research that suggests motorway noise creates fatigue and lethargy leading to negative health impacts. These preliminary findings warrant existing and future research on the possibility of soundscape design to reverse such impacts. Environments with diverse and engaging listening environments may be attractive to residents who otherwise have little incentive to visit parklands and grasslands dominated by repetitive and information-poor soundscapes from motorways. The present research will provide some evidence for these

possibilities via ethnographic engagement with local communities. It is the ambition of this study to imagine future urban environments in which soundscape design is a feature of the landscape. Rather than sounds being the incidental consequence of infrastructure projects, effective soundscape design might create a future in which listening is central to the enrichment of everyday life and the establishment of healthier communities. Importantly, the notion of noise in this research is not reduced to an unhealthy by-product of the city but considered to be a design material that can be reshaped into new soundscapes.

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Acoustic Ecology in the Digital Era

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ABSTRACT: Since the early 1980s microprocessors and digital technology have penetrated our environment and everyday life in various utensils, devices and equipment. Among other, more obvious effects to culture and society, digitalization has changed the soundscape almost everywhere in the world.

In this paper I'm reflecting on sonic experiences, both personal and shared, asking what kind of strategies could be useful in trying to observe, analyze, understand and perhaps also to improve our sonic environment in the digital era. Are the arguments used in fighting against noise pollution valid when dealing with synthetic sounds? How should acoustic balance in the environment be defined in the digital age? Scientists, scholars and artists working with sound should share and discuss their views on ecology and aesthetics of the digitalized soundscape in order to challenge designers to improve the sonic dimension of our collective environment.

KEYWORDS: acoustic ecology, acustemology, acoustic ethnography, digitalization.

1. From Schizophonia to Transphonia and Beyond

R. Murray Schafer introduced the term schizophonia already in the late 1960s to describe how original sounds are separated from their electroacoustic reproductions (Schafer 1969, 43). The word has rather negative tone, and the term transphonia has been suggested as an alternative: Heikki Uimonen defines transphonia as the "mechanical, electroacoustical or digital recording, reproduction and relocating of sounds." (Uimonen 2005)
In addition to traditional concerns of acoustic ecology like increasing density of urban soundscapes and shrinking and disappearing of hi-fi soundscapes, digital and microprocessor-based signals have brought a completely new kind of element to the audiosphere. To me the essence of digital signals is the lack of physical origin – in contrast to sounds caused by mechanical and electro-mechanical bells, sirens, buzzers and solenoids – and furthermore their indifferent or missing connection to the actual material reality. This brings schizo- and transphonia to the next level: we are surrounded by sounds, which are not referring to anything concrete and not caused by any direct action. These beeps are like dropouts in the holistic experience of existing in the world, errors in the flow of acoustic communication.

2. Ettore Scola and my first "beep epiphany"

In his 1983 movie *Le Bal* Ettore Scola takes us to a journey through five decades of European history using a ballroom in Paris as a stage for the change of costumes, habits and, of course, music. The time travel begins from the 1930s and after German occupation, the invasion of American entertainment and the rebellious 1960s the film concludes with a parody of self-absorbed dancers in an early 1980s disco. In the very last number – a slow one – during a close-up of a dancing couple, aculeate beeping of a digital wristwatch punctures the intimate and melancholic soundtrack. Although this unmistakable sound was already familiar to me, those few seconds of the disruptive signal became the most memorable moment of the film. For me Ettore Scola was the first one to point out this new category of sounds, which had appeared in our shared acoustic space and has now spread all over the world due to the conquest of microprocessor technology and digitalization.

3. Nicolas Frize on the fake identity of synthetic signals

In April 2003 in Paris I had the pleasure to meet French composer and sound artist Nicolas Frize, who was keynote speaker in a pedagogic workshop[1] focusing on the role of sound in interactive art. Frize's various projects include working with prisoners, hospital patients

1. La Fémis European teachers' workshops: New media, teaching interactivity: Sound, 2. – 4. April 2003

and lots of archived sound recordings. The first part of Frize's talk was dealing with sonic memories and our affiliation with nostalgic sounds. Frize had e.g. interviewed retired elderly factory workers about the sonic dimension of their working environment, and they described how they were able to monitor large-scale industrial processes just by listening to the machinery around them. This observation didn't necessarily require any dedicated auditory display.

Frize demonstrated how soundscape reveals to us as much as we are willing to accept: the sounds reflect not only the operations and activities of our community, but also the economical, sociological and political structures of our society. This isn't, of course, anything revolutionary, there's a lot of literature on acoustic ecology dealing with these issues, but to me Frize's sharp arguments and politically charged standpoint sounded fresh and inspiring.

Later after the presentation I had a discussion with Nicolas Frize. I was interested in his opinions on the increasingly common synthetic signals, which we encounter in our everyday life. I told Frize how I couldn't help being bothered by the beeps and bleeps, which have replaced earlier electro-mechanical sounds in many environments, products and user interfaces. I confessed my romance with the sound of old Sweda model 46 cash register machine in the grocery store next to my childhood home, and mentioned how irritated I could get from hearing the swarm of barcode readers while queuing at the checkout of a supermarket.

To take one more example, the crunch of the machine stamping a cardboard bus ticket has been replaced by a beep, which appears when a plastic card is brought next to a card reader. If validating one's ticket happens using a touchscreen interface, we are also facing a serious accessibility problem. For a visually impaired person a single beep as the only response to moving one's fingers across a flat plastic surface is not very helpful.

Our conversation meandered from mobile phone ringing tones as "wearable sounds" to global capitalism and mass culture. Nicolas Frize was very critical about all preset sounds in digital devices arguing that they give people a fake sense of personalization, and that symbolic sounds (earcons[2]) in general are lacking a consistent design paradigm. Our discussion ended with a shared wish for new aesthetics in designing artificial audio signals.

4. The Quieting Sounds of Musical Ringing Tones

The increasingly growing number of mobile phones has affected our shared sonic space in various ways, and like with any emerging technology, different parts of the world have a different history with this phenomenon, too. Mobile devices have gained a lot of attention under different disciplines in the academic world, and a significant amount of research has been done on the sonic dimension of mobile culture. In Northern Europe the first wave

2. Earcons are not directly correlated with the visual icon or event. Symbolic sounds typically consist of single tones or motives or short melodies (Blattner et al. 1989, 2, 22).

of ringing tones was experienced from mid-1990s onwards when the crude and angular monophonic melodies, motifs and tremolos filled the air in public transport vehicles, offices and lobbies. Later on, after a few years period of simplistic polyphonic reductions of music dominating the cellphone sounds, the method of producing the ringing tone was changed from buzzers to tiny loudspeakers (Häikiö 2004, 9). This enabled the use of actual audio recordings as ringing tones, and excerpts of pop songs of various genres – typically in mp3 format – began to emanate from people's pockets and handbags.

In 2011 I interviewed Finnish sound designer Timo Anttila who had worked for Nokia in the turn of the millennium creating a few of the early ringing tones. According to Anttila designing the sounds was not originally a distinct job, but rather a secondary role for some of the programmers who didn't even necessarily need to understand much about music or audio as such.

It seems that the age of smartphones has caused rather radical and perhaps unexpected turn in the way people want to display their devices to others in the audible domain: at least in the North the musical ringing tones are almost extinct. A typical mobile phone alarm heard nowadays is an imitation of the sound of an old-fashioned landline telephone, but in most cases only the low burr of the vibrate is revealing an incoming call or message. Despite the fact that the number of mobile phones has surpassed the number of population in my home country already over ten years ago, the prophecy about a constant cacophony of ringing tones playing aloud in public spaces never came true. I will return to this subject later in this paper suggesting a rather obvious reason for the ceasing of mobile device signals despite the epidemic spreading of other digital sounds.

5. Exclusive Luxury Design with Factory Preset Sounds

In 2010 Finland participated the World Expo in Shanghai showcasing all kinds of technology and design in a huge bowl-shaped white building called "Kirnu" (Giant's Kettle). I was following the process of constructing Kirnu from the first delineations until the opening day, since students from my department in Aalto University and their fellow students from the Sibelius Academy designed and realized the whole interior sound design of the building. A lot of effort was put into fine-tuning the mood, the atmosphere, the ambience, the narration and the interactive behavior of the sounds.

A specially designed elevator named 'Lantern', manufactured by KONE, the 4th largest elevator company in the world, was an integral part of the architecture of the pavilion, standing on its own as a light sculpture. The glass shaft and the elevator car together created a visual landmark for the main hall, enhancing the overall effect of the interior of the pavilion. (Design Curial 2010). The custom-built elevator cabin included finely designed materials such as handmade ceramic artwork for the floor and a high quality

semi-transparent glass. The elevator also featured the latest in RFID (Radio Frequency Identification) technology, which enabled the pavilion's VIP guest to access the top floor. (LIFT Journal 2009).

The Sound in New Media students of Aalto were excited to get their hands into this elevator: the unique sounds of Finnish folk music instruments and pristine northern nature would complete the elevator experience. When the student team presented their ideas to me, I advised them to get in contact with the elevator manufacturer before proceeding with their plan in order to get first-hand information about the actual possibilities to customize the sounds of the lift.

In our next meeting the students reported me what was the response they got. The representative of the company had told that the component, which makes the sound of the elevator, couldn't be programmed to make any other sound. Furthermore, the component is hard-wired into the structure of the elevator in such a way that it cannot be replaced with any other component. So, in the end, the only option for the sounds for the design elevator with hand-crafted ceramic floor and other unique materials and decoration was the same "ping-pong" which is heard in all the lobbies and corridors of office buildings, hotels, hospitals and airports equipped with KONE elevators.

The technical quality of the products – and the quality of the related services – of any internationally successful company must be excellent, and the same goes with KONE elevators without doubt. In summer 2016 I had a chance to discuss with two youngish designers from KONE who were probing the possibilities to launch a major project for upgrading the elevator sounds. In the industry a lot of research-based effort has been put into improving the noise isolation of both the elevator cars and the shafts, but designing sounds is another thing. According to the KONE designers there had been a lot of suspicion about the whole idea: "Have you heard any complaints about our elevator sounds?" was a comment from one engineer.

By the writing of this I don't have further news from KONE about the plans to take a bigger leap in the sounds of their elevators, but I would be very interested to get involved in such design and development.

6. And Get the Machine that Goes "Ping!"

My continuing encounters with artificial signals and my incurable allergy to them brought me recently into conversations with professor Ville Pulkki and research engineer Ilkka Huhtakallio from the Department of Acoustics and Signal Processing in Aalto University. Mr. Huhtakallio had interesting information to share about the beeps emitting from medical devices.

Hospitals and other facilities for medical treatment are semi-public places where patients, their friends and relatives as well as the personnel are being exposed to a very specific array of sounds. Hospital soundscapes would deserve a lot more space in this paper for several reasons, but my motivation to bring the sounds of healthcare devices into the attention of the reader is again in the design aspect. Unlike the branded sounds of smartphones or the anonymous beeps of various gadgets, the audible alarms of medical equipment have been officially standardized[3] since 2003. (O'Brien 2007, 1).

Although the specification is voluntary, it is rather likely that manufacturers of medical devices gradually start to take the standard into account – either for liability reasons (i.e. in order to avoid lawsuits in the case of wrong decisions leading to failed treatment) or in order to keep or increase their share of the market. In other words, in the medical equipment business better sound design might be a competitivity factor. (ibid.)

The heading of this section is a rather famous quote from the film *Monty Python's The Meaning of Life*, which also premiered in 1983 like *Le Bal*. A joke being made out of an alarm signal in both of these films is just a coincidence, but an interesting one considering how far apart the movies are in terms of style and genre.

7. Conclusions and Further Questions

The chirping chips and peeping piezo speakers don't cause hearing loss or physical damage to anybody's ears, and that's probably why these sounds haven't gained more attention in acoustic ecology discourse. As a sonic phenomenon these artificial signals can't be easily categorized as urban or suburban, public or private, hi-brow or lo-brow, nor associated with work or leisure exclusively. Another interesting aspect in the (non)design of these signals is the lack of branding. However, since most of the aforementioned signals are not coming from consumer products, it's actually obvious that the requirements for a successful signal don't include attractiveness. The signal only needs to be loud enough, and as inexpensive to produce as possible.

The ringing tones and other audio signals of mobile phones – and the habits of using them – have changed a lot since the first GSM phones came into the market, partly due to the evolution of technology, but to large extent due to fashion. Especially for the young people being in fashion is important, but even beyond that is the importance of not being out of fashion.

When I asked research engineer Ilkka Huhtakallio about the secret ultimate reason for the use of similar kind of beep in so many different devices, he showed me some pictures

3. IEC 60601-1-8 is a comprehensive international standard that specifies basic safety and essential performance requirements and tests for alarm systems in medical equipment.

and schemes of piezoelectric buzzers and speakers. (TDK Xiamen CO 2008). The speaker is, of course, a physical object, which produces sound waves by vibrating. The special thing about the piezo speaker is that it can be mounted into a quite small space and, furthermore, the fact that it doesn't require any audio signal input to ring. An electric current with a low voltage triggered by a snippet of code – or even just by an on-off switch – creates a burst of a square wave which sounds like, well, a beep. And, as said, the component for making the beep doesn't need much space, it doesn't need much electricity and it's ridiculously cheap to manufacture.

And last but not least, no-one needs to design the sound of a piezo buzzer, it's there, built-in and waiting for just a little bit of AC current to make it chime aloud. The question is whether it would be worth to think of ways how to make space for something deliberately designed instead.

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Taking Care of Sonic Identity – Local Development Between Urban Sound Art and Planning

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ABSTRACT: How can we encourage local development through the development of listening practices?

This paper focuses on the relationship between urban sound art and planning by inquiring into participatory strategies that can stimulate sonic awareness. Sonic awareness contributes here to the development of urban and regional policies, revealing the potential of sonic identities.

In this research, I show how enacting critical listening can become a tool of empowerment both for institutions and citizens, and I examine the main outcomes and perspectives emerging from my participatory sound art project "Listening Closely" developed in 2015 in the southern Italian village of San Cipriano Picentino.

KEYWORDS: sonic identity, intangible common, sonic awareness, participatory sound art, empowerment.

1. Introduction. Sound art and the development of sonic awareness

Sonic identity is the result of a shared acknowledgment of overlapping environments and cultures. For this reason it represents a strategic key to unlock the political agency of urban inhabitants.

This paper explores possible interactions between sonic studies, planning, and policy design, by inquiring into the sonic environments and atmospheres produced by public policies. With this aim, I will discuss strategies that may generate radically different approaches to fostering sonic awareness.

Enacting sonic awareness can be means of empowering both institutions (The Royal Swedish Academy of music 1996) and citizens. Taking account of natural and human sonic qualities of a specific environment in the design process can support the implementation of public policies concerning urban transformation. At the same time the development of sonic awareness among citizens can act as a powerful device for self-government.

In fact, inhabitants' sonic awareness can stimulate radical change in the political sphere, in terms of caring for sonic environments embedded in economic, natural and social issues (Di Croce 2016).

Although often unquestioned or unconsciously perceived (Wissmann 2014), urban sounds are relevant in a policy context: they represent the aural reflection of a political framework in a specific context at a precise moment. This is why urban sound design needs to derive from public sonic awareness. Sonic, and more broadly cultural, knowledge and awareness have the opportunity to address urban and regional policies by suggesting social priorities and requirements to the institution. They also might foster civic engagement in disclosing and taking care of particular sonic environments connected to urban everyday life. In this context, sound art practices claim the potential to reframe political narratives through a radically different political and poetical discourse (Anderson 2014), especially sin marginalised contexts and spaces.

> When space is understood not in abstract or absolute terms, but as socially and politically constituted, a spatial sound practice can emerge not only as a poetics, but as a politics, not only as an aesthetics, but as an ethics. Such a critical spatial sonic practice does not merely 'happen in' space, but is poised radically to transform the very terms of its constitution. (Ouzounian 2015, 74)

This theoretical framework derives from the literature about *ambience* (Augoyard, Torgue 1985; Grosjean; Thibaud, 2001), from the theory of *aural architecture* (Blesser, Salter 2007); and moves toward sound art practice (Ouzounian, 2015) and participatory art and

design (Ultra-red 2014) in order to explore the effects and the potentials of sonic awareness in the urban agency of the inhabitants. Managing a problematic, and often marginalised, urban issue through the development of sonic awareness becomes then the centre of this paper.

2. Case study. How to encourage local development through the development of listening practices?

In the past few years I have developed a number of art residencies and participative performances with the aim of exploring different kinds of sonic environments, focusing on sonic identity, everyday practices and citizen's sonic awareness. In 2015 I was invited by the Fondazione Aurelio Petroni for an art residency in San Cipriano Picentino, a small village in the south of Italy, where I developed a project named "Listening Closely" (Di Croce 2016).

In this project I was interested in the relationship between the inhabitants of a small settlement and their sonic environment, and the connection between sonic environment, participatory design and the political level of understanding. The outcome I expected was to stimulate sonic awareness so that sonic identity could enter the political framework of the village.

San Cipriano Picentino is located in a mountain area close to the city of Salerno, on the Tyrrhenian Sea coast. It is both on the periphery of a wider economic and social system, and a rural area that has a close relationship with agriculture – the production of hazelnuts is important in the area.

After meeting several inhabitants in the centre of the village, and after presenting them the aim of my research, I organized a series of soundwalks with the people interested in contributing to my project. During the soundwalks I asked them to show me their environment and to present me with the everyday sounds they believed to be the most distinctive. As we walked, I interviewed the participants, asking them why they had made those choices. I then recorded their chosen sounds with them.

The soundwalks helped people to get closer to their sonic environment and to the urban and rural atmospheres, which sounds contribute to create. In particular, they did realize how important sound is in reflecting seasonal changes, working routines, and events taking place in specific spots. The choices they made also demonstrated slightly different feelings about certain everyday sounds, such as the bell of the main church or the traffic in the central square, and displayed emerging perceptual contradictions between different social classes, occupations and ages.

In the hazelnut fields, in particular, the farmers explained how, in the last 30 years, the mechanical harvest of hazelnuts replaced the manual harvest, and how this change con-

tributed to the composition of the current soundscape of the valley: a monotonous drone takes the place of the old farmers' songs.

> Before, when we were working manually, our parents used to sing while working; now we just hear the noises of the machineries...then, when tractors were introduced, we suddenly stopped singing... I was one of the first who bought one. (Taken from an interview with a farmer, my translation)

From these interviews it is possible to perceive an unusual mix of nostalgia and pride, a sort of gloomy trust in the future, which corresponds to the farmers' inevitable adaptation to the rules of the market.

The sound of the mechanical hazelnut collectors suddenly became the subject of the farmers' attention as their ears focused on the progress of the mechanical collectors. This trend also demonstrates the dangerous working conditions for some farmers, whose work requires a senstive attention to mechanical sounds.

> Every machinery you see works through compressed air...Here you can't work with earplugs (even though you must) because if something happens, that means something blocks the airflow...So you need to be ready without any earplug, you need to listen carefully, otherwise you loose your harvest day...If somebody comes and says: you must use earplugs because of the law, I can't do it because if something goes wrong, nobody will refund my working day. There are machineries you need to listen to by will or by force, because this sound lets you earn money. And here there's no money at all...In the end you get used to this sound, now it doesn't hurt me at all. (Taken from an interview with a farmer, my translation)

This need to listen "by will or by force" in order to "survive" constitutes an interesting aspect of some of these interviews. Here it is possible to disclose a relationship between sonic perception and precarious working conditions – that is to say, the exposure to certain sounds derives also from economic junctures. No matter how dangerous it is, farmers cannot escape from their working sonic environment and they have no way of changing it.

On the other hand, those who can afford to live within a better sonic environment do not hesitate to improve their living conditions.

> The doctor who was living over there just left because of the church bells. He has moved away because his house was in the direct path of the bell, he

> told us he could not sleep anymore... (Taken from an interview with an old inhabitant, my translation)

In other cases people chose sounds which recalled their sonic memories, such as the sounds of street traders in the main square from the 1950s and 1960s, which are now gone, or the evening crickets chirping in a park close to the centre of the village.

> When I was a child I was always there, during the night listening to animals, to crickets. I used to come here to play, and together with my friends we were listening to these sounds. (Taken from an interview with an inhabitant, my translation)

Figure 1. Recording the sound of mechanical hazelnut collectors. ©Chiara Caterina

This first part of the project leads me to some significant reflections. Most of the people who participated in the soundwalks realised their personal responsibility in the composition of the sonic environment. Everyday practices, working conditions, government of the land: every single aspect of the inhabitant's life now gradually takes on a sonic perspective. Thus, a divergent but coherent inter-subjective sonic level of understanding emerges, a bond between people and the sonic environment which drives their perception of the atmosphere of the village.

The archive of field recordings and interviews that I had collected later became the basis of a final participatory performance. The public was invited to select sounds from the archive that I played and mixed together in real time. The score I prepared for the performance invited participants to choose a sound, representing a segment of the archive, from a collection of paper notes placed on a table just in front of me. Only three recordings (three

paper notes), could be played simultaneously. One by one, people chose a new note to be played, replacing one that was currently playing.

Through this performance, the local community was involved in a "sonic meeting" where they could experience their particular role and commitment in the conscious construction of the everyday sonic environment. In fact, every single choice illustrated a dialogue between personal feelings and inter-subjective understandings. Explored in this context, sonic identity was not merely the result of a fight or a mash-up between different perceptions and choices, rather it represented a sonic dialogue, an interplay between inhabitants. The effects produced by the choice of each person reverberated immediately into the sonic environment of the performance, perceived by all the other participants.

It is remarkable how some of the most-selected sounds came from everyday working tools, such as tractors or excavators, and to show how deep is the sonic relationship between people and their job, even though it may be unsafe. At the same time several participants manifested their toleration of the selected sounds, demonstrating how intense and sometimes unconscious the effects of an everyday exposure to a noisy working environment can be.

The performance was an invitation to identify and then untangle the sonic elements to be preserved within the environment. It is an encouragement to stimulate planning awareness, which moves from a multitude of conflicting sonic perspectives: any sort of identity deals with a multiplicity of stakeholders and demands a deep awareness.

It is possible to consider the performance a device aiming to stimulate public engagement in sonic fields. At the same time the participatory event becomes an empowerment tool, allowing people to share and reframe their system of values based on acoustic perception. Finally, the performance explains the most pressing urban and regional issues to be faced both by institutions (through sensitive policies) and by citizens (through their personal behaviours). Far from a simple acceptance of the *status quo*, the inhabitants are exhorted through the performance to move beyond an almost bearable sonic environment, and to address their dedication to improve the quality of their entire lives, therefore to demand a more sensitive political level of understanding about sonic environments.

Figure 2. A spectator participates to the performance by choosing a sound to be played from the paper notes placed on the table. ©Chiara Caterina

3. Definitions and directions. Listening to an intangible common

Participatory sound art projects can play a key role in creating the space for dialogue, especially in those marginal contexts where it is difficult to foster dialogue between institutions and citizens. Sonic awareness refers indeed to a political action (Attali 1984). It is closely connected to any involvement of citizens in public decisions, because sonic environments unveil the government of a city or a rural area.

From this perspective, a well-balanced dialogue between institutions and citizens could create a new community of aware inhabitants (Olivetti 2015); a group of aware citizens able to demand of the institutions a reframing of the priorities of the urban agenda, and to propose sound-based methodologies to deal with them.

The principle of *subsidiarity* proves here to be the most suitable form of agreement between institutions and acknowledged citizens.

> Subsidiarity is the principle of allowing the individual members of a large organization to make decisions on issues that affect them, rather than leaving those decisions to be made by the whole group. (Collins Dictionary).

In other words, subsidiarity is "the principle of devolving decisions to the lowest practical level" (Collins Dictionary) while stimulating collaborations and endorsements.

Thus, a large organization (or institutions) should support efforts at the local level (by citizens) in contributing to urban management. This requires inhabitants who are sonically aware, especially in terms of the interpretation of their sonic identities and their cultural heritage.

The notion of *commons* is useful in the context of identity and heritage, and takes into account the subsidiarity level of understanding about the goods or belongings deriving from the everyday environment. A commons is defined as "land or resources belonging to or affecting the whole of a community" (Oxford Dictionary of English), or "the cultural and natural resources accessible to all members of a society, including natural materials such as air, water, and a habitable earth. These resources are held in common, not owned privately" (Wikipedia). Thus, intangible commons, including cultural heritage and sonic identities, need to be connected to their tangible sources, which correspond to the system of urban and regional policies regulating, among other things, land use, licences, working conditions, public space usability, and local development strategies.

This interdisciplinary approach focuses on the relationship between inhabitants and their sonic environment with a special attention on everyday human activities, which shape the contemporary sonic environment. By critically listening to the sounds produced by such activities, which I call "everyday practices", it is possible to realise the role of specific sonic cues in creating a unique atmosphere (Kreutzfeldt 2014), a distinctive sonic identity. Enacting sonic awareness can contribute then to the design of urban and regional policies in collaboration with aware citizens, and to reveal the potential of sonic identities.

In other words, sonic awareness enables citizens to consider audible everyday practices as intangible commons to be preserved. Furthermore, sonic awareness of everyday practices can lead to a shared, although (fortunately) conflicting, sense of place, which needs intangible commons to gain a strengthened "right to the city" (Lefebvre 1970).

In summary, the notion of the "intangible commons" is helpful to clarify the political role of communities in public decisions. Taking care of a shared and acknowledged sonic identity becomes the ground to establish a subsidiarity (rather than a subordinate) level of understanding.

4. Sonic reflections. A shared sonic acknowledgment

Taking care of sonic identity has become a crucial node to be researched within sonic environment, sense of the place, and planning fields.

"Sonic Commons", as defined by O+A (Odland, Auinger 2009), intends to build up the basis for a shared understanding of public care about urban and social issues.

> By labelling our shared sound space the Sonic Commons, we are reminding ourselves that certain things like air, water and humane sonic environments should be considered human rights. [...] We are not advocating quiet for quiet's sake; we are advocating humane design that takes into account how we perceive and interact with the word. (Odland, Auinger 2009, 67)

Here, sonic environment should not be interpreted as a mere by-product of human activities, rather as a non-accidental event (Serres 2016) inviting sonic awareness.

> It is a never-ending story of how we use power and how the byproducts of that power reach us through space, resonating and coloring the space in ways we rarely notice, or discuss. We do not have the language. The process is so subliminal that the language will have to be invented. Let's begin. (Odland, Auinger 2009, 66)

Therefore, "taking care" of intangible commons leads to a new understanding of urban regeneration, wherein sonic awareness is the first step, the basic grammar for such a new language to be invented and developed.

Sounds contribute to create the sense of the place. Thus, in order to preserve any intangible common, a special attention to the sonic awareness of the whole eco-system is required. "Conserving 100 Soundscapes in Japan" represents the perfect example of an action plan developed for this purpose.

The plan was achieved between 1994 and 1997 by the Environmental Agency of Japan, which decided to select through a "bottom up" process a number of soundscapes, linked to Japanese culture, to be potentially conserved, altered or restored.

> The aim of this project was to encourage individuals or groups throughout the country to recommend the soundscapes which can be appreciated in specific localities and which the dwellers wish to preserve or to conserve for the next generations, and to select 100 soundscapes out of the recommended ones as the symbols of the richness and wide variety of Japanese soundscape, and old Japanese nature and culture. (Torigoe 1999, 104)

This remarkable project operated through a sensitive process by taking into consideration that any urban environment, like the natural ones, is an eco-system wherein every political, social and economic issue is related to the others.

> Here, it is very important to be aware of the fact that we cannot just conserve the sounds of birds separated from the environment. In order to conserve their sound and songs, we have to conserve the habitat and eco-system where the birds can come and live. In this way, conserving soundscapes mean conserving eco-systems which rise or cherish these natural creatures and sounds. (Torigoe 1999, 106)

Through sonic awareness dwellers can enter the design of public policies in order to conserve an ecosystem. More widely citizens can demand and commit to the preservation or the improvement of the quality of urban and rural sonic environment. They have the chance to finally reconsider silence as a public value, thereby establishing a new relationship between us and the environment (Oliveros 2005).

Urban sound art, together with the practices related to sonic environment, deal with urban regeneration through the development of sonic awareness. Such art practices attend to the same issues that planning should take into consideration in order to improve the quality of sonic environment. Therefore urban sound artists and planners should cooperate more, especially in order to foster participation and the involvement of citizens in public discourse.

> The more you bring people into discussion, the more they start to understand that sound and urban sound is not sound that is just around them, but that they also realize how much they are part of the urban sound, and how much it has to do that urban sound is also an information about our society and the way we organize our interactions. (Auinger 2013)

In conclusion, improving sonic acknowledgment is not just about encouraging listening education itself, rather it is about stimulating the political debate around sonic environment, therefore about every social and economic aspect connected with it. Sonic identities are in fact neither unique, nor homogeneous, they witness instead socially precarious conditions as well as the "common feeling" of the majority. This is why atmospheres are political, they require governance (Feigenbaum, Kanngieser 2015), and demand a shared sonic awareness. Within this frame urban sound artists must work through sensitive participatory processes in order to invigorate public sound design and disclose the multiplicity of the agency of inhabitants.

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Using Acouscenic Listening to Hear the Unheard

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ABSTRACT: This paper discusses the emergence of a creative approach for sound art and acoustic ecology, developed over a seventeen-year timeframe within the collaborative art/science practice of Softday[1]. Initially, we worked with sonification algorithms to create musical mappings from environmentally related data, performed by classically trained musicians. The sonifications were complemented by field recordings of soundscapes from the contexts of the data sets. We have increasingly been using soundwalking to inform our work, normally conducted with a group of participants that create a collaborative sound map of an area of interest. The participants then use the sound map as a graphical score and perform the soundmap. A collectively experienced, internalised and re-represented soundscape being expressed as a collaborative performance can help to communicate both context and affective aspects of the work.

KEYWORDS: Soundscape Ecology, Human Geography, Sound Art and Ecology, Acouscenic Listening, Creative Soundwalk.

1. https://softday.ie/about.html

1. Introduction

This paper discusses the emergence of a creative approach for sound art and acoustic ecology, developed over a seventeen-year timeframe of art/science practice. Initially, Softday worked with sonification, using for example artificial neural network algorithms to create musical mappings for performance by classically trained musicians, of environmentally related data sets. The sonifications were complemented by field recordings of soundscapes from the contexts of the data sets, including sounds from normally unheard sources, e.g. using hydrophones. Since then, we have increasingly been using soundwalking to inform our works (Westerkamp 2006). Our soundwalks are normally conducted with a community of interest that create a collaborative sound map of an area or location of interest. The sound map is then represented as a graphic score with the participants' annotations spatially distributed as the experienced place is recalled, and using colour coding to signify for example biophony, geophony and anthrophony (Krause 2012). The participants, using their own bodies and voices, then perform the soundmap. Each performance is recorded and discussed by the participants and further iterations/performances of the soundmap may be created. What started as our own intuitive approach for creating environmentally related sound art has now become a more formalised method for exploring soundscapes collaboratively. We are now seeing, or rather hearing, that it is the context of the data that is the critical aspect of our works.

In our latest works, we have extended this method to include the participants' own field recordings of their own soundscapes. We trained participants to use inexpensive recording equipment and open source software tools to edit and process their soundscape recordings and to collaboratively perform with their recordings as a laptop ensemble. As a basis for the performance, a graphic score is collaboratively created and after several iterations of the performance, as part of the reflective practice, the participants finally performed the work in public.

2. Acouscenic listening

Sound can be an invasive phenomenon of everyday experience in that it assists our engagement with, immersion in, and commentaries with the environment in which we live. Auditory engagement further challenges the dominance of the pragmatic visual object and counteracts a prevailing bias or dependence upon a predominantly ocular-centric focus of reading an environment through predominantly visual metaphors.

> Most of us think that what we think about a place is determined by what we see in it. And I think it is for most of us, consciously. But unconsciously there

> is a perception of a space which deals with how it sounds, what sounds are there, and how sound acts in it and on our sense of sound. (Neuhaus, 1984)

The city as an incessant inundation and movement of sonic action may be experienced through the listening body as sound incorporates and mediates a connection between space and narrative. Sound textures can be referred to as the strata of sounds within a musical composition and their relationships to each other. The aural texture of an urban soundscape may be constructed by an attentive listener sensitive to the combinations of competing sound signals arising from background noise, and these aural textures may be considered as static images by the auditory system (Rabinowitz & King 2011). Sound is also concerned with phenomenology, memory, imagery and associations. This may be referred to as sound's specific relational condition. Sound is something that reacts with space as Salomé Voegelin (2010) suggests, "sound narrates, outlines and fills, but it is always ephemeral and doubtful".

In 1974 the American composer Pauline Oliveros published 'Sonic Meditations' a seminal work that broke away from the prevailing traditions of western music, and challenged the need for standard music notation in favour of prose instructions (similar in composition to Alan Kaprow's 'Happenings' or Fluxus event scores). Oliveros (2010) defined Quantum Listening as "listening in as many ways as possible simultaneously – changing and being changed by the listening". Quantum Listening directs our attention in a non-judgemental way to what is heard, amassing meaning, and interpreting the meaning of what has been listened to, whilst deciding on further creative actions. Quantum Listening can be regarded as similar to Schaeffer's Reduced Listening (1966). The understanding and application of Oliveros's Quantum Listening methodology contributes to our on-going investigation of the everyday within Acouscenic Listening practice. The focus of Softday's Acouscenic Listening practice cultivates an understanding and appreciation of soundscape to body on a finely tuned level, expanding the potential for connection and interaction with one's environment, body, technology and performance with others in sound and related arts. When working with the quotidian, this is realised through focused creative soundscape walking meditations, a methodology that has become a key element of our Acouscenic Listening practice.

In John Drever's (2009) assessment, "the salient concern in soundwalking is everyday life" and a key concern of the Creative Soundwalk is the corporeal exploration of sound location, narrative and its relation to the everyday. A Creative Soundwalk encourages the interaction of the individual listener to space and place through immersive or embodied experiential mapping and a basic understanding of psychogeography. Traditional soundscape walking meditations can be either singular or shared experiences, encouraging participants to create subjective maps based on areas of appeal, mapping mentally and mindfully

a relationship to place and memory through environmental sound. A Creative Soundwalk differs from a traditional soundwalk in terms of its objectives to locate the practice within the everyday, to encourage its participants to be active listeners, researchers and creative participants. In order to achieve this, a creative turn is applied to co-authored subjective maps created by participants on a Creative Soundwalk.

The Acouscenic Listening approach to the Creative Soundwalk may be considered closer to the *dérive* or 'drift', defined by Guy Debord (1958) and the Situationists as

> a technique of rapid passage through varied ambiences. Dérives involve playful-constructive behaviour and awareness of psychogeographical effects, and are thus quite different from the classic notions of journey or stroll.

While a traditional soundwalk may be exploratory, scientific, phenomenological, experiential, etc., an inherent aspect of an Acouscenic Listening approach to Creative Soundwalk practice is playfulness, which is an essential ingredient that is fundamentally suited to encouraging creative self-expression for a layperson. Play liberates the listener from an overdependence on competition, cogent discourse and rationality in relation to music/sound inherent through pre-existing controlling paradigms of social and cultural conditioning. The Situationists in their critique of the primitive social functions of play state that "its goal must be at the very least to provoke conditions favourable to direct living".

The attentive listener plays an active role in actively perceiving sound in the world and simultaneously plays a creative role in developing an impression of a given soundscape, which in turn may lead to greater emotional satisfaction, creative stimuli and communicative experiences of the everyday. The Acouscenic Listening approach to creative soundscape mapping reveals a myriad of sonic events that are often mundane, habitual or ambiguous. Our desire to reveal the minutiae constituent parts of a soundscape finds purchase in the writings of Georges Perec, who along with Michel de Certeau, and others, integrated new ways of engaging with urban spaces through concrete experiences of the everyday. Perec asks:

> How should we take account of, question, describe what happens every day and recurs everyday: the banal, the quotidian, the obvious, the common, the ordinary, the infra-ordinary, the background noise, the habitual? (Perec 1997)

A complex soundscape also reveals localized histories and memories that may lead to the creation of fresh narratives for further creative development. We explore the continuous integration of everyday sounds in sound/music composition, a tradition instigated by

Russolo through Cadrew, Cage, the Fluxus movement and others, that seeks to insert the sounds of the banal, the mundane and the everyday directly into live performance. We regard this approach as a means of giving aesthetic credibility to these sounds.

2.1. The Acouscenic Listening Workshop

Since 2012, Softday have been conducting creative workshops based on our practice in Acouscenic Listening, drawing upon and combining methodology from Acoustic Ecology and Socially Engaged Art practice. We are interested in the dialogue that occurs between the listening participants and place or space, a dialogue embarked upon through the language of sound. The participants are introduced to some theoretical contextual and practical frameworks for the use of Acouscenic Listening as both a creative deep mapping exercise and holistic sound art practice. A typical Acouscenic Listening workshop may be broken down into a number of learning outcomes:

- Theoretical context and practical frameworks for the use of Acouscenic Listening.
- Participation in and understanding of the Creative Soundwalk.
- Introduction to psychogeography and deep mapping.
- Introduction to collaborative, co-authored sound art practice.
- Critical reflection on all aspects and potential creative outcomes of the workshop.
- Introduction to Eastern thought, pedagogical theory and practices, and Acouscenic Listening.
- Introduction of group sonic meditations work.
- Introduction to graphic music scores and the application of a creative turn to the completed soundmap.
- Performance, recording and dissemination of the completed sound work.

A key element of the workshop is derived through consensus by the participants and Softday to collectively develop, document and track the evolution of the proposed work, from its original 'pitch' by the artists as a workshop concept, to the collective mapping, movement meditations and improvisations, to final performance and public dissemination of the creative work. Agreement is also sought on how work in progress may be documented (audio/video/photo). Continuous critical reflection on the delivery of workshop elements also assist both the participants and the artist/educator to reflect upon the learning experience, and to inform all participants steering the development of the work towards a possible shared vision. Reflection also highlights any emergent misunderstandings or antagonisms within the shared group experience as the workshop evolves.

The artist's role in this process is both socially communicative and creatively pedagogic, working with participants to share 'expert' and 'lay' knowledge, and allowing participants to find their voice or form of expression that can co-exist with others in a communal discourse. Participants are introduced to *Qigong* and *Tai Chi* exercises and adapted

Ear Cleaning exercises. *Ear Cleaning* exercises were first proposed by R. Murray Schafer who emphasized that ears should be 'cleaned' as a prerequisite to listening (1967).

The Acouscenic Listening Creative Soundwalk is undertaken in silence with the agreement of all participants. Walking in silence is an important element so that there are no demands on the attention of the participant from mobile devices or conversation. During the Creative Soundwalk, mindfulness techniques are applied in order to consciously quieten the mind and bring a listening attention to the soundscape. This process can be described as 'training the muscle of our attention'. Interrupting the cycle of incessant communication affords the participant the space to temporally 'switch off' from the demands of technology and 'switch on' the listening body to the developing soundscape environment.

This silence may also be thought of as a meditation or at very least a temporary agreement between the participant and the artists to employ a mode of consciousness in order to cultivate an embodied response to the sonic environment. In this state the meditating participant engages in, or is aware of, all that happens with transient and situated sounds of place occurring within a real geographical time frame. This action creates a temporary social bond within the group, even though each participant may articulate a unique listening experience upon completion of the walk. The participant engaging with acoustic space creates a scenario, an improvisational interrupt, and a change of perspective that deepens the embodied listening experience. The Acouscenic Listener should therefore except that they are immersed in incomplete positions of uncertainty and 'not-knowing', continuously searching for the value of 'sounds-in-themselves' in order to establish the sound objects as well as establishing themselves.

Upon completion of the Creative Soundwalk participants are invited to collectively create a soundmap of the experience. This map is not necessarily an accurate graphic representation of sonic features that appear in the sound environment, as is the case with detailed topographic maps. The sound map is a graphic score with the participants' annotations spatially distributed as the experienced place is recalled, and using colour coding to signify biophony, geophony and anthrophony sound sources. The participants then, using their own bodies and voices, perform the soundmap. The Acouscenic Listening sound map is at this juncture a visual representation (a graphic art work in itself), which suggests no limitations as to how it may be further represented or transformed. Therefore, the map (Figure 1) can be received as subjective truth insofar as a sound map is an abstraction derived from the territory of the sound environment, but is not the thing itself, as scientist and philosopher Alfred Korzybski suggests; "the map is not the territory".

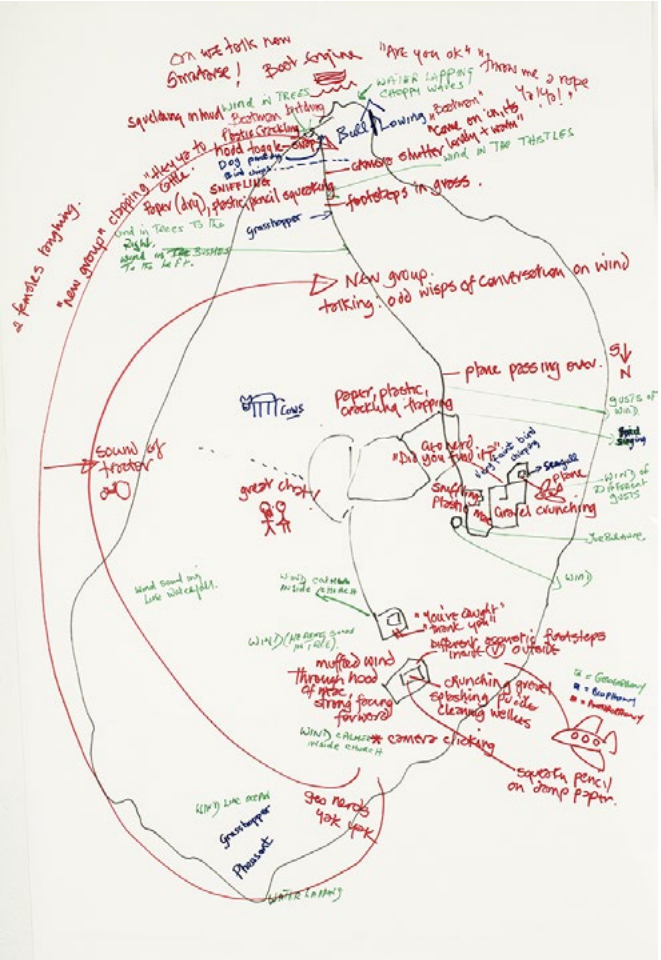

Figure 1. Holy Island soundmap/graphic score August 2016.

Each performance is recorded and discussed by the participants and further iterations/performances of the soundmap may be created. What started as our own intuitive approach for creating environmentally related sound art has now become a more formalised method for exploring soundscapes collaboratively. What we observe, or rather hear, at this juncture, is that it is the disclosure of the hidden and personal narratives in relation to that mapped data, that emerges as the critical aspect of our works. A sonified data set can be almost anything, while a collectively experienced, internalised and re-represented soundscape being expressed as a collaborative performance can help to communicate both personal context and affective aspects of the work.

This subjective and reflective approach with embodied listening results in the inclusion of the lived experience of listening to a soundscape. The sound sources are neither distal nor proximal; they become instances of human experience and can be communicated as a creative narrative structure. Acoustic gestures function as aural triggers that locate the active listener in the tempi of the everyday, assisting in the social and cultural characterization of both space and place. It is important to take time to help the listening participant to learn a process of aural way finding. Auditory engagement with space and place is the result

of a reciprocal process between the listener and the sonic environment. The environment suggests distinctions and relations, that enable the listener to pick up information in the ambient acoustic array (Gaver 1993) and to select, organise, and transform the meaning of what is heard.

Figure 2. Mapping the Limerick City Soundwalk, October 2016.

The ambient acoustic array can provide us with rich information about place and activity in the world. Without having to think about it, hearing contributes to our immediate awareness of surrounding space. For example outdoors, aspects of the soundscape can be rapidly picked up. A blindfolded person can be led around between different places and their hearing will immediately pick up subtle cues about the structure of the environment and surrounding activities (McGrath et al. 1999). Hearing also helps shifting attention between events happening around us, including behind, above or in places in the immediate environment where the actual source is visually occluded (Van Valkenburg et al. 2004). Therefore the listener plays an active role in perceiving sound in the world and simultaneously plays a creative role in developing an impression of a given soundscape, which in turn may lead to greater emotional satisfaction, creative stimulation and communicative experiences of the everyday.

2.2. Case study: Using Acouscenic Listening in the Amhrán na mBeach (Song of the Bees) projects

In our on-going project *Amhrán na mBeach* (*Song of the Bees*) [2] we have extended the Acouscenic Listening methodology to include the participants' own field recordings of their own soundscapes. Amhrán na mBeach draws attention to the global condition of honeybees and

2. https://softday.ie/bees/

in particular current threats such as Colony Collapse Disorder (CCD). We approached Simon Sleeman, the apiarist at Glenstal Abbey in Murroe, Co. Limerick, who agreed to collaborate with us on developing this project.

We examined the prevailing conditions that contribute to the destruction of honeybee colonies globally including CCD, the fragmentation of bee habitats, the spread of monoculture agriculture, the extinction of a number of wild bee species, the planting of genetically modified organism (GMO) crops, and the wholesale commercial trucking of bee colonies to agricultural areas to replace the wild pollinators, which themselves have almost disappeared. We also surveyed international and national data sets in relation to the proliferation of Neonicotinoids and other contested toxic pesticides that may contribute to increased levels of CCD in global honeybee populations.

In 2012 we commenced a series of intensive workshops at Glenstal Abbey with a small group of four Irish beekeepers. We trained the group, our community of interest, to use inexpensive recording equipment and open source software tools to edit and process recordings from Creative Soundwalks undertaken in their own apiaries. We conducted workshops with the beekeepers and encouraged them to collaboratively perform live with their recordings as the *Softday Apiary (laptop) Ensemble*. As a basis for the performance, a graphic score was collaboratively created for a potential live group performance. In this part of the process all aspects of the potential interpretation of the co-authored graphic score are discussed with and agreed by the participants.

The *Softday Apiary Ensemble*, may be considered as a form of 'Scratch Orchestra', an experimental musical entity of the type established by composer Cornelious Cardew in the 1960's. Cardew defined a Scratch Orchestra as "a large number of enthusiasts pooling their resources… assembling for action (music making, performance, edification)" (1969). We also created scores for the Irish Chamber Orchestra and for the Glenstal Abbey Choir, in Western Music Notation, generated from algorithmic sonification of four years of scientific data about bee diseases and colony losses in Ireland of CCD data. The world premiere performance of *Amhrán na mBeach* took place in Glenstal Abbey Church in April 2013.

In July 2014, Softday created and performed a Swedish version of *Amhrán na mBeach* entitled 'Sonic Pareidolic Ceromancy', which was performed at the Harp Art Lab in Harplinge in Sweden as part of the BZZZ! International Sound Art Festival 2014[3]. We used the Acouscenic Listening methodology also for this version of the project. We disclosed and contrasted the Irish bee data and sounds with Swedish bee data and sounds in collaboration with Swedish beekeepers, performers and musicians.

In 2015 we undertook an artist residency in Paris. Using Acouscenic Listening methodology we worked with urban beekeepers and local sound artists to reveal the unique and

3. https://softday.ie/bees/spc.html

hidden soundscapes some of the Parisian apiaries. We conducted a public Creative Soundwalk to Le rucher-école at Jardin du Luxembourg and gathered field recordings that formed the basis of a new sound art composition. In September 2015 we performed *Chant des Abeillies – Song of the Parisian Bees* [4] live at the Centre Culturel Irlandais.

Figure 3. Mapping the Le rucher-école at Jardin du Luxembourg soundwalk, Paris, August 2015.

After the original performance of *Amhrán na mBeach* we have had several opportunities to deliver re-mediated versions of this work. In a re-mediated version where we don't have access to a chamber orchestra or trained laptop beekeepers, we use samples from the recordings we made during the original performances. While a re-mediated performance can be quite different to the original performance, the re-mediated performance is a statement or reveal of the oft-unheard narratives and memories from the original community of interest that we are bringing forward to new audiences. Some of the audience at the original performance were direct stakeholders or participants in some way, while audiences experiencing a re-mediated work can only have an indexical relation to the original work.

3. Conclusion

The work of Softday through the Acouscenic Listening methodology and the Creative Soundwalk, offers new artistic perspectives on the relationships between body, landscape, soundscape and the everyday whilst challenging assumptions that the predominance of anthropogenic sounds can be linked to a lack of environmental quality, or that they inhibit the perception of other natural sounds. We argue for a creative re-exploration of the human listening experience in a non-judgemental frame of mind, where an active listener

4. https://softday.ie/bees/paris/

can consider all aspects and elements of a soundscape with an open mind. Furthermore, as discussed in the Amhrán na mBeach case study, the methodology can be used to help fuse data and context in a work of sound art.

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Politics of Participation in Benoît Maubrey's *Speaker Sculptures*

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ABSTRACT: *Speaker Sculptures* is a series of works by Benoît Maubrey, created in 1983–2015. All of them are large-scale architecture-like constructions (often modelled after existing historical buildings or building types) built of recycled loudspeakers. The public could connect to the work by calling a designated number, or using Bluetooth or WiFi technologies, and express themselves freely through the sculpture. In my paper, I investigate the strategies of audience engagement the Maubrey employs and their applicability to the acoustic design of urban spaces. Through their numerous loudspeakers, Speaker Sculptures connect the public space to the electronic media, subverting their antagonism and creating a single space of social interactions. This offers a possibility of political presence in public space to those, who are unable to do so in person due to physical or mental disabilities, or other personal circumstances.

KEYWORDS: sound art, sound sculpture, participatory art, participatory culture, augmented reality.

Figure 1. Benoît Maubrey. Temple (2012). Photo courtesy of the artist.

In 1983, Benoît Maubrey started a series of works titled *Speaker Sculptures*. These were large-scale architecture-like constructions built of recycled loudspeakers. Many of them were modelled after existing buildings (Speakers Gate, 2010, a replica of the gateway of a 6th century fortress; Temple, 2012, a recreation of the Delphi Temple ruin) or building types (Audio Igloo, 1997; Shrine, 2015, imitating a Torii Gate), some included parts of existing structures (Speakers Wall, 2011, which featured a piece of Berlin Wall). Most of *Speaker Sculptures* were outfitted with an answering machine, so that the public could call a designated number and express themselves freely through the sculpture. Later works expanded the number of ways the public could interact with the sculptures. For example, *Open Cube* (2013), installed at the Hard Rock Hotel Palm Springs, also allowed connection via Bluetooth technology. *Shrine* had an 8-channel PA system that allowed several people to interact with it simultaneously, both on site and remotely. Additional sounds may include white noise or radio transmitters tuned to random frequencies.

The aim of my paper is to explore the artistic strategy of connecting public and private spaces via acoustic media, realized by Maubrey in his *Speaker Sculptures* project, and its applicability to urban sound design. I want to point out that the object of this discussion is this artistic strategy in general rather than particular artworks, which results in a rather narrow

focus of this paper and disregard for other artistic considerations that define *Speaker Sculptures*. On the other hand, this approach also allows veneering into speculative, hypothetical territory. The focus of my discussion will therefore be the possible effects such a sculpture could have on urban life, should it become a permanent feature of the landscape, which may go beyond what was realized in particular artworks.

The *Speaker Sculptures*' primary feature is that they extend the public space, making it accessible both to those present in it physically, and to those staying at their homes. What is most interesting here is that they do it by the means of electronic media, whose relationships with urban space has been traditionally understood antagonistically. Prior to the mass mediatization of the late 20th century, city streets, parks, cafes etc. were the primary sites of social interactions. However, the electronic media stripped such places of their function. According to Richard Sennett, "electronic communication is one means by which the very idea of public life has been put to an end. The media have vastly increased the store of knowledge social groups have about each other, but have rendered actual contact unnecessary." (Sennett 2002, 282). While the introduction of online participatory media rekindled the need for contact, it now happens outside of physical spaces. (Sennett 2010, 262) Together with growing mobility, this has led to the emergence of what Marc Auge calls "non-places", public spaces that do not facilitate social interactions. These are places one simply passes through, in as quick and uninvolved fashion as possible, on the way from one familiar – essentially private – place to another. (Augé 1995, 77–81)

Sound installations are often used to rejuvenate such "non-places", as art infuses them with the "charisma" they lost and facilitate the public's engagement with them. (Föllmer 1999, 226) However, *Speaker Sculptures* go further than this: they situate the interactions, happening in the electronic media, in the physical urban space, reconciling and merging the two. Maubrey's works subvert the antagonism of the physical public space and the public sphere of media. Instead of "stealing" the functions of public space, electronic media expand and enhance it, facilitating involved social encounters. By arranging loudspeakers in architecture-like forms, the artist makes the technologies "blend in" with the urban space, emphasizing their unity as the space of communication. Through *Speaker Sculptures* the urban space becomes augmented, existing both in physical and virtual planes that become inseparably connected by the social relations that emerge between the participants situated on both ends.

In Hannah Arendt's concept of the public life, any public action is necessarily political – and vice versa, any political action is necessarily public. Political life is the life of the *πόλις*, the city, and therefore happens in its open spaces. (Arendt 1958, 22–78) While for Arendt her approach to political was necessary to extend the notion to include spheres outside of institutionalized politics, her insistence on the publicity made it exclusory as well. Judith Butler in "Rethinking Vulnerability and Resistance" notes that "[a]ll public assembly is

haunted by the police and the prison. And every public square is defined in part by the population that could not possibly arrive there; either they are detained at the border, or have no freedom of movement and assembly, or are detained or imprisoned". (Butler 2014, 9) The artist Joanna Hevda extend this category of those, whom the equating of the political and the public denies political agency, to people suffering from physical and mental disabilities that prevent them from leaving home. (Hevda 2016) In Arendt's paradigm, political action requires a body to be publically present, however it is often the very same body that prevents one from political action.

In that regards, the most interesting aspect of *Speaker Sculptures* is that they allow one to be perform in the public space without leaving their home. They do not only merge the physical public space with that of electronic media, but also through their unity connect the public space with a multitude of private spaces. This offers a possibility of political presence that is both embodied and anonymous, thus expanding the reach and scope of possible political activities. Maubrey likens the space created by his sculptures to London's Hyde Park famous for its history of political debates and demonstrations. (Maubrey 2014) Since late 19th century, the Park's Northwestern corner – the so-called Speaker's Corner – holds a reputation of a place where everyone can speak their mind without fear of prosecution. However, unlike Speaker's Corner, *Speaker Sculptures* do not require the speaker to be present in the flesh, but lets her voice be heard from the safety of the private space.

At the same time, a question can be raised whether the presence of the voice in the absence of the body holds enough political weight. In *Speaker Sculptures*, this concern is addressed explicitly by the tangible physicality of the sculpture and its scale. The voice of the distant speaker is given weight by lending it the "body" of the sculpture, which is commensurate with its architectural surroundings. The voice thus becomes one with the space it fills. Moreover, *Speaker Sculptures* make up for the lack of bodily presence with electronic amplification. In any public event, the one with the megaphone is the one with power, as their voice can drown out the other voices. *Speaker Sculptures* give the participants a megaphone the size of a building, empowering those, who are locked out of public discourse by their personal circumstances, to be heard.

On a deeper level, an argument can be made that the speaker's presence in *Speaker Sculptures* is not entirely ephemeral, but embodied. In his analysis of telephone communication, Barthes note that "[t]he order of listening which [it] inaugurates invites the Other to collect his whole body in his voice", (Barthes 1991, 252) which is then transmitted through the cable to the listener, or in case of *Speaker Sculptures* – into the urban space. Media scholar Frances Dyson calls this phenomenon telepresence: while the speaker is not physically on site, their body is present in "the grain of the voice" – tone and cadence of speech, idiosyncratic noises, breath – that is carried through technological channels and made tangible by sound waves. (Dyson 2009) *Speaker Sculptures* provide the caller with the opportunity of remote,

but nevertheless embodied engagement with the space and all who are physically present in it. In other words, they allow one to perform politically – perform in public – without leaving the safety of a private space. The body is present in the voice, but it is absent in the space and therefore cannot be removed from that space, ostracized or harmed. The anonymity of telepresence in a public space makes communication across class, race and gender barriers, that Arendt envisioned, possible (at least to a certain extent), while at the same time not requiring one to forgo one's identity.

Moreover, the audio channels do not discriminate between voice and other sounds. This allows for a new, acousmatic mode of self-presentation in public space that previously has only been possible in electronic media. One's musical preferences are as much a reflection – and a part – of one's identity as visual features, such as fashion and hairstyles. Nevertheless, this part is usually reserved for private spaces – sometimes all too private, like the space of one's head enclosed in headphones. Music in one's headphones serves to dissociate them from the surrounding space, escaping engagement with the strangers and adding to the public space becoming a "non-place". *Speaker Sculptures* allow the participants to share publically what has usually been shared privately, through mixtapes and online playlists. Music contextualizes the voice in the same way clothing contextualizes the body, thus making a "telepresent" self-presentation as comprehensive as one performed in public space in the flesh.

It is interesting to contrast Arendt's approach to the political to Barthes' understanding of the term "as describing the whole of human relations in their real, social structure, in their power of making the world". (Barthes 1972, 143) The urban space as a site of human relations has been redefined not in the terms of physical structure of space, but as a structure of relations that form and inhabit it, as "a space of flows" (Castells 2004). Sound being a relational phenomenon (LaBelle 2015, xi–xiii), this relational structure finds a parallel in a certain kind of sociality specific to sound art – one that relies on sound being heard and answered. The agoras of *Speaker Sculptures* act as hubs where relations that form the public space intersect with those happening in the space of electronic communication media, forming a new kind of relational topography that transcends the boundaries of physical space.

In that regard, they can be described in terms of Nicolas Bourriaud's relational aesthetics. For Bourriaud art objects in contemporary world have no intrinsic value and serve only as a catalyst for a certain kind of sociality. The true matter of relational art is the system of relations emerging between the participants as a result of this sociality of art. (Bourriaud 2002, 107) *Speaker Sculptures* fit this narrative perfectly. Their impressive gargantuan forms aside, their primary function is precisely to facilitate the social encounters in this newly create augmented space of relations. Thus, another political aspect arises to *Speaker Sculptures*. As Bourriaud puts it, the role of relational art «is no longer to form imaginary and utopian realities, but to actually be ways of living and models of action within the existing

real, whatever scale chosen by the artist». (Bourriaud 2002, 13) *Speaker Sculptures* offer new modes of social interaction and connect many private and public spaces into a relational structure, thus providing a means to overcome the atomization of urban life.

However, as far as adopting this strategy to urban acoustic design goes, the downsides of having such sculptures as permanent features of urban space must be considered. Critiquing the concept of public space as open to all, Butler points at its gatekeepers – the police and the authorities – that decide who gets the access. (Butler 2014, 9) In the case of *Speaker Sculptures*, the access to public space is exercised through technological channels, thus making the technologies themselves the gatekeepers. While the volume of one's voice passing through audio channels can exceed manifold that of those physically present, the speaker has no control over it. *Speaker Sculptures* give a lot of power to those who operate the technologies – not only to increase or decrease the volume, but also to disconnect the caller completely. I would speculate that a solution to limit this power might lie in further automation, relying on distributed peer-to-peer computing rather than human factor.

Moreover, the idea of technological expansion of physical public space into virtual one does not account for the accessibility of required technologies, thus putting up a class and income barrier for this kind of political participation. Many of those, whose voices desperately need to be heard, are locked out not only of the public space, but out of communication channels as well, and *Speaker Sculptures* cannot do anything to remedy their situation. Their political effect transcends some barriers but not the others.

Another aspect to be considered is the effect such works have on everyday functioning of the local soundscapes, which can be rather disruptive. Here, a peculiar dialectics emerges. On the one hand, the function of sound art in public spaces is to break the routine of the everyday to force the inhabitants to engage with the space and each other. I.e. it needs to be disruptive to be effective. The same can be said of political actions, such as demonstrations or protests: to be heard one must generate enough noise. On the other hand, demonstrations and sound art projects have an end, while the long-term effect of breaking the established sonic routines is uncertain. The urban ecologies will have to restructure themselves around these new conditions, and not necessarily in the desired way. Changes in urban space always walk a fine line between gentrification and ghettoization, and acoustic design is no different in that regards.

Another metaphor Maubrey uses to describe the participants' interactions with *Speaker Sculptures* is "oral graffiti". (Maubrey 2014) Like city walls provide a canvas for graffiti artists, these sculptures serve as a means for anonymous acoustic self-expression in urban space. And just like graffiti, the result of this self-expression can be as much art as vandalism – often at the same time.

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A Quiet Life

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ABSTRACT: Over the course of this paper, sound artist Johann Diedrick looks at his work Good Vibrations and presents how his acoustic cartography listening tours have allowed acoustic explorers to reorient themselves to the outside world through expanded listening. The Good Vibrations project presents ways in which bodies interact with their environment by examining subtle sounds through amplified listening. By discovering previously unknown "sound"-able objects, these acoustic explorers begin to interact with the environment in a performative way, using the sounds around them as inspiration for play and exploration. In the paper he will present qualitative analysis in the form of feedback forms as a way in which sound artists can solicit responses about their work from an audience to help inform future iterations on their artistic practice.

KEYWORDS: sound, listening, space, environment, bodies, performance, amplifiers, microphones, DIY.

1. Introduction

Hi! My name is Johann Diedrick. I make installations, performances, and software that let people play with sound. The main themes of my work center around listening, environments, bodies, and the performance of these elements in time and space. Today I would like to present some of my past work and then go into one project in particular to explore how expanded listening practices can recalibrate our relationship to the world around us.

Before I do that, I want to introduce four main themes in my work. These themes include listening, space/environment, bodies and performance. For me these four themes are tightly intertwined within my work, as I will show throughout this presentation.

2. Listening, Space/Environment, Bodies, Performance

2.1. Listening

Good Vibrations

Listening is one of the biggest parts of my practice, and the topic I will be spending the most time on during the course of this talk. But for now, I'll briefly introduce my project *Good Vibrations*, which I presented at the last Invisible Places conference. *Good Vibrations* is a listening experience that focuses our attention to the subtle, quiet sounds in our environment through the help of mobile listening kits. The kits themselves are a relatively simple application of an amplifier and a collection of different microphones. Over the course of the project, the *Good Vibrations* mobile listening kits have included the following microphones:

- A contact microphone for surface vibrations
- A probe microphone for listening to the sounds inside materials
- A hydrophone for water-based sounds

The kit also includes a wooden dowel for activating surfaces. Along with these tools is an instructional guide for using the kit and "acoustic points of interest" sheet for some ideas of what to listen out for.

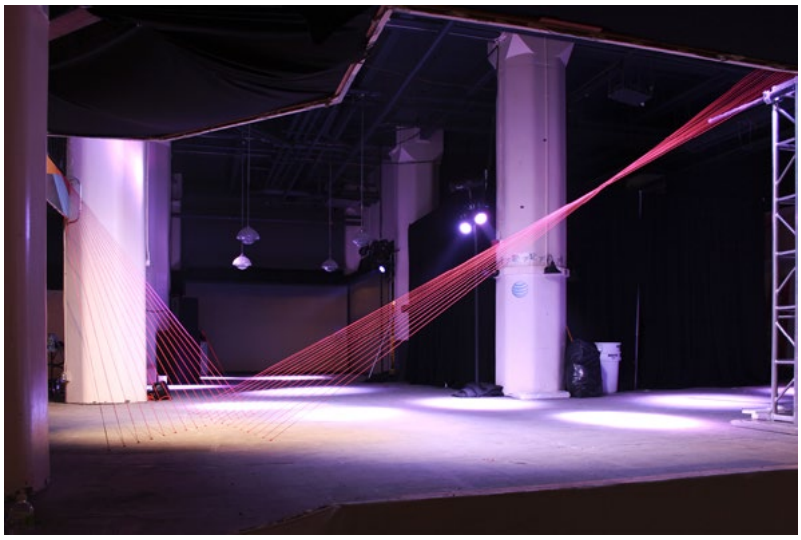
The project, conceived together in collaboration with Christie Leece, was meant to give us a novel way to access, consider, and respond to the world around us through a raised attention and heightened awareness of environmental sounds. It also gave us a tool to acknowledge atypical environmental sounds, especially ones overheard (used here in the way one might use the term overlooked) because of loudness or cliché. We wanted a way to become introduced to sounds that we probably would have not have had access to otherwise because of their diminutive quality, and also to sounds that were outside of the normal range of "environmental" sounds we are accustomed to when we think of urban sounds (traffic, construction, machines), natural sounds (birds, trees, rivers) or human sounds (conversations).

2.2. Space/Environment

Strings

The theme of environment, and spaces in general, is another theme that I have been exploring throughout my work. This exploration first began with a series of sound installations called *Strings*. This series, in collaboration with Luisa Pereira Hors and Monica Bate Vidal, is a room-sized instrument that surrounds you. In five different iterations, we constructed a large interactive sculpture that resembled a harp or the inside of a piano. Visitors are able to use a bow to "stroke" the strings, or "pluck" the strings with their hands in later versions. In the bow version, contact between the bow and the strings closes a circuit, which is detected by an Adriano microcontroller and triggers a synthetic sound played back from a computer, using Ableton Live. In later versions, visitors can pluck the strings with their hands and the

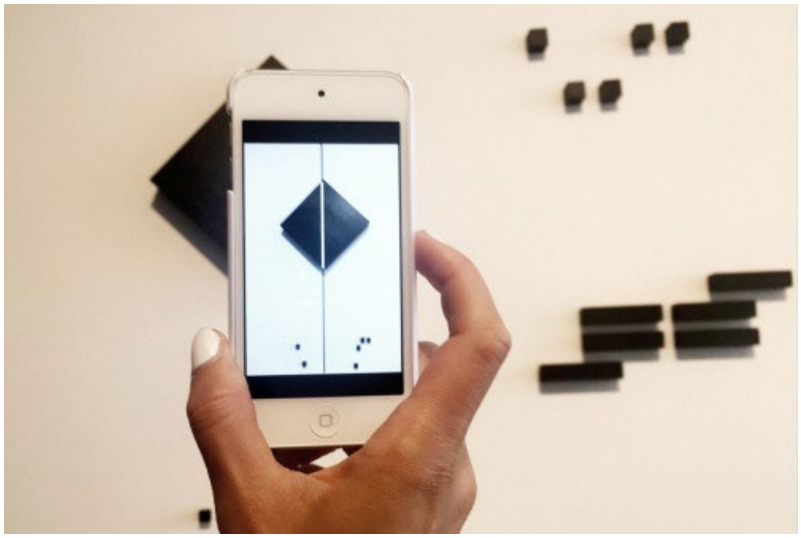
vibration caused by the plucking vibrates a piezo element, which is again detected by an Arduino microcontroller and is used to control the playback of a synthetic sound, this time in Max MSP. For all of these versions, we wished to give visitors a more spatial experience of playing back sounds, one in which the line between performer and audience are blurred and any number of players can move freely around a space to interact and listen to sounds.



Format No. 1 and Format No. 2

The performance of music in space has been explored in another collaboration between myself, Louise Foo, and Martha Skou, entitled *Format No. 1* and *Format No. 2*. For this collaboration, I was commissioned to develop a mobile application to accompany a visual, spatial musical score designed by the two artists. The mobile application, developed for iPhones, allowed users to play back a score that surrounded them.

For Format No. 1, the score was in the form of white and black geometric shapes, inspired by the history of musical composition from classic Western music notation, to the more abstract visual scores of Xannis to digital MIDI compositions.



For *Format No. 2*, an iPhone application was developed to play back a more three-dimensional spatial installation made of up black spheres and circular shapes hanging inside of a space. The application would play back sound samples depending on the position they were located on the screen, and the volume was adjusted depending on the size of the circle as it appeared on the screen.

With these tools for both *Format No. 1* and *Format No. 2*, visitors were able to recreate their own interpretation of the score by moving through the space and using the application to play back musical sounds as guided by the score created by the two artists.

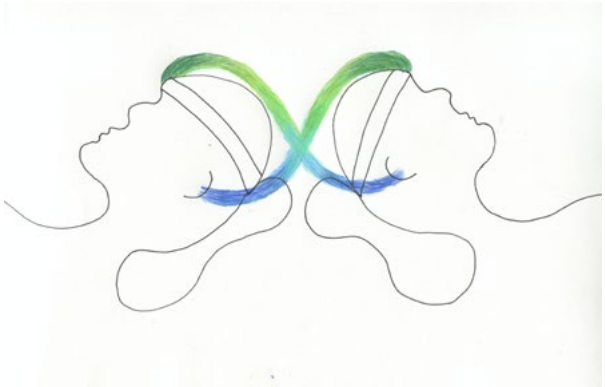
Sirens

Given my interest with sounds in outdoor environments, I wanted to create sound installations that introduce new sounds into the outside world, as opposed to experiences where we take sounds from the environment, using it as a source. This resulted in *Sirens*, which are inexpensive, solar-powered interactive sound installations that are easy to make. Inspired by the work of Laura Pearl and XXX's solar powered sound bot workshops, Evan Roth's LED

throwies and the public sound interventions of Max Neuhaus, *Sirens* provide a cheap way for sound artists to introduce sounds into the environment, with a simple yet effective way for it to respond to both the environment passively and human interaction actively. Each siren consists of six main parts: a solar panel for energy, a capacitor and integrated circuit (40106 or 74C14) and speaker for sound generation, a photo cell for pitch variation and interaction, and a magnet for installation on any kind of metallic surface (mailbox, road sign, public transportation, etc.). With a siren, I have reduced my idea of public interactive sound installations to a simple form that can be adapted to a number of spaces, each offering different variations of the type of sound and interaction that can be produced.

2.3. Bodies

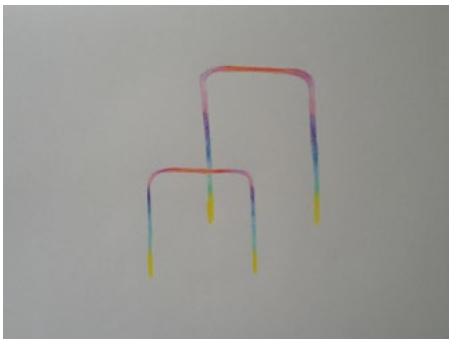
Environments are not exclusive as sites for sonic creation, as bodies are always present within the works I create within environments. Therefore some attention should be given to some of my works that have used bodies as a sonic source. In my work *Grand Dream*, I used two unconscious bodies as the performers for a sound installation. *Grand Dream* consists of two sleeping performers who are both wearing EEG readers. While dreaming, the EEG reader reads the brain activity of the first performer and translates these readings into sounds. These sounds are passed to the second performer via headphones. The second performer's brain activity, influenced by the sounds produced by the first performer, are read by their EEG reader and also translated into sounds, that are then heard back by the first dreaming performer. The two sleeping performers become locked into a neuroacoustic feedback loop, with their sleeping unconsciousnesses performing music that is projected into a space for an audience to hear.

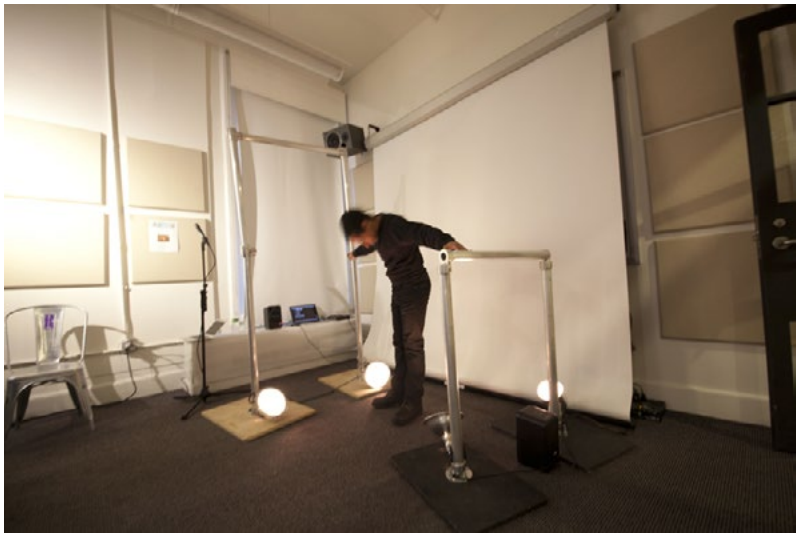


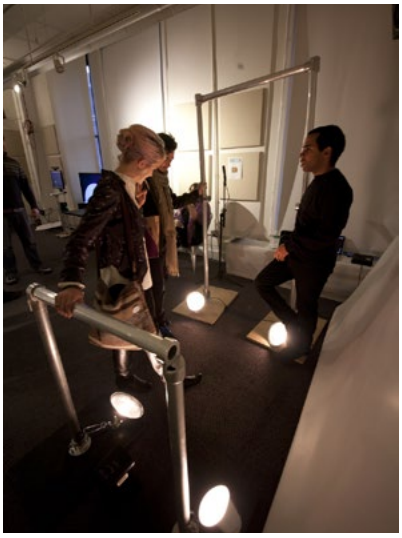
2.4. Performance

A Haunting

A Haunting is a performance within a sound installation that remembers the presence of bodies. In this performance, two or more bodies perform a chorography wherein bodies move, dance, and touch each other. When the bodies meet, a circuit is closed that in turn plays back a synthesized voice across a pentatonic scale. The sound installation itself is able to remember each one of these interactions, and will itself play the sounds back in the same sequence that the dancers have performed them. In this way A Haunting becomes imprinted by the past interactions of bodies that occur in the space, like a haunted memory.







Transmissions

Transmissions is a return to a more traditional kind of performance that allows an audience of bodies to play the role of performer for a composed performance. For Transmissions, I was commissioned to create a mobile application that allows an audience to play along with musician Pat Noecker in his Transmissions performance. Over the course of one hour, the performance plays out as follows: for the first 25 minutes, an assortment of musicians (guitar, drone, synthesizer, saxophone, violin, bass, accordion etc.) play an A note. Afterwards, for the next 25 minutes, the musicians perform an E note. Finally, for the final 10 minutes of the performance, the musicians can play either an A or an E note on their instruments.

For this performance, the mobile application was provided so that the audience can play back an A or an E note on their phone. This synthesized note can be rendered in four different types of modes: a sine wave, a square wave, a triangle wave, and a sawtooth wave. The phone's flashlight was programmed to strobe along with the sounds to give the audience members some visual niceties.

2.5. Summary

Over the course of my work, these four themes are intertwined and manifest in different ways. I would like to turn my attention to one such project to analyze how all four themes are present, including how I have introduced some qualitative feedback forms to inform the progression of the project.

3. Good Vibrations

3.1. Introduction

Invisible Places, 2014

As introduced before in section 1.1, Good Vibrations is a listening experience that uses mobile listening kits as tools for tapping into the least audible sounds in our environment. At the Invisible Places conference in 2014 in Viseu, Portugal, I hosted three tours that took "acoustic explorers" on listening expeditions throughout the town.

Inspiration

The project was inspired by many different things from a variety of angles. For example, the original design of the listening devices was inspired by scientific monitoring equipment, both in color and form. Like a Geiger counter used to measure radioactivity in an area, the mobile listening kits were designed to measure sonic activity in an area.

Influences

It occurred to me much later that one main influence on this project was one particular performance of "Baibaba Bimba" by the Tenniscoats. Their casual, charming rendition of this song by playing music with the environment around them must have been some seed influence for my desire to create an experience that let an audience hear and eventually perform their environment in a similar way.

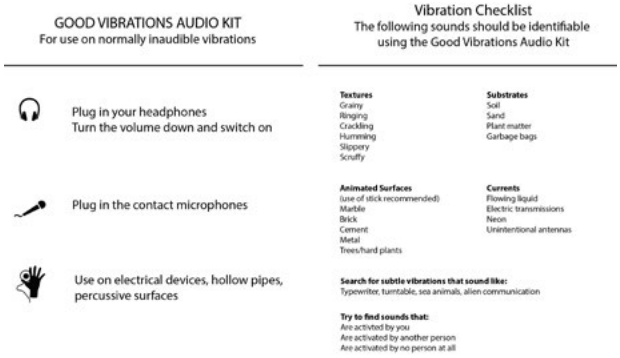
3.2. Insights

Listening

Spending even a little bit more effort to listening can be a revelatory experience for many people. In this presentation, I will present a number of case studies and examples of what is possible when listening becomes a primary mode for navigating one's environment. By making the experience of amplified listening mobile, we are able to deeply investigate sounds that are present but easy over-heard (analogous to sights being overlooked).

Space/Environment

These listening tours usually occur outside, although some of my own explorations with my mobile listening kits have happened indoors as well. But generally, the tours have taken explorers to city streets, parks, college campuses, playgrounds, storefronts and sidewalks. Objects in space take on a new kind of significance. No longer are fences, bikes, grates, walls, windows, and poles merely inanimate backgrounds of our surroundings. During the tours, explorers begin by using our "acoustic points of interest" card. The card gives them ideas of what types of objects to look out for in their environment to listen to. This includes types of sound textures ("grainy", "ringing", or "scruffy"), substrates (soil, sand, plant matter), surfaces (marble, brick, metal) and currents (flowing liquid, electronic transmissions, neon). We also prompt explorers to find sounds that sound like every day objects they might encounter (typewriter, turntable) to ones that might be more rare or even imaginative (sea animals, alien commutation).



GOOD VIBRATIONS AUDIO KIT
For use on normally inaudible vibrations

Plug in your headphones
Turn the volume down and switch on

Plug in the contact microphones

Use on electrical devices, hollow pipes, percussive surfaces

Vibration Checklist
The following sounds should be identifiable using the Good Vibrations Audio Kit

Textures
Grainy
Ringing
Crackling
Humming
Slippery
Scruffy

Substrates
Soil
Sand
Plant matter
Garbage bags

Animated Surfaces
(use of stick recommended)
Marble
Brick
Cement
Metal
Trees/hard plants

Currents
Flowing liquid
Electric transmissions
Neon
Unintentional antennas

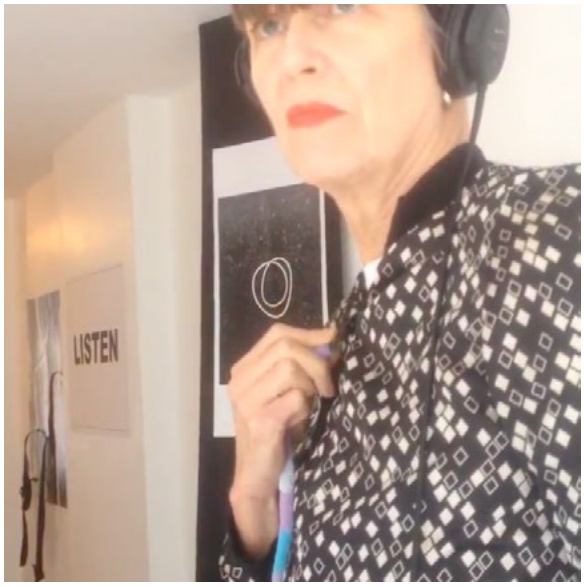
Search for subtle vibrations that sound like:
Typewriter, turntable, sea animals, alien communication

Try to find sounds that:
Are activted by you
Are activated by another person
Are activated by no person at all

The card gives some final advice in case you get lost: Try to find sounds that are activated by you, activated by another person, or activated by no person at all. These final three prompts, along with the advice from before, combine to give our explorers the needed push to try to find or make sounds from any and everything in their environment. Listeners both listen to things already making sounds (neon, air conditioners) and find objects and bring out sounds that never existed without human intervention (bikes, grates). This to me unveiled one of the more interesting aspects of the project. The discovery of and understanding that all objects in our environment are "sound"-able, meaning that they all possess the quality to produce sound. It is not just that things produce sound, but that anything is "sound"-able if you creatively activate it. The listening tours I host expose people to the idea of uncovering the "sound"-able qualities of objects in their environment.

Bodies

Bodies are also objects in space, and are an undeniable source of sound in our environment and on tours. On many occasions people have used the listening kits to listen to themselves and other people, such as what occurrence in a listening tour in Toronto.



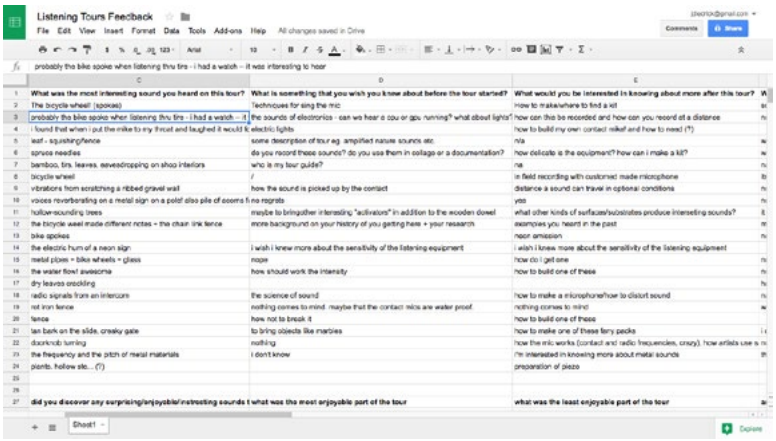
Performance

After sufficiently acclimated themselves to the world of "sound"-able objects, the listeners start to perform on their environment, using these newly recontextualized objects as sonic material. Some use bike tire spokes and sewer grates as xylophones and marimbas. Others move closer and away from neon signs as one might perform on a theremin. Still others find and record sounds and use them later for their own electroacoustic pieces. Either way, the tours begin at a place of exploring and tend to end up at a place of performing. Listeners take the time to discover "sound"-able objects in their environment, and they begin to naturally perform with these objects in public space. This radical re-imagination of how one is allowed to treat their environment is both a creative and political revelation. Spaces become activated in a way that is unintended, and listeners begin to take ownership of the world around them as something they can play with, operate on, and use for creative means.

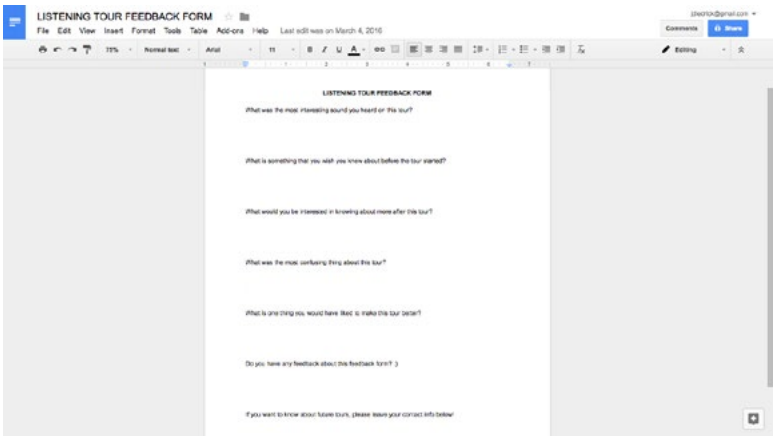
3.3. Research

Feedback forms

Along the way I have utilized a feedback form system to get qualitative responses about the tours, to see how people like them, what they respond to, and how I might improve them.



What was the most interesting sound you heard on this tour?	What is something that you wish you knew about before the tour started?	What would you be interested in knowing about more after this tour?
The bicycle wheel (spokes)	Techniques for sing the mic	how to make/where to find a kit
probably the bike spoke when listening thru tire - i had a watch - it	the sounds of electronics - can we hear a cpu or gpu running? what about lights?	how can this be recorded and how can you record at a distance
i found that when i put the mike to my throat and laughed it would k	electric lights	how to build my own contact mike/ and how to need (?)
leaf - squishing/fence	some description of tour eg. amplified nature sounds etc	n/a
spruce needles	do you record these sounds? do you use them in collage or a documentation?	how delicate is the equipment? how can i make a kit?
bamboo, tins, leaves, eavesdropping on shop interiors	who is my tour guide?	na
bicycle wheel	/	is field recording with customized made microphone
vibrations from scratching a ribbed gravel wall	how the sound is picked up by the contact	distance a sound can travel in optimal conditions
voices reverberating on a metal sign on a polaf also pile of acorns fi	no regrets	yes
hollow-sounding trees	maybe to bring/other interesting "activators" in addition to the wooden dowel	what other kinds of surfaces/substrates produce interesting sounds?
the bicycle wael made different notes + the chain link fence	more background on your history of you getting here + your research	examples you heard in the past
bike spokes		noor emission
the electric hum of a neon sign	i wish i knew more about the sensitivity of the listening equipment	i wish i knew more about the sensitivity of the listening equipment
metal pipes + bike wheels + glass	nope	how do i get one
the water flow/ awesome	how should work the intensity	how to build one of these
dry leaves crackling		
radio signals from an intercom	the science of sound	how to make a mikrophone/how to distort sound
rot iron fence	nothing comes to mind. maybe that the contact mics are water proof.	nothing comes to mind
fence	how not to break it	how to build one of these
tan bark on the slide, creaky gate	to bring objects like marbles	how to make one of these fairy packs
doorknob turning	nothing	how the mic works (contact and radio frequencies, crazy). how artists use it
the frequency and the pitch of metal materials	i don't know	i'm interested in knowing more about metal sounds
plants. hollow ste... (?)		preparation of piezo
did you discover any surprising/enjoyable/interesting sounds t	what was the most enjoyable part of the tour	what was the least enjoyable part of the tour



LISTENING TOUR FEEDBACK FORM

What was the most interesting sound you heard on this tour?

What is something that you wish you knew about before the tour started?

What would you be interested in knowing about more after this tour?

What was the most confusing thing about this tour?

What is one thing you would have liked to make this tour better?

Do you have any feedback about this feedback form? :)

If you want to know about future tours, please leave your contact info below

Some improvements have been showing people how to record the sounds. The beginning intention of the project was not about recording sounds, but since so many people have asked about it, I've been helpful along the way to assist people in doing that.

People have also asked how to make the kits, which is something I will be doing later at this conference.

4. Conclusions

4.1. Where to go from here?

My acoustic adventuring is still ongoing, and I'd like to share a few projects that I'm working on that can be seen as an offshoot of what I've done before.

Transients

Transients is an iPhone app that allows you to record sounds. You can either tether them to the position where they were recorded, or drift them on a map for someone to pick up along the way, like a message in a bottle. This project debuted at Yami Ichi in New York City and is still a work in progress.

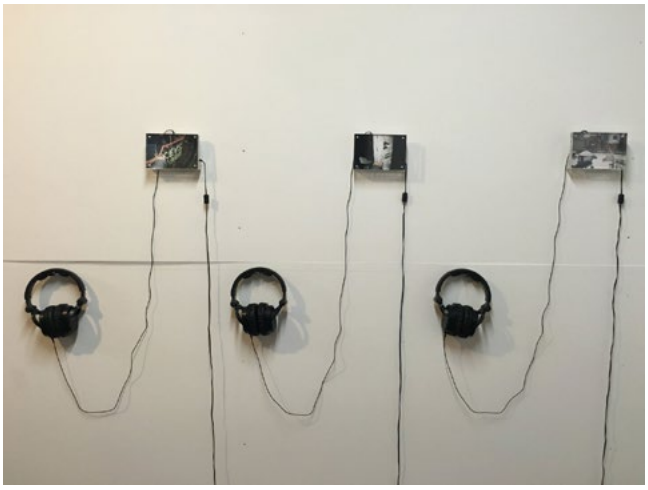
Naked Ear

The *Naked Ear* workshop is for artists and researchers wanting to become more familiar with the potential of sound. Our focus begins on expanding our understanding of sound in an environment. This requires a basic vocabulary for talking about sound as a material, as well as the ability to make and use tools for investigating and manipulating sound for creative purposes.

The workshop will introduce participants to the world of sound art, while providing techniques for making tools for creating these experiences. This will include the fabrication of hand-made microphones and amplifiers for use in installations, performances, and scientific research. The goal of the workshop is to take these tools into the field and use them for artistic investigation and public engagement.

It Is Impossible To Know About Earth…
So We Must Hear Her Voice In Our Own Way…

It Is Impossible To Know About Earth… So We Must Hear Her Voice In Our Own Way… is a series of sound/photo diptychs that document hidden sounds I've discovered with my mobile listening kit. My acoustic explorations amplify subtle sounds that go unnoticed and generate new sounds that wouldn't have existed otherwise, including the reverberations of street life transduced through a hollow pole, the gliding of ocean waves against sand, and the soft patterings of light February snow. The diptychs' medium (disposable camera and lo-fi recording) encourages an artistic practice that prioritizes casual and informal ways of engaging with sound. This combination of mediums advocates for a sound art practice that uses tools and techniques for experimenting in ways that would be too expensive — monetarily, technically and conceptually — if not without tools that can be used freely. This work demonstrates how even the most mundane, everyday scenes contain exciting, unexpected and poetic sounds waiting to be discovered — if only we took the time to listen.



Quiet Music, Weak Sounds

Quiet Music, Weak Sounds is collaboration between myself and sound artist Eisuke Yanagisawa to discover, amplify, and share the subtle sounds in Kyoto, Japan. Over the course of four weeks, we will explore Kyoto's soundscape with custom microphones, amplifiers and field recorders. Informed with their findings, we will host a series of workshops, teaching members of the community how to build and use their own sonic investigation tools. We will turn participants into acoustic explorers and take them on explorations of Kyoto to find, record, edit, and present their own found sounds. Afterward we will construct our own Aeolian Harps and introduce our own sounds to Kyoto's Kamogawa river path. Finally, we will present their findings to the community at large, in the form of a talk and reception party.

Summary

So that's it! Thank you much.

4.2. Thanks and Acknowledgements

I would like to thank my collaborator Christie Leece and the Invisible Places committee for allowing me to present this paper. Thank you!

4.3. Questions, Comments, and Discussion

I am open to hear feedback about my ideas and presentation. Please feel free to contact me at jo@aquiet.life.

The Sound Object of Radio – The Constitution of an Ethereal Community

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ABSTRACT: Our goal is to study the shaping of audiences formed by radio listening, and their behaviour vis-à-vis the notions of territory, identity, language, and private and public space. To this end, it becomes important to study listeners' relation with the radio sound object, the space where that relation fuses and how it comes about. Sound, when listened to as radio aesthetics (voice, music, effects and silence), sometimes fuses the private and public spheres. A negotiation is struck between the power of a mass medium and the interests that constitute the listeners' private spheres. Through broadcasting, in particular, what was of the private domain became collective. It is in this context, fed by the dubious relation of what is private or public, that the relation between listener and medium-broadcast sound object is solidified. One of the ways of understanding this relation, created through radio in the 1930s, involves understanding the relation between the listener and the voices/characters of radio.

KEYWORDS: Radio, sound, ethics, community.

In the first times of its history, radio provided a sensation of novelty and new experiences. It was in the 1920s that radio found the path of broadcast, due to three factors: technology, medium regulation, and society.

When it first appeared, radio displayed unique characteristics when compared to the other media. Its power open up to a new form of understanding of what was human, and to the creation of a community of listeners who united and formed a unity. Scattered over a territory, which was increasingly taken up by the medium radio, the inhabitants, in some cases from remote parts, began to be regarded as elements constituting an audience, since the technology of long-distance broadcasting allowed geographical barriers to be broken. It was a revolution of sorts: "life on the earth as it had always been lived was destined to never be quite the same again" (Cox, 2009: 03). Little by little, the broadcasting capacity reached planetary dimensions, and its large providers, such as, for instance, Americans, were creating broadcasting structures with head radio stations located in the larger cities and smaller radio stations scattered across the American territory, broadcasting programmes generated at the main radio station.[1]

Around those times there was an atmosphere of novelty and projection of a medium which changed the community landscape of territories. Even those who lived far away, isolated in territories or wandering, could now belong to a community and have the same information as the others. When reflecting on this topic it is impossible not to think of the statement that opens the introduction to Armand Mattelart's work *The globalization of communication*: "Real-time communication systems determine the structure of the planet's organization" (1996:11, our translation).

With the creation of radio networks, contents are no longer exclusively received by those who have the chance to be in the territory covered by the radio originally broadcasting that contents, but they began being heard by a larger number of people, thus giving more people the possibility of listening to the same content: "On the ether, if multiple outlets could be linked together, they reasoned, a single show could be beamed to many more listeners than those confined to the geographical purview of a lone station's transmitter" (Cox, 2009: 09).

The strength of a network lay in the number of relay stations, and this was proportional to the number of listeners. Broadcast contents were, thus, exported and gained the ability to reach farther, which made them more valuable for advertisers.

Radios working as a network on content production and/or broadcast originated in the 1920s, when two radio stations, WEAF and WNAC, which broadcast in the eastern United States, decided to share part of their programming. When other stations joined them, a

1. In the United States, two years after KDKA was created in 1920 in Pittsburgh, Pennsylvania, there were already about 564 radio stations (Junqueira, 2002), a large majority of which would come to contribute to and form radio networks. What is considered to be the seminal broadcast of the idea of *network* took place on January 4, 1932, when the New York radio station WEAF dispatched, via telephone, to WNAC, in Boston, a saxophone solo lasting a few minutes.

group began which would come to be officially called *Broadcasting Corporation of America*, and unofficially *the telephone group*, because it was through the telephone lines that the stations shared their contents. It is here, in this movement, that the concept of network radio began.

In an association to the idea of community, radio networks (and especially those we address in this paper, namely the American ones, which emerged in the 1920s and 1930s) are connected to the creation and dissemination of their own specific culture. The audience seen as a set of united people received values capable of generating feelings and providing various inspirations. They came together in the reception of sound contents where, for instance, the great names of entertainment began to be known equally in the whole territory. The songs that were all the rage were not confined to the exclusive ear of a community in a city or a state – they played equally all over the country, familiarizing the ear with the same sound and with the creation of a united taste base, a new aesthetics. Everybody knew about and witnessed what was happening in real time. Culture was formed in the whole territory and access became widespread.[2]

In order to gain deeper insight into the constitution of *ethereal* communities, it is crucial to consider the characteristics adjacent to the listeners' relation with radio and its sound contents, the space where it is rooted and how this happens. In the America of the 1930s e 1940s, as well as in Europe, the relation between the listeners and radio was intense and, in many cases, it was in radio that the hopes of solving personal problems, pertaining to the realm of the family and the community, resided. One of the examples known, presented by Bruce Lenthall, in the book *Radio's América – The Great Depression and the Rise of Modern Mass Culture*, happened in the creation of a relationship triangle between sponsor, listener (who, in this case, was a child) and the programme. Janet, such was the child's name, was confined to a sanatorium. Her father had given up smoking to save money to be able to afford a Christmas visit to his sick child. Janet's wish to give her father a Christmas present was enormous and, in particular, to give him a tin of tobacco. For lack of other solutions, Janet resorted to radio, namely, to a quiz show sponsored by her father's favourite brand of tobacco, *Kentucky Club*. With a letter sent to the programme, Janet managed to get the attention, not only of the programme, but also of the sponsor, who sent her a large tin of tobacco for Janet to give her father.

This situation, which is surely similar to other cases, illustrates the relationship with listeners that the first years of radio brought about, as well as the construction of ethereal communities around the sound produced by radio. America, as embryo and as privileged space of some events pertaining to radio history, is, in this radio/listener relationship, an

2. This is still the case today with a greater emphasis to be provided by television and, in the past few years, by the internet.

important place for the study of the notion of audience formation, as it is the space of a social setting associated with the rise of this medium.

Janet's story clearly illustrates the relationship that developed between a public sphere created by the medium radio, optimised by the fact that is based on a broadcasting model, and the private sphere. A relationship of mutual influence and with various aspects capable of offering solidity to that relation, "listening to the radio was an act of negotiating between the power of the mass medium and one's own interests" (Lenthall, 2007: 64). In other words, the use of a sphere to the influence, or benefit, of another: [on Janet's story] "When she could not manage on her own, when her local and personal community proved inadequate, she reached for an ethereal connection. Through radio she found ways to personalize a vast, anonymous world. She heard a human voice attached to a large commercial company – and believed it might hear her. The broadcaster who spoke to millions felt like an intimate friend, someone she might trust – perhaps like someone who might help her find a measure of control in her own life" (Lenthall, 2007: 54). The final part of this quote is intriguing because, through the story told there, there is the possibility of entering what we might call an intimacy created in the vastness of broadcast. Although traditional radio broadcast is from one to many, and therefore gives rise to a vast audience, the listener feels the message as being exclusive to him/herself. In this context, it is fed by the relation between a public side and a private side which strengthens a relationship between the listener and the medium. This is one more way of understanding the relationship between the public sphere created by radio and the private sphere of each listener.

The historic fact that was the entry of a stranger's voice, through radio, in the space of privacy and intimacy (the house, the room, the business premise, and later the car) implies the immersion of sound in the public space. Radio was the first medium to make spaces and times hybrid, uniting public and private, as well as present and past. It was on this relation that the constitution of an audience in the 1920s and 1930s was based. A considerably rich relationship, where new relations were formed which were similar to the regular relations we build and rebuild every day.

Through the radio networks that were formed in the United States, Americans were able to understand and interact within a new mass culture, bringing into their private sphere the benefits found there. When they could not find answers, it was to the radio they turned as if that mass culture which emerged through broadcast might be an inspiring beacon of life in the private sphere. The radio brought the world to those who listened to it.

We all know that the model created for the radio and other media is centralising. The economist William Orton, together with other intellectuals, even questioned whether there was still space for the individual: "...Right that radio was a crucial source of that culture" (Lenthall, 2007: 55). This and other critical visions went as far as laying their thoughts around culture as mass phenomenon. Indeed, radio, it is true, carries a message which is

heard by many and which, therefore, is located in a space of centrality, capable of giving rise to a standardisation of culture, a standardisation of thinking, in a sort of globalization of times. Yet, even so, there is a space where the message is the target of a negotiation or of mediation. It is the space where the listener has the chance to participate and shape a kind of deal between collectivism and centrality with the private side. This was strongly felt in the 1930s, with the listeners' active participation in a relation with the radio of true activity. Listeners displayed an ability to draw to their benefit what they listened to. There is, in fact, a centralising and collective space that is associated with the radio's broadcasting nature, but also through interaction listeners attempted to take from that collective side something that would benefit their private sphere: "Popular listeners did not dictate the shape of radio or its programs, but within the bounds of the centrally controlled form, those listeners discovered some room to use radio in ways that helped them to count in modern society" (Lenthall, 2007: 55). It is thus that in the 1930s each listener pinned in the radio their hopes that it might reflect a general model.

One of the ways of understanding this relationship between listeners and radio involves understanding the relation created with the voices and characters of radio.[3] This relation is fed by the listener's ability to create a specific personality for that voice. It is based on the qualities of sound and on the voice where a physiognomy, a spectre or a phantasmatic image always arises.

In these created relations, one tries to consolidate the characteristics of relations held in the private sphere. Even where there is no physical knowledge, the listener felt this relationship as true *friendship*. When we stated above that it was to radio one turned to obtain information, it is clear that we were talking of radio voices. It was these figures, in some cases characters playing a role, that listeners felt as friends and relatives, and in whom they placed complete trust. Something which still happens today.

Listeners' involvement with radio in this early stage must also make us reflect on a quite intriguing content phenomenon known as the *Radio Soap*.[4] As would later happen on television with soap operas, there was a strong involvement with the characters of these programmes who, to a certain extent, justified the high level of loyalty that listeners placed in their relation with these shows. It was with these characters that listeners lived daily, it was these characters that entered their homes and, in the development of their roles, exposed themselves to the audience. Indeed, listeners felt the relationship with these characters very closely, in a truly intimate way.

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3. A relationship studied by the psychologists Hadley Cantril and Gordon Allport.

4. This format é characterized by being a radio soap opera in several episodes and with listeners, mainly female, following the events in the lives of a set of characters. To consider the issues related to this type of programmes in more detail, see: Jim Cox, *Historical Dictionary of American Radio Soap Operas* (Scarecrow Press, 2005); *The Great Radio Soap Opera* (McFarland & Company, 1999) and John Dunning, *On the Air: The Encyclopaedia of Old-Time Radio* (Oxford University Press, 1998).

The characters of the radio soaps were more than characters in a fictional space. They were close to the listeners and the listeners lived and shared their joys, frustrations, annoyances and suffering with them. In a letter written to the leading character in one of these shows, at one point the listener declares that Mary Marlin is "so real to me" (Lenthall, 2007: 66). Once again, we can speak of that collective or public that belongs to all and is the product of the experience of listening to the same contents, albeit in a relation with the private side, since these characters worked as models brought from the public into the private arena.

This audience process was not passive. Quite the opposite, since it displayed a strong level of interaction. Besides, only with this interaction is it possible to understand the relation between the public and the private. The listener was required to have the ability to become part of the process: "Integrating radio into their lives meant interacting with the broadcasts they heard" (Lenthall, 2007: 62). An interaction was required which in the 1930s involved a series of activities capable of showing the practical side of this action, for instance, sending mail to the programmes[5], participating in contests, placing various requests, and in some rather unusual cases to the producers, making various information requests, purchasing sponsors' products, creating feelings of friendship with show hosts or programme characters.

It was also with the large radio chains that emerged in the first decades of the 20th century and created large audiences that radio began to be considered a medium capable of contributing to the construction of a national culture. Something in common, capable of creating an identity and influencing a collective personality. However, this creation is not linear since there are variables that are not always easy to control: common personality differences within a population, geographic issues, regional unity features, urban vs. rural, etc. The idea of community gradually forms by the relation created between the listener and the medium, and by the ability of large networks to supply the same contents to large audiences.

The feelings lived through radio and all we have mentioned as support of a relation between listener and medium, with special emphasis in a relational balance between the public and the private spheres, lead us to the notion of new community formation. The idea of a sharing, of a similarity of ties, results in the constitution of a community which is created and evolves through the relation established with radio.

These relations are the product of ether. They are *ethereal* relations, just like the communities that emerge around the medium radio. A great deal of what happens in the community, in the radio collective, is introduced in the relations belonging to the private sphere.

5. Writing letters to show hosts was very much in fashion. On this topic, see Bruce Lenthall in the work *Radio's América – The Great Depression and the Rise of Modern Mass Culture*, p.62.

For example, the possibility of listened contents becoming the topic of conversation in the private sphere: "...communities of listeners grew up in private settings" (Lenthall, 2007: 77). News, contests and other programmes foster conversation within personal relationships.

Another aspect of the formation of the notion of community lies in the fact that the experience of listening to radio in the 1930s took place in a group, for instance in the family or at the club.[6] The radio was even conceived as an element capable of providing pleasure and unity to the family. The popular quiz shows were a source of entertainment and family togetherness. We emphasise the idea that the ever-present relation with the collective shaped and influenced the private sphere, in this case as catalyst of face-to-face relationships.

It is clear that this sense of community and the relations created within the listener-medium scope could not achieve the same depth that relations consummated within a space, which for lack of a better word we shall call «traditional»: "But equally certainly, the imagined interactions of listening and occasional letter writing could not provide the same level of personal exchange and potential support that face-to-face relationships might: radio permitted only a moderate degree of social participation" (Lenthall, 2007: 79).

Felt in the 1930s was the ability possessed by radio, as later became apparent with other media, of creating a space for sharing ideas. A collective *arena* which opens new horizons for those who listen to it, and which has the ability to exert a strong influence in each listener's private sphere.

Much of the influencing capacity of radio can be detected here, as well as the way how a true relationship is forged between the medium and those who listen to it. It can also be partly detected what nobody can really explain well and which is the magic of radio. The ability to penetrate in the core of the private sphere, which is the basis of all sounds.

In this game of influence between the public and the private, there were/there are those who assert the possibility of instilling the private side into the public: "By using radio to personalize the public world that touched their lives they felt they could claim a measure of importance and control" (Lenthall, 2007: 80). This last quote is an example of that, by highlighting such terms as 'importance' as 'control'.[7]

The medium radio and its dissemination throughout the globe, be it the device or the contents, have fostered a notion of network distinct from the traditional one, and the emergence, before the new technologies did that, of a community where alteration through listening led to substantial changes in the very notion of subject and public. The space was being shaped by a culture of sharing, but also of the imaginary realm which lies in the phantasmatic spectre introduced by sound.

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6. This is an experience which was gradually lost throughout the history of radio. Nowadays, listening to the radio is much more a lonely act than a group act.

7. A possibility opens up here of reflecting on the notion of radio propaganda and the way this medium was used to spread political ideas and ideals, and how it became a medium at the service of dictatorships and other interests.

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"When it Comes, the Landscape Listens" – Listening as Place Through Binaural Sound

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ABSTRACT: In this paper I will argue that despite the numerous challenges it poses, anthropomorphism is a viable means by which to empathise with place without resorting to a wholly homocentric perception of it. Beginning with a discussion of the principal motivations for anthropomorphism and its aforementioned criticism, I will then make suggestions as to how binaural sound can enable a merging of self and place. Holly Owen and Kristina Pulejkova's film *Fram* (2015) is discussed as an example of an artwork that facilitates such a merging through its use of an anthropomorphised snow head to record the testaments of individuals living in areas most susceptible to climate change. The latter half of the paper discusses the practicalities of fostering placial empathy through binaural sound, making specific reference to my own project *If Walls Could Hear* (2014-) and the challenges it face by trying to give the city of Liverpool a pair of ears. It concludes by asserting that although the act of listening as place is difficult to facilitate, binaural sound possesses the capacity for us to listen *with* it.

KEYWORDS: binaural, anthropomorphism, art, place.

1. The 'more-than-human'

> When it comes the landscape listens, Shadows hold their breath.
> (Dickinson, 2016, 39)

Emily Dickinson's poem *There's a Certain Slant of Light* (1861) presents a dialectical relationship between place and our inner selves, culminating with a description of the landscape possessing the capacity to listen intently. Writing in first person plural, Dickinson troubles the romantic gaze of the individual self in relation to landscape, gesturing instead towards a sense of merging of them that manifests just before it tragically ends. It reflects the aim of this paper, in which I will argue that despite the numerous challenges it poses, anthropomorphism is a viable means for artists to encourage empathy with place. Binaural sound in particular possesses the capacity to sidestep some of the homocentric trappings of anthropomorphism by affecting a sense of merging between self and place that is 'more-than-human' (Woynarski 2015, 24).

Beginning with a discussion of some of the principal motivations for anthropomorphism and its aforementioned criticism, I will cite some of the artists and performance makers who defend its utilisation. This recognition of the human will then lead to an examination of binaural sound recording and its ability to map the sonic imprint or 'spectral watermark' of a recordist onto a listener (Barnard 2010, 39). The latter half of the paper discusses the practicalities of fostering placial empathy through this recording technology and its use by non-human recordists. Specific reference is made to Holly Owen and Kristina Pulejkova's film *Fram* (2015) and my own project *If Walls Could Here* (2014-)[1]. The paper concludes by asserting that although the act of listening as place is difficult to facilitate, binaural sound possesses the capacity for us to listen through it.

Anthropomorphic observation broadly concerns our ability to infer human qualities in the nonhuman. Animals, spiritual deities and even technologies continue to be ascribed human characteristics whether fleetingly or enduringly. According to an often cited survey of the field conducted by Nicholas Epley, Adam Waytz and John T. Cacioppo (2007), our ability to anthropomorphise begins primarily during childhood as a desire to understand the world around us. The motivation for this is initially egocentric (in which we look for the characteristics that remind us of ourselves), but eventually becomes more homocentric (as we accrue knowledge of and experiences with other human beings). As adults, instances that prompt us to lapse into anthropomorphisms occur when our immediate environment does something out of the ordinary and we try to reason with it as if it were a human being (ibid 873). Crucially though, our tendency to anthropomorphise increases when we feel

1. www.ifwallscouldhear.wordpress.com

we lack the capacity to socially connect with others of our own species, prompting us to humanise nonhuman alternatives (ibid 866). As will be discussed later, this need for human interaction could be one of the principal triggers for the utilisation of anthropomorphism in art works that seek to draw attention to ecological threats.

Anthropomorphism's inherent emphasis on subjectivity has invariably courted major criticism, particularly within animal behaviour studies. Georgette Leah Burns (2014), a scholar of Wildlife and Habitat Management, presents an informed discussion of the varying merits and limitations of anthropomorphism with specific reference to the study of animals. Burns suggests that whilst it allows humans to perceive access to the thoughts and feelings of the non-human, these are obviously only interpreted from a human perspective (7).

This argument is a common one, demonstrating how anthropomorphism runs the risk of becoming selective empathy, in which we choose to identify only with the perceived human qualities of a non-human agent.

However, in recent years a growing defence is mounting for a more considered usage of anthropomorphism, particularly in the wake of anthropogenic climate change. In *Vibrant Matter: A political ecology of things* (2010), Jane Bennett, chiming with philosopher Bruno Latour, argues that maybe 'it is worth running the risks associated with anthropomorphising [...] because it oddly enough, works against anthropocentrism' (cited in Woynarski 2015, 28). Bennett describes this relationship between human and non-human as a 'cord' which has the potential to dissolve the binary. This leads to a recognition of what ecodramaturg and performance maker Lisa Woynarski refers to as the 'more-than-human' (2015, 24) – a term borrowed from David Abram's *The Spell of the Sensuous* (1997). What is particularly affecting about a 'more-than-human' perspective is that it does not prioritise our species over landscape nor does it delineate between them. Establishing this though is difficult due to the series of tensions between humanity and the landscape as observed by cultural geographer John Wylie (2009, 278). Yet Wylie, echoing the same paradox recognised by Bennett, describes an overcoming of this divide, which can lead to 'a sort of sublimely de-personalising tuning-into or becoming-with: phenomenal coincidence of self and landscape' (2009, 278). This would seem to suggest that the aforementioned perceived merging of self and place is one based on a chance synchronisation, in which the former momentarily overlooks themselves in a bid to 'become-with'.

Wylie is conscious of the emphasis on 'looking' within landscape studies, and this has been reflected also in the work of many artists interested in global ecological issues. Malcolm Miles (2010) argues that the emphasis on image in some art works can undercut their own intention by creating a 'gap between consumption of the spectacle and the step to personal action' by their audience (31). Rather than creating a merging of the two, such works 'capture' their audience, in which, for example, 'disintegrating ice becomes as beautiful as suffering in Renaissance paintings of martyrdom' (ibid, 32). The natural is framed as spectacle, and

Miles argues that art must go beyond the depictions of nature in mass media and change the conditions in which it is produced (ibid, 24).

One alternative form of production lies in the expanding field of ecomusicology, which 'focuses on the ways in which music and sound can reflect, confront and affect ecological issues' (Pezanoski-Browne 2015, 9). In "The Tragic Art of Eco-Sound" (2015) Alison Pezanoski-Browne discusses Jana Winderen's *Silencing of the Reefs*, which draws attention to the hidden sounds of this underwater environment which are 'usually imperceptible to human hearing' (11). For Pezanoski-Browne, Winderen 'adopts a decidedly non-human-centric perspective' which 'allows listeners to perceive tragic environmental loss from the imagined vantage point of sea creatures' (ibid 12). The selection and editing of the subsequent recordings evidences that the 'human perspective' Leigh Burns refers to will always be present. However, it is Winderen's capturing of the invisible, of something impossible for humans to hear and experience without these recording technologies that invariably dehumanises them. The emphasis in these recordings is not so much on how Winderen interprets this landscape but on how our own landscape can be interpreted from a non-human perspective. It is this 'imagined vantage point' that I will now address with specific reference to binaural sound.

2. Intimate Distance

Binaural sound enables a listener wearing headphones to be seemingly surrounded by the echoes of a recorded place from the past. Two microphones housed within the ears of a human or artificial head essentially humanise the sound, by offering 'the listener the perspective of the performing artist, rather than the perspective of a detached audience or observer' (Simpson 2017). The distance between these two microphones is particularly important, duplicating the interaural time difference (ITD) between our ears that enables us to locate ourselves in a place. However, it is not just the distance between our ears that helps humanise such a recording. Our 'external ear, the pinna,' contains distinct contours whose topography acts as a 'spatial filter that changes the frequency content of sound depending on direction' (Blesser and Salter 2009, 188). According to Barry Blesser and Linda-Ruth Salter (2009), it is the pinna that helps the listener to determine the orientation of sound in the median plane – 'front, above, behind, or below' (188). The differences between pinna sizes in the human population are quite noticeably large, meaning that replacing the ears of the recordist with an artificial pair can still create 'significant auditory errors' (ibid, 188). As will be discussed later with reference to my own ongoing project, such discrepancies are useful in cultivating a more-than-human perspective as it acknowledges just enough of the non-humanness of the recordist.

Matthew Barnard (2010) refers to this unique imprint that the recordist makes on a binaural recording as a 'spectral watermark' (39), implying that in addition to establishing

a sonic map of a place, binaural sound also presents a map of the recordist. In binaural recordings, the spectral watermark of the recordist acts as the foundation for the listener's construction of what educator and artist Peter Salvatore Petralia labels 'headspace' (2010, 97). It is a term in common usage, but here denotes the internalised architecture built by immersive audio performances which 'subvert physical space' (ibid, 97). Petralia insists that headspace is 'not merely imagination [...] but the kind of sight we have with our eyes closed' when the world bleeds in and mingles with an internalised sense of space (ibid, 97). In the same way we can infer unobservable human characteristics in the nonhuman, binaural recordings can enable us to perceive structures and spaces that hang only on a sound.

The two different places (the recorded and the present) have the capacity to coexist relatively comfortably, depending upon their degree of perceived temporal or geographic synchronicity. Dallas Simpson (2017), who has extensive experience as a binaural sound artist, suggests that the listener adopts either a detached or attached perception to such works depending on their attitude. I would argue that these respective perceptions are not fixed for the listener and that they oscillate between them. This 'attitude' of the listener that Simpson refers to echoes the sense of chance synchronicity discussed earlier in relation to the 'becoming-with' of human and landscape expressed by Wylie. The sense of immersion afforded by binaural recordings creates an attached perception, but the often inability of the listener to match what is heard with what is seen is what detaches them. Invariably then, the listening experience is not dominated by either of these two perceptions, and Simpson (2017) himself acknowledges that, through his work, he is 'striving to establish a complete artform'. It is in this incompleteness and the pleasing ambiguity garnered by binaural technologies that have made them a popular medium for artists, driven by 'romantic ideas about the intimacy of the individual and senses of place' (Emam 2013, 2).

A notable example of this with regards to fostering empathy with place is Holly Owen and Kristina Pulejkova's film *Fram*[2] (2015), which is the first in a series of films entitled *Switching Heads – Sound Mapping the [...]*. It was prompted by the artists' desire to 'go to the artic before it melts' and bring back the sounds and sights of it to an urban audience (Owen and Pulejkova 2017). In the making of this film, they documented the perspectives of various individuals who live in places most susceptible to climate change. These responses and conversations were 'heard' by a snow sculpture of a head with binaural microphones in its ears. Named 'Geoffrey', this recordist acted as a voyeur, confidant, silent spectator and archivist and was made from the snow of the landscape in which he was recording (Owen and Pulejkova 2017). By relocating the microphones to a non-human recordist, the artists invert Simpson's definition of binaural sound by presenting 'the perspective of a detached audience or observer' (2017). Consequently, listening through the ears of Geoffrey is quite

2. Norwegian for 'forward'. It is named after a ship which explored both the Arctic and Antarctic in the late 1800s.

an eerie experience when juxtaposed with the film, as you try to ascertain the anthropomorphic hooks to humanise him whilst conscious of the inherent fragility within such a shared headspace. The anthropomorphic process is constantly suspended because one cannot ignore the slow melting away of Geoffrey's spectral watermark.

Owen reveals that the erosion of the recordist was intentional, as it draws attention to its own increasingly finite existence and subsequently that of landscape in which it has been sculpted from (ibid). 'It's got this whole narrative of its own' (ibid) and with the binaural microphones in its ears this implicitly becomes the overarching 'narrative' underpinning all of the recordings it captures. At instances the global intersects with the local, in which some of the interviewees speak directly into the ears of Geoffrey and 'breath the life into it' (ibid). The nature of this anthropomorphism is affected through wry humour and a sense of irony, in which Geoffrey is playfully provoked into responding. For the listener, our inability to respond through Geoffrey highlights the landscape's own powerlessness to engage within the debate to decide its own future.

Owen and Pulejkova (2017) state that 'one can find empathy for a place, but only if it is anthropomorphised. We need to have our human point of view in order to empathise with something'. This resonates with the recent granting of human rights to a river in New Zealand. Aside from it symbol as an ancestor to the local Maori tribe, lead negotiator Gerrard Albert argues that

> treating the river as a living entity is the correct way to approach it, as an indivisible whole, instead of the traditional model for the last 100 years of treating it from a perspective of ownership and management. (2017 cited in Ainge Roy)

In *Fram*, 'the human point of view' was the stories of the people they spoke to, aided by the intentionally humorous anthropomorphising of their snow sculpture. But it is also the short-lived life of Geoffrey himself which brings the global threat of climate change and a need to counter the 'empathy-exterminating mind-set' of its deniers to the forefront (Klein 2014, 48). In *Fram*, Geoffrey literally melts away the binary between human and non-human, becoming an 'indivisible whole' himself.

The ability of humans to empathise with place has been critiqued in Paul Bloom's recent book *Against Empathy: The Case for Rational Compassion* (2017). Within it Bloom argues that empathy paradoxically encourages indifference towards anthropogenic climate change, in which citizens are swept away by the individual isolated stories made close to us as opposed to the larger future story of the planet, which exists often as a series of projected statistics and data sets. What is particularly effective about the *Switching Heads* series is that the binaural technologies 'capture' the listener, but it is the presence of Geoffrey as recordist who ensures that they are not swept away by these stories but instead bear witness to them.

Owen and Pulejkova hope that it is the immersive quality of the sound recording that 'will hopefully create empathy' and prompt people to 'start raising the issues around global warming and climate change' (2017). In a bid to do so, the work has been presented at events that engage with climate change, such as Time to Act (2015) in Brighton and the ArtCOP21 (2015) festival in Paris. This latter event occurred in response to the United Nations Climate Change Conference which also took place in Paris at that time, with over 550 different events seeking to signal to delegates that 'climate is culture' (Artcop21, 2017). During this event, Owen and Pulejkova took to the streets dressed in their artic clothing, with *Fram* on a small screen on the back of one of their rucksacks and two pairs of headphones hanging either side. Although such a viewing setup was 'quite unique', the work attracted a lot of audience who watched the film in its entirety (Owen, 2015). In the artists' online account of the project at that time, Owen queried to what extent audiences are actually making a connection between the icebergs in the film with 'our endangered polar landscape' (2015). It is a valid question and echoes an observation made by Alison Pezanoski-Browne (2015) in relation to ecomusiciological works risking style over substance through a "greenwashing" of their audience (9). However, responses to *Fram* have been 'overwhelmingly positive', suggesting that audiences have largely understood the film's function as an archive of 'a moment within the evolution of climate change' (Owen and Pulejkova, 2017).

3. *If Walls Could Hear*

In a similar vein to Owen and Pulejkova, my own practice has also sought to engage with place through binauaral sound. *If Walls Could Hear* (2014-) began with quite a simple and naive premise: listening to what place hears. Initially, this concerned merely affixing a pair of Roland CS 10EM binaural microphones to different objects, and trying to detect their spectral watermark in a bid to achieve a shared headspace. It has its roots in works such as Bruce Nauman's *Amplified Tree Piece* (1969) and *Untitled Piece* (1970), which respectively brought the sounds of the inside of a tree and a mile into the earth's surface into the gallery space. Akin to *Fram*, *If Walls Could Hear* is concerned with placing the listener in a location sonically that they could never occupy physically.

Figure 1. Lamp post on the Christmas Steps, Bristol (2014).

Since its beginnings, I have collaborated with a range of nonhuman recordists including: a lamp post in Bristol (Figure 1), a wind turbine in Wales, a tree in Liverpool and a rocking horse in Brazil. The quality of these early recordings revealed the difficulties of trying to capture the headspace of a nonhuman, the omnidirectionality of the microphones and the absense of an outer ear, made it difficult to locate oneself within the soundscape. The 'ears' themselves felt decoupled from each other and lacked the appropriate degree of humanness to gesture towards something that bordered on the anthropomorphic. As a means to try and strike a balance, synthetic ears were introduced to the microphones, which immediately humanised the sounds heard. This modification highlights the challenges of affecting the aforementioned necessary tension between self and place which can determine the more-than-human perspective for the listener.

The most ambitious iteration of the project was to attach a pair of ears to a whole city. Working with colleagues and students from the Department of Drama, Dance and Performance Studies at Liverpool Hope University, we attempted to capture what Liverpool heard. Since its founding in the late 12th century, the city has accrued a rich history and culture that has been at the centre of world trade and industry. Each of its thirty wards has a distinct character and through its recent process of regeneration, different histories intertwine. Its distinct sound, 'Merseybeat' or 'Liverpool Sound' was purveyed by the music of The Beatles amongst others and represented 'the first time in the history of British popular music when a sound and a city were bracketed together in this way' (Inglis 2010, 11). Conscious that such a diverse and richly textured history could not be fully expressed in my recording, I

instead opted to create a platform for a host of possible Liverpools to be 'bracketed together' between these two ears. With a spectral watermark of 111.8 km², such a large distance invariably presents a challenge for a listener who has to marry together two often very different soundscapes, particularly if they are being recorded 11 miles away from each other. It charges the listener with essentially an impossible task, of building a headspace large enough to accommodate an entire city of roughly 478,000 people.

Divided into two groups, we each took an ear to one of the edges of Liverpool. The right ear (Figure 2) was located at the tip of Fazakerley, site of the Royal Ordnance Factory which produced munitions for the Second World War (Tullock 2011). Located within this specific spot is one of the main roads into Liverpool, running almost parallel with the railway line. It is a place of speed, humming with the noise of traffic, replete with retail parks and winding neighbourhoods of small semi-detached redbrick houses.

The left ear (Figure 3) was positioned at the edge of Speke-Garston, a settlement older than Liverpool which eventually became absorbed by it to become a crucial site for shipping and docks (ibid 2011). Here at the southernmost point of the city, not far from the airport, the atmosphere is a more relaxed one of marshland and dog walkers. Birdsong is the primary sound, peppered with the occasional drone of a landing aircraft.

Figure 2. Right Ear (2017).

Figure 3. Left Ear (2017).

For the first time in the project, I decided to incorporate mobility into the recordings by having the ears mounted on a portable staff to be held by each of the two recordists. This was decided upon principally to reflect the enormous sense of scale of the recording, but

also to counter this with the 'human point of view' of the sounds of footsteps. As already mentioned, the tensions between human and non-human have to be readily established for the listener to dissolve them through anthropomorphism and hopefully occupy that of the more-than-human. My recordings of Liverpool sought to echo artist Janet Cardiff's own utilisation of binaural sound as a means 'to breathe and walk in synch with the virtual body', but this 'body' was that of the city itself (Christov-Bakargiev cited in Bussman 2007, 84).

Not surprisingly, once the two recordings were aligned with each other the ensuing soundscape illustrates a marked difference between the right and left ear. It begins with a brief dialogue between North Ear recordist Silvia Battista and myself in the South, conversing as if just a few feet away from each. The reason this was left in the final recording was to establish, at least initially, a recognisable headspace for the listener. Upon completion of the conversation, the two ears begin to walk, allowing this headspace to expand and dehumanise into an 'imagined vantage point'. There is no concrete sense of completeness in the ensuing soundscape, but significantly there is not the sense of discordance one would expect. This evidences the effectiveness of the binaural microphones and the synthetic ears, but also our brain's ability to seek correlation between the sounds our ears hear. Unfortunately in the final recording this effect is largely disrupted by the mobility of the ears themselves, which, rather than acting as a means to humanise the sound, at instances draw attention to the artifice of the recording setup. Consequently, it often masked the sounds of the footsteps and the landscape, revealing how tenuous the connection between the ears actually was.

4. Listening through Place

If one of the principle triggers for anthropomorphism lies in our inability to connect with others of our own species, its utilisation by artists engaged with ecological issues is very telling. In Dickinson's poem, the sense of imminent calamity occurs with the landscape developing human-like qualities, almost in a final attempt to reason with humanity in a homocentric manner. The continued resistance by some to acknowledge anthropogenic climate change has led to a quashing of placial empathy and paucity for anthropomorphism.

The initial aim of *If Walls Could Hear* was naïve but what it has led to is an interrogation of the trappings of anthropomorphism and the selectivity of empathy. This requires a human presence to provide a degree of familiarity in order for the listener to anthropomorphise, but this needs to be tempered by a sensitive monitoring of the weight of such a presence to avoid the trappings of anthropocentrism and the over-empathising that Paul Bloom discusses. To hear as a city or as a head of snow is of course an impossible task, but it is our *attempt* to do so that could allow the more-than-human to occur through a perceived merging of them. Such a merging between self and place is possible, but it is only as structurally sound as the headspace envisaged by the listener. It requires not only anthropomorphism of place but in

essence a placialisation of the self, necessitating this 'tuning-into' of landscape and body to make them both an 'indivisible' whole. Yet this process of 'tuning' is never fully realised, with the aforementioned ambiguities of binaural recordings allowing for constant slippages between the binaries of past/future, body/place and local/global. It is this suspended listening experience that can make seemingly distant global ecological issues intimate encounters. Given the challenges it presents to the listener, I am not sure that *If Walls Could Hear* has yet managed to successfully facilitate a perceived sense of listening with place, but at the very least it does offers a means to listen through it.

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Listening Bodies – Tact, Pain and Urban Accessibility

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ABSTRACT: This paper examines characteristics from the dimensions of touch and discomfort or pain (nociception) that the sonic ambiance produces in our bodies when we navigate the spaces we inhabit. Based on an ongoing research investigating alternative conceptions to urban accessibility and diversely functional bodies, we argue for the inclusion of the tactile and discomfort aspects of sound as actors shaping the experience of our everyday spaces. We bring the focus on the physical perception of the sonic ambiance, from tact to transduction, listening through the body and its vibration. We investigate how this full body tactile experience, that at times and for some individuals can be an unpleasant experience, may unlock another perception on urban accessibility that goes beyond basic safeguarding measures. Using an ethnographic approach, we examine the relationship that deaf-blind and blind or partially sighted people establish with the ambiance in everyday life and the role the sonic ambiance adopts when they navigate the space in the city (both in terms of route and rhythm). We argue the tactile and pain dimensions of sound are an important element in the making of place for blind and deaf-blind individuals. They intervene on aspects of their spatial orientation but also of their connection to their emotions in and towards the space they navigate, deeply shaping their relationship to the city they inhabit and thus their making of place.

This paper presents the initial diagnostic of two collectives on aspects of the layout of accessible spaces in Barcelona, their actual use or 'misuse' by individuals in these two collectives, reflecting on the sonic ambiance and the practice of listening, even when being deaf-blind. We conclude by highlighting the importance of rethinking listening as a tactile, emotional and, at times (both in terms of nosiception but emotionally), painful practice.

KEYWORDS: sonic ambiance, pain, nociception, touch, embodiment, ensoundment, accessibility, disability.

1. Introduction

The sonic ambiance we live within is constantly morphing, echoing the changes of a rapidly changing environment. It is always on and while we may not notice it, we are constantly exposed both to the sound and the vibrations that traverse our bodies even while asleep (Schwartz 2003; Ingold 2007). This sonic ambience may not be always pleasant, and for diversely functional people it can be perceived with more intensity and, as such, have a worse overall impact . We approach listening from a full body experience where the sound is heard through the ears, but also through the whole body. In this immersive body experience, we listen to sound while being in sound; we are ensounded (Ingold 2007) Moreover, the sonic ambiance is tactile and through this sense can connect to people's feelings and sensations, the body ensounded goes beyond the listening practice we engage in with our ears, it conjures the whole body, making it vibrate and make sense of the sound through the skin (Nancy 2002, Horowitz 2013). However, what happens when this bodily inception is a cause of discomfort or becomes a nuisance to urban navigation?

In this article we bring the focus on the physical perception of the sonic ambiance, from tact to transduction, listening through the body and its vibration (Helmreich 2010; Rodaway 1994; Smart 2007). We investigate how this full body tactile experience can, at times and for some individuals, be an unpleasant experience or overwhelming (Drever 2015). In addition we analyse a perspective that may unlock another perception on urban accessibility that goes beyond basic safeguarding measures. It also questions the ways we think about sound, from design to implementation, notably when it comes to sounds that are utilitarian (like alarms, or car signaling sounds).

It presents the initial diagnostic of two collectives (blind and deaf-blind individuals) on aspects of the layout of accessible spaces in Barcelona, reflecting on the sonic ambiance and the practice of listening, even when being deaf-blind. This diagnostic counterpoises the dimensions of usefulness of sound and that of its tactility and aesthetic perspective. We conclude by highlighting the importance of rethinking listening as a tactile, emotional and, at times (both in terms of nociception but emotionally), painful practice.

2. Methods

Our case study is in Barcelona, where we work with two local associations for diversely functional individuals, Apsocecat and B1B2B3. The former is an association for deaf-blind people in Sants and the latter is for blind and visually impaired people in Les Corts. B1B2B3 caters for all people that have visual impairments, irrespective of the degree of the impairment. This is relevant since the main Spanish association for visually impaired people only attends individuals with a 1/10 sight, legally blinds. It also means that many users in B1B2B3

still have a residual sight that, for some, enables them to navigate without any visual identification of having a visual impairment (no stick or 'low vision' badge).

Although the two associations cater for the whole of Catalunya. they are mainly rooted in their respective neighborhoods.

We have been conducting research with these two associations for the last three years (since 2013). Fieldwork consisted of an ethnographic approach inspired by mobile methods (Buscher & Urry 2009) combining non systematic observations, in depth interviews with users of the associations and their technical staff together with participant observation, focused on the examination and analysis of situated practices and knowledge enabling urban spatial navigation non visually (Haraway 1998). The documentation and observation of said practices has been video recorded. Upon analysing the recordings we have been able to identify and isolate a cluster of urban orientation practices and explore their articulation, mediation and translation in the urban environment's experience between its different elements (like sounds or tactile pavements) and specific urban interventions (Callon, 1987; Latour, 1999; Sánchez Criado & Cereceda Otárola, 2016). In addition we have gathered empirical data around the sensorial experiences and everyday life situations that affect visually impaired and deaf blind individuals' corporeality.

3. Results

In our preliminary analysis we have identified three major discourses around notions of pain, tact and sound in blind or visually impaired individuals and one major discourse for deaf-blind individuals.

Firstly, we saw there are two sides to understanding sound as a guide. Some participants identified sound as an orientation tool when navigating the city. Participant 1 is a middle aged man, totally blind living in the Eixample neighborhood in Barcelona. The Eixample is an area organised in a grid-like fashion, having every other (horizontal) street head towards the Sea (East) and the other towards the mountain (West) and every other (vertical) street head towards the Llobregat river (South)[1] and the other towards the Besós (North). Therefore Participant 1 knows that if the cars head towards the sea he is in Urgell and if they head towards the mountain he is in Villaroel. Participant 1 spends a few moments listening to the direction of the traffic to orient himself in the Eixample. In this sense the sound, although not a welcome sound (as Participant 1 says, the sound of the cars is sometimes too much), is a guiding sound without needing any extra information or adaptation given for blind or visually impaired people.

1. In Barcelona we orient ourselves with the references that are at the limits of the city Sea (east), Mountain (west), Besós (north east) and Llobregat (South west) instead of North, South, East and West. Some maps actually place the city as if the Sea was South when it actually is East to facilitate this references.

Participant 2 is a deaf-blind individual with a cochlear implant that enables him to hear. He lives in Zona Franca and his perspective on sound as a guide is the opposite to Participant 1. Participant 2 is completely blind and has had hearing loss for many years, with a cochlear implant in one ear and a hearing aid in the other, his hearing is functional and we are able to have conversations without the help of a mediator. However, he is weary about using the soundscape to orient himself. Because he has been losing his hearing for a few years, he is not comfortable relying on the soundscape as an orientation, he states that it allows to know a general *geist* of what is going on but not to calculate distances and be able to travel safely in the city.

The second discourse revolves around the aesthetic and functional perceptions of sound. The participants talk about sound as a communicating aspect but also have an interest in how it communicates. In Barcelona traffic lights are equipped with an audio signaling capacity that can be activated through a small remote controller ("Comandament") that blind people can carry if they chose to, this is known as the ciberpass system (López y Nieves, 2000) Once activated, the traffic lights will emit a loud repetitive beeping sound to signal that the crossing has a green light for pedestrians, making sure that visually impaired and some hard of hearing (but not totally deaf) people will be able to hear it and cross safely.

Participant 1 comments on the audio signal chosen for traffic lights. The sound is repetitive, very loud and is quite high pitched. This is to ensure it is heard by a majority of people, including the people around the traffic lights and inside the cars. However, it also means that the sound can be bothersome. He would rather the sound was more natural and relaxing, like bird or natural sound. Participant 1 does not understand why the sound of the traffic lights has to be so obnoxious instead of adding a sonic aesthetic aspect to the city. For him this sound is very intrusive into the everyday life of the inhabitant of the city. It hurts his ears, even though he agrees about its usefulness. However, he perceives it as a sound that is so intrusive it becomes disruptive, not only aurally but also mentally, impacting on his perception of space. It hurts his ears, body and mind and makes him become irritated.

Last but not least we identified a discourse around the notion of sound and confusion and fear. Participant 3 is a visually impaired woman whose sight is deteriorating over time because of a degenerative disease. She has much more difficulty to see at nighttime than at daytime. She stated two situations in which the soundscape gave her a strong sensation of discomfort. Firstly when it is nighttime and she hears sounds in the street that she does not recognise, it makes her feel vulnerable and very unsettled. The urban soundscape brings a sensation of discomfort and dissonance with the environment that makes the participant feel fear because of the difficulty she has in deciphering the sounds, understanding their meaning and she turns around and leaves. In the same line, several participants talked about rainy days where the rain is pouring and impacts on the floor repetitively and loudly for an extended period of time. They talked about how the rain is a problem for them, its sound, soothing for many, is confusing for them as it masks the other city sounds and disengages

the participant with their aural connection. Rain sounds overpower all the rest, they muffle the city leaving a sound residue that is not enough for them to orientate themselves and makes them even more confused.

4. Discussion

Our results show that sound does have a tactile and painful potential, mostly experimented through discomfort (bodily or emotionally) and listening as a practice that encompasses all the body, from the flesh to senses to emotion. Understanding sound and listening in this sense, can function as a tool to re-frame how we conceive and implement accessibility in the city (Imrie 2001; Imrie 2012; Imrie & Luck 2014; Bates 2011; Bates 2014), particularly in smart cities.

Indeed, urban sounds are lived by participants with diverse functionality in several levels. There is an interjection towards the sound designers to question the sounds designed and their impact on the urban space but also towards the technology behind the sound. It is important to attend to the ways in which sound communicates in addition to the message it transmits. There is a question surrounding ciberpas to know whether this sound (of a similar intensity and pitch to emergency services vehicles though with a different cadency) was designed having in mind the sonic impact it would cause, the discomfort and sense of rejection that transpires from our preliminary diagnostic. There is a question around the acoustics of said sounds (Suchman,2012), the meanings they acquire in aspects that touch the collective of diversely functional individuals, like accessibility; special attention is brought to whether these meanings coincide with the original ones the designers determined at inception.

Through listening the user configures the meanings of sounds (Berrens 2015; Berrens & Calvet-Mir 2016) and they morph both their conception of space and the city layout. Thus visually impaired and deaf blind individuals reconfigure sounds, making the identification and composition of sonic urban objects an accessibility practice which produces aural spaces, sonotopias (García 2005). These make the design and materiality of urban sounds a relevant matter for diversely functional collectives (Callon & Rabeharisoa, 2008; Latour, 2004; Stengers, 2015).

The sonotopias (García 2006) unveil a different perspective on the urban, highlighting the materiality and design of the sounds themselves; attending to them can unlock a possible dialogue with the city in order to rethink notions of accessibility for diversely functional individuals that have the corporeal experience of the urban user at its heart.

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Soundwalking – A Creative and Meditative Art Practice Used to Foster a Sense of Stewardship for Local Waterways

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ABSTRACT: Citizens and tourists enjoy the beauty of fresh water resources, but when these bodies of water become endangered through the effects of climate change or pollution, these areas become less desirable, and therefore it is important to consider ways to increase perceptions of stewardship to protect them. My research focuses on my art practice termed "soundwalking", a walk focused on listening to different features of a specific environment. Soundwalks that will be used in this research will be based on listening techniques, exercises, and methods of musical composition that were developed primarily through the study of acoustic ecology and Deep Listening. I connect these ideas with findings from fields like environmental psychology to argue that when we embody a certain area of the environment through a soundwalk, we can begin to understand its needs more. When we understand how we connect to our waterways we can become better caretakers of our waterways.

KEYWORDS: Soundwalks, acoustic ecology, Deep Listening, stewardship, meditation, waterways.

1. Introduction

There is often a sense of distance from broad environmental terms such as "climate change" or "water pollution" until there is a personal experience that connects us and our personal place: a drought that makes the grass yellow and crunchy in our favorite hiking spot, water conservation laws at home, having to use bottled water due to contaminated water, or beached sea creatures at our favorite seaside location. What is taking place between a person and their environment that forms a deeper connection that may encourage taking action? How do we strengthen our bond to the environment?

> Not till we are completely lost, or turned round, – for a man needs only to be turned round once with his eyes shut in this world to be lost, – do we appreciate the vastness and strangeness of Nature...Not till we are lost, in other words, not till we have lost the world, do we begin to find ourselves, and realize where we are and the infinite extent of our relations. (Thoreau 2004, 166)

My art practice of soundwalking is based on getting lost in a once familiar place even though one is being guided through the space. It is like spinning oneself around and then just prioritizing listening to the environment instead of focusing on the visual environment that we have grown accustomed to relying upon in navigating from point A to point B. This act of getting lost from what we are used to turns one inward, while connecting one more to the outward environment at the same time as other senses open up. Listening is 360 degrees, so we slow down to hear what is all around us instead of just what lies ahead, even with a headphone-based soundwalk. We are present in the world around us. Sound is vibration, and we feel our other senses engage more intensely, such as touch and smell, and it becomes easier to embody another being or a certain area. When we embody a certain area of the environment, we begin to understand its needs more. We can become better caretakers of our environment from developing a sense of stewardship.

"Soundwalking: A Creative and Meditative Art Practice Used to Foster a Sense of Stewardship for Local Waterways" is an examination of how soundwalking can be a creative catalyst for change that highlights the importance of stewardship in regards to our natural resources and more specifically to water. I am defining soundwalks as walks based on listening as a participatory artistic event for interactivity and listening to the sonic environment. I use the term "stewardship" to describe how human beings re-envision themselves and their place in the natural world as part of a larger integrated system. I am defining stewardship in the manner that Professor of Philosophy and Environmental Studies and Faculty Fellow for Sustainability at Gonzaga University, Brian Henning, describes it in his article, "Stewardship and the Roots of the Ecological Crisis". Henning states that nature

does not need fixing by a benevolent caretaker, but it has its own integral unity that if allowed to flourish, functions quite well. We are called to be stewards of ourselves, not of nature, so if we are to become good stewards it means to "devise ways of living that are in harmony with and respectful of the other beautiful forms of life on the planet." (Henning 2015, 49) We are currently at a moment of urgency to embrace this holistic definition of stewardship, especially in the United States, a country that has had recent plans to pull back its involvement with the global and legally binding Paris Agreement to reduce greenhouse gas emissions to limit global warming. As temperatures rise, our fresh water resources are affected.

In the last two years, I have created several projects that explore the importance of stewardship, and one project will be addressed in this paper. The *Troy Waterways Project* is an online resource that acts as a container for various stories and media experiences highlighting seven local waterways in Troy, NY. Included among the seven sites is the *Riverfront Park Soundwalk*, a site-specific, 20-minute artist audio tour of Troy, NY's waterways taking place along the Hudson River. From the feedback from participants of the *Riverfront Park Soundwalk*, I attempt to draw conclusions from these research questions: *How does the artistic practice of soundwalking create a sense of connection for individuals to their waterways? What is taking place that allows a sense of stewardship to develop, a sense of connectedness to nature?*

2. Listening

My art practice of soundwalking consists of encouraging participants to experience a once familiar place in a new context primarily through listening. According to composer, Pauline Oliveros, "Listening has very little definition compared to hearing. Though the two words are often used interchangeably, their meanings are different." (Oliveros 2005, xxii) "To hear is the physical means that enables perception. To listen is to give attention to what is perceived both acoustically and psychologically." (Oliveros 2005, xxii) Deep Listening is a practice by Oliveros that is about "learning to expand the perception of sounds to include the whole space/time continuum of sound–encountering the vastness and complexities as much as possible." (Oliveros 2005, xxiii) Though I originally developed my listening practice through the study of acoustic ecology[1], it is also through the meditative practice of Deep Listening that I am often inspired to listen more attentively to the environment around me to create my artistic practice of soundwalking. Listening to all sounds everywhere can build an awareness that can engender "stewardship". In my soundwalk practice, I provide an augmented consciousness of the environment, with stewardship implying a reaction to this deep listening and awareness of the conditions of one's surroundings.

1. Acoustic Ecology is an interdisciplinary field–founded by R. Murray Schafer, Hildegard Westerkamp and others at Simon Fraser University in the late 1960's–that studies the relationship, mediated through sound, between human beings and their environment.

3. Water

In "Untapping Watershed Mind" in *Thinking With Water*, writer and video artist, Dorothy Christian states that:

> When we allow our imagination to flow with the water, from its many perspectives we get a small glimpse into how profound a connector water is for all of us. It is a connecting force that defines some physical boundaries and some would say, defies all boundaries. We begin to see how each of us is related through water....some of the water that is in our bodies may have previously circulated in woolly mammoths millions of years ago, or swelled up in a plump, juicy salmonberry, or jostled around with fish in lakes and rivers, or been processed by our local sewage treatment plant. Water connects us to places, people, and creatures we have not seen, life that is far away from us, and life that came long before us. (Christian 2013, 240)

Water does not fit into the bright blue puddle boundaries of world maps so easily. Water is soil; water is sky. Water is us. It intermingles with everything. Yet, water crisis was the number one global risk based on impact to society (as a measure of devastation), as announced by the World Economic Forum in January 2015. (World Economic Forum 2015) The US is not without its water crises. Most recently Flint, Michigan, and St. Joseph, Louisiana, have been poisoning their inhabitants with lead in their drinking water. Their pipes that carry the drinking water are not safe, but the Safe Drinking Water Act, enacted back in 1986, required the Environmental Protection Agency to set standards for the concentration of lead in public pipes, with a push for "lead-free." (Roussi 2016). Close to home, there is Hoosick Falls, NY where there is water contamination from perfluorooctanoic acid (PFOA). "PFOA is a man-made chemical that is toxic and persistent in the environment. It is used as a surface-active agent and in a variety of products, such as fire-fighting foams, coating additives and cleaning products." (United States Environmental Protection Agency 2017) Also, large corporations are privatizing water that can cut off local cities from their water reserves. In 2015, during the record-setting California drought when residents were asked to cut back their water use, Nestlé was still drawing millions of gallons of water to bottle and sell from a creek under a permit that had expired 25 years before. (Mohan 2015) The Dakota Pipeline protest by water protectors has been in the news consistently throughout 2016.

While these water issues may seem far removed to many of us, we are always immersed in nature as we are a part of nature. Taking a soundwalk can remind one of this fact through an embodied listening experience. Environmental psychology studies have shown that we are biologically and evolutionary still connected to our non-concrete environments. One

study has shown that human beings from all different types of environments and cultures are still genetically programmed to strongly prefer to inhabit the lush green coverage of savannah settings, a setting that 70,000 years ago would have increased our likelihood for survival. (Falk and Balling 2010, 479–493) Exposure to even just scenes of nature produces a host of beneficial effects in humans such as better health to improved neighborhood relationships. (Kaplan, Rachel and Stephen 1989, 1–5) However, it is when we have no alternative that we can find solace in simulations. For instance, when a real window is available, a screen-based substitute has only a minor effect on us. (Kahn 2011, 46–48)

What seems to be prevalent in literature on our connection to water specifically is similar to finding a relationship with a human being: we must first love or heal ourselves as individuals before we can love and heal the water issue. Senior Scientist with Environmental Defense, Dr. Rod Fujita, states in his book, *Heal the Ocean: Solutions for Saving Our Seas*, "To heal the ocean, we must heal ourselves." (Fujita 2013, 198) In *Engaging with Climate Change: Psychoanalytic and Interdisciplinary Perspectives*, in Chapter 9 on the love of nature and on human nature, psychoanalyst Sally Weintrobe speaks of restoring what she sees as split internal landscapes, "Loving nature is an ordinary and natural part of human nature, and I argue that capitalist culture, particularly in its recent neoliberal global phase, actively seeks to erode our loving feelings and to persuade us that we are apart from, not part of nature." (Weintrobe 2013, 199) In his book, *Blue Mind*, marine biologist and conservationist Wallace J. Nichols traces our connections to water via scientific studies, real estate, economics, and simple pleasures and occupations of humans. He states that, "Each element is part of a vaster pattern, a pattern that connects and evolves by discernible principles. When we begin to see interconnection–a deeper relationship arises an institutional desire to protect what we love." (Nichols 2014, 204) I believe that soundwalks can help one slow down to experience the interconnections and feel as though one is part of a pattern of nature through an embodied listening experience. My hope is that this naturally then leads to a sense of wanting to protect what is a part of us.

I believe that the strength of my art practice is that I am using the same technology–the mobile phone and computer generated sounds–that easily grabs our attention on a daily basis and takes our attention away from the natural environment to use it as a window to connect one's attention more to the natural environment for one to experience the natural restorative effects that the natural setting has to offer. It is this restorative connection that may encourage more stewardship for the natural setting of waterways, and therefore a community may be more willing to protect their natural water supply instead of letting a large corporation privatize their water. During a soundwalk, a participant addresses a specific environmental issue at the site where it occurs, and while the experience can be enjoyable and educational, it can also promote an active imagination and critical thinking.

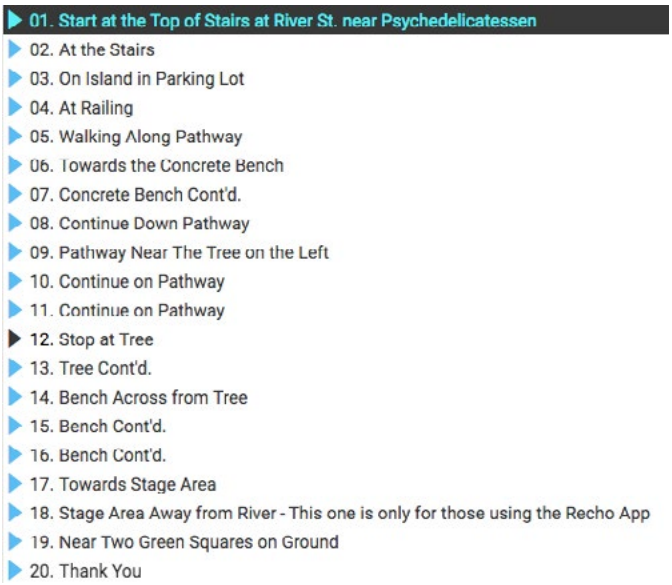
In my art practice, I am utilizing various technologies to create media art that creates an artistic frame for our waterways that allows participants to see the environment as if it was carefully framed in an art gallery, akin to a museum tour. We could be just as thoughtful and delicate about handling our polluted waterways as the care we imagine is put into the conservation of great master works of art in a museum. The archivist dons the white gloves to carefully handle the art piece so its lifespan continues for generations to come. Many American cities will spend millions of dollars to buy master art works, yet the same cities will let their rivers and drinking water remain polluted and undrinkable, perhaps not even safe for swimming or fishing. We copy and emulate our art, yet we take for granted our waterways. *What if we emulated and embodied our waterways through art, through soundwalks? What would this be like for participants?*

4. *Riverfront Park Soundwalk*

Troy, NY, a small city of around 50,000 people, is located about two and half hours north of New York City along the Hudson River. It was founded on its use of water with its origins as a Hudson River port and an early center of industry. Even though today Troy does not use the waterways in the same way, they provide a sense of place, and they clearly are a part of the community. From 2014–2015, I collected stories from Troy residents and water experts from Riverkeeper and the New York State Museum on local waterways along with creating experiences highlighting seven local waterways: the Hudson River at Riverfront Park; the Postenkill Falls; Spring Avenue natural spring; Ingalls Avenue boat launch; the Burden Waterwheel; the Piscawenkill, a small creek in North Troy; and the nearby Cohoes Falls of the Mohawk River that flows into the Hudson River. This project was created to get a better understanding of people's connection to water.

Figure 1. *Riverfront Park Soundwalk* map/flyer.

Riverfront Park Soundwalk is a site-specific, 20-minute artist audio tour of Troy's waterways located in downtown Troy. Participants use their mobile phones to access a map on my website with an option to play either a sequence of MP3 audio files, or participants can use the free Recho app to locate geocached sound files. The narrative of my voice guides them on a particular route with field recordings, musical elements, and interviews with the public and waterways experts that overlay the actual surroundings as they walk. If soundwalk participants use the Recho app, they also have the option of leaving their own 30-second story on their own connection to the Hudson River as part of the soundwalk.



In the *Riverfront Park Soundwalk*, truth and fiction are sometimes blurred by local mythology. Stories told by residents reveal the beliefs held by the community that shape their connection to the waterways through generations. One interviewee's family goes back many generations in Troy to when his relatives came over from the Netherlands and married into the Native American Indian Mohawk tribe. He described a common myth told by locals on how the Iroquois Nation, or Iroquois Confederacy, was formed.[2] I was unable to find a historical reference to this common story told by locals of Troy that involved a Native American Indian surviving a leap from Cohoes Falls. However, it played a significant role in how locals connect with the Hudson River so the story became part of the soundwalk. I leave it to the participants to dig deeper into the website later to find out more about the stories and history embedded in the soundwalk.

I conducted six formal and recorded interviews with locals and water experts, but also I conversed with locals whenever I could about Troy's waterways. What stood out most was

2. The Iroquois Confederacy, was a group of five (later six) related Indian tribes, who created the Iroquois constitution, properly termed the "Constitution of the Haudenosaunee Confederacy," to establish a common form of governance across a huge geographic area, bringing peace and prosperity to formerly warring tribes.
https://www.britannica.com/topic/Iroquois-Confederacy

that they wanted to be able to go swimming in the Hudson and also be able to go fishing and eat the fish. This is basically is how the Hudson was when the Native American Indians lived here centuries ago. And this is what some scientists and advocacy groups are working on for the next 15 years. It may become a reality. However, there seems to be a misunderstanding by locals that the river cleans itself. That is not true. I took all of these things into consideration when I was creating the soundwalk. I perpetuated some local storytelling myths while dispelling others that I feel go against the advocacy for clean swimmable and drinkable water in Troy.

The *Riverfront Park Soundwalk* is comprised of a walking route that was mapped out in advance to include points of interest to attract the walkers' aural attention and serve as an informal cue for them to listen to the sound features. As it's laid out quite linearly, I created a timeline of history along the waterway. I utilized various onsite markers such as murals, the river itself, and the new concrete stage area that seems to have a controversial history with locals of Troy as many trees were cut down to create the stage and to make the area more safe with well-lit open space. There was an overall disconnect that I felt between Troy and the Hudson River, and to add to it, the city of Troy did not plow the snow in the winter along the River. Therefore, for many months and all the way into April, there were no walkable pathways along the Hudson River. Also, after a round of feedback from participants, the City then closed the one of the two stairway entrances to Riverfront Park indefinitely, and I had to restructure the first ten minutes of my soundwalk to work with the open stairwell entrance. When that version was complete, the city added hidden fountains in the ground that turn on as one steps across them. This added a more playful element to the end of the soundwalk, yet one that needed to be addressed with participants before they were surprised.

In the soundwalk, silences are included for one to listen to, allowing one to feel past the headphones to the actual environment. The guided narrative is not to replicate radio or NPR with many filler sound effects, but to allow one to have a greater connection in a more meditative way to the surrounding environment. At the end of the soundwalk, participants are encouraged to remove the headphones and just listen to their surroundings. Also, participants have a way to upload their own soundwalks and stories about the waterways via the Recho app. In the summer, the weather was quite hot and humid, and some participants chose to run through the fountains at the end, embracing the full immersion in water, the theme of the soundwalk.

The *Riverfront Park Soundwalk* was launched at the Rensselaer Historical Society in Troy, NY in the Summer 2016 with two group soundwalk experiences and an interactive kiosk onsite for about two months. Audio and video feedback was recorded after the two soundwalks. Also, prior to this launch, several groups and some individuals took the soundwalk to give me feedback.

5. Feedback

I am interested in how the artistic practice of soundwalking in mobile applications can be used as a methodology to awaken perceptions of stewardship in the participants. After participants complete the soundwalk, I ask them to fill out a form (certified by Rensselaer Polytechnic Institute's Institutional Review Board): *1) Please describe your soundwalk experience and 2) Do you feel more connected to the environment around you due to the soundwalk experience? If so, how?*

The preliminary feedback that I have received from 13 participants told me that my artist audio tour soundwalks are creative art forms that connect locals who have lived in Troy for generations, new Troy residents, and commuters to Troy in a deeper way to the Hudson River. Soundwalks can encourage participants to connect more deeply to an environment that may already be familiar to them. Here are a few examples of writing from participants. I will keep their names anonymous unless otherwise noted. Living in North Troy since the 1980's, one participant let me know that he had visited the river more frequently to connect with nature before the trees that blocked the traffic noise had been cut down to make room for the concert stage area. However, he felt that the soundwalk opened up new ideas about the river that would keep him coming back to his usual spot: "Riverfront sound walk was like going to a museum that I have been at my whole life with the river as the main exhibit. I learned things I never knew in a new and engaging way. The experience was unique."[3] Another long-term resident of Troy also connected more deeply to the river from the soundwalk:

> The soundwalk experience was focused. I have visited the Hudson River many times but the directions, music, and description allowed me to focus more on the water and the surroundings. I particularly liked the picture mural that has the viewer imagine what the site would have been like when the Mohawks lived there. The green landscape is much different than the mostly concrete walk ways and stand that is there today. The timing allowed one to explore and open up to the surrounding area. It wasn't rushed or too slow. The directions were clear, the voice giving directions and the story was also very audible and understandable. The interview was very interesting that linked the different water ways around the area: the Cohoes Falls, Pebble's Island and Mohawk River.[4]

3. Interview with Troy, NY local, August 20th, 2015.
4. Interview with a Troy, NY local who works at Rensselaer Polytechnic Institute, March 15th, 2015.

Figure 3. Participant listening to Troy, NY's Native American history through the lens of a forgotten mural as part of the Riverfront Park Soundwalk (Winter 2015).

The final restructured version of the *Riverfront Park Soundwalk* also overall gave long-term residents who participated in the soundwalk a refreshed connection to the river: "Informative, ended at a perfect location–the water fountain–on a hot day. I enjoyed hearing some of the history and context of the river that I have walked along for the past ten years, and deeply moved by its native mythology." This participant said "Yes" to feeling more connected to this particular environment due to the soundwalk, and the memory of the Native American tribes person jumping off of the falls will be remembered at every visit to the river.[5]

Figure 4. Participants listening to local mythology as they walk along the river as part of the *Riverfront Park Soundwalk* (Summer 2016).

5. Interview with Troy, NY local, August 20th, 2015.

In the *Riverfront Park Soundwalk*, the participant is asked to connect the past, present, and future in a subjective way for themselves that personalizes the space around them hopefully into one of a place with meaning. I was pleased to hear that an RPI student who commutes in to Troy was encouraged by the soundwalk to become more engaged in the Troy community as she felt an interconnectedness. "I feel contemplative of my transient 'home' in Troy now. I am a commuter student, so I have been reluctant to really settle in to the area. But this soundwalk allowed me to connect with the socio-historical-political history of the area, and made me feel sad even, for the loss of the culture and connection to the land that we understand to have existed in Downtown Troy years ago. I appreciated the visioning toward the future, which allowed for the formation of an imaginary – the water taxis, etc. that allows sound-walkers to participate in an almost sci-fi storytelling process."[6]

My initial intent was to have participants go beyond a sense of space, and create for themselves a sense of place that can have meaning to them by creating scenarios through storytelling and soundscape in powerful ways that engage the senses, not just sound. Through strong personal associations, memories are formed, and a place can have more meaning and value to a person. This sense of stewardship, or interconnectedness, is what I was aiming for in this soundwalk. In geographer, Yi-Fu Tuan's book, *Space and Place*, he notes that, "Open space has no trodden paths and signposts. It has no fixed pattern of established human meaning; it is like a blank sheet on which meaning may be imposed." (Tuan 1977, 54.) My concern was that I covered the canvas too much with museum-like audio, however, there seemed to be feedback that mostly indicated a deeper engagement with the surroundings and memories formed. At the very least, I was hoping to encourage a meditative slowing down. A new RPI student said, "The soundwalk experience was lovely! Typically, I would run through a park like this and the audio caused me to slow down and look around more."[7]

To slow people down, I used a very calm voice and pacing along with making the route feel very safe and organized. Also, the participants are encouraged to think on their own with critical thinking about environmental issues. One participant wrote about the experience of the meditative instructions that I give for removing the headphones at the end of the sound walk to just listen to the environment, "The end of the walk focused on a listening exercise–even with the heavy winds today, and the cold, I found this to be an expansive moment in the project. Inviting the participant to engage and activate on their own."[8]

Also, another participant commented on the meditative nature of the piece, "I do feel more connected to the environment. Closing off the other external sounds and listening to

6. Interview with RPI Graduate Student, March 15, 2015.
7. Interview with new RPI student, August 20th, 2016.
8. Interview with RPI faculty member, March 15th, 2015.

the speaker talk about the river and its history allowed me to focus on the River. I liked the meditation piece to reflect about the site's past and present condition."[9]

Pauline Oliveros' Deep Listening inspired these moments of meditative listening. In Deep Listening, not only does one expand the perception of sounds to include all sounds around oneself, but also simultaneously one "ought to be able to target a sound or sequence of sounds as a focus within the space/time continuum and to perceive the detail or trajectory of the sound or sequence of sounds. Such focus should always return to, or be within the whole of the space/time continuum." (Oliveros 2005, xxiii) Oliveros also states "Animals are Deep Listeners. When you enter an environment where there are birds, insects or animals, they are listening to you completely. You are received. Your presence may be the difference between life and death for the creatures of the environment. Listening is survival!" (Oliveros 2005, xxv) In the Riverfront Park Soundwalk, my intent was to encourage one to feel their interconnectedness to all things, that their presence was important to the creatures of the Hudson River and that the River and those creatures are important to us.

I feel that the best summary of my soundwalk was written by artist, Rebecca Uliasz in "Embedded Narrative: Remembering through Soundwalking," an article referring to my *Riverfront Park Soundwalk* and other soundwalks in the 2016 *Resonant Structures* exhibition catalogue:

> Her walks encourage the participant to switch mental gears, away from the frenzied and over stimulated mindset through which we usually unconsciously experience our sensory environments, and towards one of mindful and deep consideration of ones surroundings, almost akin to a sort of meditation experience. Even the most mundane of urban settings, such as a busy city street, is transformed for the participant into an atmosphere ripe with information that allows for further reflection and connection. The walks often go beyond a neutral sensory experience, however, and morph into one in which Williams uses the intimate connections the participant has just made with their surroundings in order to address environmental concerns....The participant is at once presented with the setting and the facts in a way that aims to strike in them a greater sense of empathy towards the space, and bring to light the immanency of the various impacts that human activities have had on this environment. (Uliasz, 2016, 58–59)

Pauline Oliveros took the *Riverfront Park Soundwalk* in September 2016, and her initial response was, "I'm watching the kids enjoying the water. Interesting that they are enjoy-

9. Interview with Troy, NY local, August 20th, 2016.

ing the water that is being pumped up into a kind of fountain for them, while the river is flowing over here. But they would be in danger if they were in the river, unfortunately." Though she felt very connected to the Hudson River already, the soundwalk revealed to her the disconnect that many people may have to their local waterways. [10] This can be due to pollution, inaccessibility, or a general lack of education. It is my hope that the locals of Troy, my main audience for the soundwalk, will find personal and meaningful ways to bridge these disconnects to the local waterways. The soundwalks are to provide a sense of stewardship to inspire personal action.

6. Conclusions

My soundwalks place the viewer in an environment where they are encouraged to reconsider it in a new context, one in which they are a participant in the sonic atmosphere that surrounds them. The imaginative aspects of the soundwalk–the playfulness and leading one through the imagination process to engage in history and local mythology, mixing augmented audio over tangible reality–is a key way that I separate this project from a dry walking tour by a science and history museum or a radio show. Encouraging Deep Listening meditation and listening past the headphones can be a profound listening experience for even locals who already feel a connection to the river. The experience is one that is at once both intimately personal and collectively felt with a group, and it can encourage one to connect and understand their surrounding environment and their role within it on a deeper level. This interconnectedness I hope will assist with a sense of stewardship, that allows one to give value to oneself in the connected web of nature. Also, my hope is that this sense of stewardship will inspire one to create ways of living for themselves–not what society expects of them–that creates a sense of harmony and respect for the other beautiful forms of life on the planet. I plan to conduct follow-up interviews with several of the same participants to find out if their visits to the river have just as much feeling of connectedness now as it did when taking the soundwalk, and if they made any changes to their engagement with Troy waterways due to the soundwalk experience.

The *Riverfront Park Soundwalk* is part of the larger *Troy Waterways Project*, and it will continually have content added to the website as I edit the longer interviews with the public and water experts and post them. Also, there were some technical issues with the Recho app, and either they will fix them, or I will utilize a new geocaching app to re-record the soundwalk. I will be writing further about the feedback from the soundwalks in efforts to improve my practice of using soundwalks as a methodology for fostering a sense of stewardship for the waterways of Troy. With water crisis the number one global risk, I believe

10. Interview with composer, Pauline Oliveros, September 13, 2016.

that it is imperative that we do something about it. There needs to be a fundamental shift in our relationship to nature and to ourselves. People need to learn to care for the environment and each other, but first one must care for oneself. The artistic practice of taking a soundwalk can provide the introspective, slowing down that is necessary to form a deeper connection to one's local waterways. I believe that there is something meaningful in addressing the "small" things through an intimate first-hand knowledge gained locally to then be able to grasp the larger "global" issues. We also can learn more about a holistic sense of "stewardship" from indigenous cultures who have had systematic strategies of living in harmony with their environment for generations. If we could borrow some of these strategies, we may be able to return the waterways to how they flourished when the Native American Indians lived along its edges. Many locals of the Troy, NY community desire a return to a healthy river in the future, one that is safe not only for swimming, but a river that can also sustain life.

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Absolute Nothingness – The Kyoto School and Sound Art Practice

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ABSTRACT: This paper explores how the concept of Absolute Nothingness as developed in the thought of three key Kyoto School thinkers Nishida Kitarō, Tanabe Hajime and Nishitani Keiji has influenced the practice of sound art. The paper examines the influence of these three philosophers on D.T. Suzuki and John Cage, the Mono-ha movement, and the Fluxus movement before examining how these influences have shaped sound art practice.

KEYWORDS: Kyoto, School, Absolute, Nothingness, Sound, Art, Nishida, Tanabe, Nishitani.

1. Introduction

The Kyoto School was a group of comparative philosophers and theologians working at the University of Kyoto between 1913 and 1963. Guided and inspired by the pioneering works of Kitarō Nishida the Kyoto School were renowned for their integration of Eastern with Western thought. They developed radically novel interpretations of place, body and experience informed by what Western commentators, most notably James Heisig (2001) has described as a meontology. Meonotology lies in stark contrast to the Western concept of ontology. Where ontology is the philosophical study of the nature of being, meontology is the philosophical study of the nature of non-being or nothingness. Absolute nothingness does not merely refer to the absence of some 'thing', but refers to a supposed 'place' or field of potential within which things and no-things co-specify and define one another. This paper presents an overview of the ideas of key Kyoto school thinkers before exploring how these ideas came to influence and manifest themselves in sound art practices. The paper considers these links through John Cage and D.T. Suzuki, the Mono-ha movement, and the Fluxus movement. The first three sections of his paper discuss the works of Nishda Kitaro, Tanabe Hajime and Nishitani Keiji and they are highly indebted to Heisig (2001), Yusa (2002), Franck (2004) and Davis et al. (2011) who provide useful insight and render the often difficult work of the Kyoto School intelligible.

2. Nishida Kitarō

The founding member of the Kyoto school was Kitarō Nishida (1870–1845). He is often cited as the most important Japanese philosopher of the 20th century. In fact he is considered the first Japanese philosopher to engage with the Western philosophical tradition (Davis et al. 2011). Nishida was born in 1870 and lived through the Meiji Restoration, a period of time in which Japanese society transitioned from the feudalist *han* system of governance to the modern system of prefectures that exists today. For the two and a half centuries directly prior to the Meiji Restoration Japan had isolated itself from the outside world. During this time it began to embrace the world and to rethink its internal political and cultural systems to incorporate some of the global developments that had taken place during Japan's isolation. Nishida would contribute to this expansion and reinvention of Japanese culture, bridging the gap between East and West by rethinking Japanese thought in terms of the Western philosophical tradition. Having dropped out of high school, Nishida gained entrance to Tokyo's Imperial University obtaining a philosophy degree in 1894. He soon took a teaching post at a middle school and under the advice of his close lifelong friend D. T. Suzuki he also took up the Zen Buddhist practice of Zazen or sitting meditation. The down to earth nature of the practice provided a counter-foil for his lofty academic ambitions. He was a keen practitioner

who immersed himself deeply in Zen until the year 1905 when he completely abandoned his practice. Three years later he became assistant lecturer of Philosophy at Kyoto University and the released his first book *An Inquiry into the Good* in 1911 at 40 years of age.

Nishida was interested in reconciling the intuitive, nonreflective consciousness that he had experienced through Zen, with the logical and rational, reflective consciousness of the Western philosophical tradition. As such *An Inquiry into the Good* aimed to establish consciousness as an absolute unifying principle for reality through the transcendence of the subject-object dichotomy (Heisig 2001,30–41). This interest in transcending the subject-object dichotomy would stay with him throughout his career. In developing his ideas Nishida adopted William James' concept of Pure Experience as "the original flux of life before reflection has categorised it" (James 1904). While James viewed Pure Experience as the foundation of the conscious individual Nishida viewed it as 'the fundamental mode of true reality" extending it to provide a unifying theoretical foundation for all of reality. Nishida viewed this reality as a dynamic unity of pluralistic but interdependent processes evolving within and as the activity of conscious experience. He viewed self-awareness as that aspect of this unity which is capable of mirroring the whole. According to Nishida an individual does not "have" experiences rather experience itself "has" the individual. As such the world mirrors itself in each of its contents and the unfolding of this mirroring within ourselves is what we think of as self-awareness. He believed that the mistaken apprehension of reality through a subject-object model gives rise to the sense of a separate self that thinks itself the owner of experience. Simple everyday direct experience was synonymous with Pure Experience in Nishida's philosophy and was the domain in which subject and object are unified and self does not exist. Nishida had hoped to establish pure experience as the absolute ground of reality but as his thought developed he built upon his ideas about pure experience to develop his concept of absolute nothingness.

In 1926's *From That Which Acts to That Which Sees*, he argued that consciousness itself must unfold in some still other more basic field. This field would provide the necessary means for the existence of that consciousness and so the ultimate ground of reality. Nishida conceptualised this field as an absolute nothingness. As Heisig (2001) observes Nishida's absolute nothingness is "nothingness" insofar as it is not of the world of being and so cannot be or pass away and it is an "absolute" because it cannot be defined in relationship to anything in the relativistic world of being "so that its only opposition to the world of being is that of an absolute to a relative." (Heisig 2001, 62). As such absolute nothingness cannot become the subject of conscious experience or an object of experience. It functions through self-negation in that it nullifies any definition applied to it while at the same time providing the means by which any such definition might be applied. It is the *absolute nothing* by which all of the *somethings* of *being* are rendered relative. This sidesteps the essentialism inherent in the subject-object model by preventing nothingness from being positively characterized or

affirmed. Being a groundless ground it provides an epistemic and ontological source that is an alternative to foundationalist descriptions of reality which posit some bottom ground level upon which reality is founded. Nishida's concept of an absolute nothingness then was not some empty void beyond the world but acted as a creative and dynamic principle at work within the world. It is encountered as the pure experience of the concrete realities of ones immediate location. Absolute nothingness developed Nishida's earlier ideas on Pure Experience by providing the necessary means for the existence of consciousness. Pure Experience and absolute nothingness become two sides of the same coin in Nishida's philosophy (Odin 1996, 80–81). Nishida developed his "Logic of Basho" or place around the idea of absolute nothingness. He conceptualised absolute nothingness as the ultimate *basho (place)* or eternal now in which consciousness is located and consciousness itself in which self and world unfold as the interplay of *relative* being and *relative* nothingness which results in the mutually interdependent existence of the peoples, things and process of that world.

3. Tanabe Haijime

Tanabe Hajime was another leading member of the Kyoto School. Born in 1885 he was 15 years younger than Nishida. In 1930 having been appointed by Nishida to a role at Tokyo University, Tanabe published an essay, *Looking Up to Professor Nishida's Teaching*, which was highly critical of Nishida opening a rift between the two that would never close (Heisig 2001). Tanabe rejected Nishida's pure experience as a starting point for his own thought and argued that Nishida's *basho (place)* of absolute nothingness had religious undertones. He also argued that Nishida's attempts to render absolute nothingness as a *basho (place)* had essentialised it as an extant object, presenting absolute nothingness in terms of a metaphysical ontology rather than a meontology, affirming negation rather than negating negation. For the starting point of his philosophy Tanabe drew from the Buddhist concepts of śūnyatā and dependent origination and Hegel's idea that the individual is always defined in relationship to other individuals to develop his concepts of pure relationship and absolute mediation. For Tanabe individuals are relative and can be both self and other depending upon how they are encountered. Furthermore all of reality is relative and interrelated. The individual contents of reality, objects, people, social institutions, can only exist and make sense in terms of their relationships to other "things". This he describes as "self-in-other" and for Tanabe nothing can exist beyond these mutual co-defining interrelationships. He reformulated absolute nothingness in terms of absolute mediation which for him is the animating principle which mediates the web of interrelations from which reality is composed. Absolute mediation is the observation that "one" cannot be posited with the mediation of an "other" and that affirmation is impossible without the mediation of negation. Tanabe's further assertion is that nothing can relate directly to another thing but that all relationships are mediated

by further relationships and this mediation is absolute in that it permeates all aspects and elements of reality. Tanabe also criticized Nishida's basho (place) of absolute nothingness as being too abstract and failing to relate to the concrete realities of the everyday world. He developed his logic of the specific as an alternative which aimed to account for the historical and sociocultural dimensions of reality. The logic of the specific provided an ontological description of absolute nothingness as the mediating force of specificity and specifity as the socio-cultural substratum of historical peoples. Tanabe's work grew increasingly religious over time invoking absolute nothingness as a religious dimension of life that could provide some form of salvation from the shortcomings of logic and reason as a means of describing the non-rational. In *Philosophy as Metanoetics* Tanabe turns to Shinran or Pure Land Buddhism to argue for absolute transformation through radical self-negation and submission to Other-Power a Pure Land concept which he equates with absolute nothingness.

4. Nishitani Keiji

Nishitani Keiji was born in 1900. In 1914 when he was preparing to enter High School his father died of Tuberculosis. Nishitani himself protracted the same illness and it was during this period of struggle that he first came into contact with Zen through the writings of D.T. Suzuki. Nishitani would later comment that his youth was a period absolutely without hope that lay in the grips of nihility and despair (Heisig 2001,191). After his fathers death Nishitani lived alone with his mother and his own battle with Tuberculosis took a toll on him both physically and mentally (for more see Heisig 2001). During high school Nishitani immersed himself in philosophy and is said to have carried a copy of Nietzsche's Thus Spoke Zarathustra like a bible while also engaging with the works of Dostoevsky, Ibsen, Emerson, Carlyle, and Strindberg. After graduation he worked as a high school teacher and adjunct lecturer while publishing in a number of journals. At this time and his work focused on Bergson, Nietzsche Schelling, Kant and the European Mystics, Meister Eckhart in particular. In 1932 he took up a position at Kyoto University. Having had an interest in the Zen state of mind since youth he began focused Zen practice with Yamazaki Taikõ in 1937. At first Nishitani used Zen as a counterfoil against which to balance the intellectual pursuits of his academic life. Over time Nishitani's engagement with Zen came to be one of the defining features of his philosophy. The other defining feature of his work was his engagement with Nihilism which was no doubt inspired by the struggles of his youth. Nishitani once commented that for him the choice to pursue a life dedicated to philosophy was a choice between life and death (Heisig 2001, 191). In similar fashion to Tanabe before him, Nishitani spent two years studying under Heidegger at Freiburg. During this time Heidegger had started also to engage with the question of Nihilism and while Nishitani learned much from Heidegger's phenomenology Heidegger in turn spent much time learning about Zen from Nishitani.

Nishitani's thought united his interests in Nihilism, Existentialism and Phenomenology. He recognised a tension between the two extremes of Essentialism and Nihilism and a viscous cycle of reactionary swinging between these two poles in the thought and behavior of the average person. Essentialism is the denial of the relative nature of self and world through the belief that all existent things have some essential substance or set of attributes that are inherent to them and define their identity and meaning. This implies an extreme affirmation or reification of the subjective ego and objective contents of the world. Nihilism, in this sense, is also a denial of the relative nature of self and world in the belief that self and world are devoid of any true nature, identity, meaning or ultimately existence. This implies an extreme negation of the subjective ego and objective contents of the world. Nishitani aimed to dissolve the tension between Essentialism and Nihilism through Nishida's absolute nothingness. For Nishitani the nothingness of the Nihilistic worldview is merely relative and can be overcome through absolute nothingness. This required a disciplined process of "self-emptying". To achieve this one must first accept the reality of the nihilistic world-view by embracing the little personal doubts encountered in everyday life fostering a larger realization of nihility in which a "Great Doubt" consumes all certitude about reality. Through a further embrace of doubt the certitude of nihilism itself is dissolved and nihilism is "trans-descended" to reach the field of absolute nothingness or *śūnyatā* which, according to Nishitani, envelops and pervades all aspects of reality as their most basic identity. This absolute nothingness or *śūnyatā* is a space in which the relative world of being is allowed to manifest in its natural "suchness" or immediacy free of the errors of nihilism and essentialism which are relativized against the backdrop of absolute nothingness. Nishitani used the language of Mahayana Buddhism to elucidate these ideas equating absolute nothingness with *śūnyatā* which posits that the lack of inherent existence of self and world is identical with the relative and inter-connected nature of self and world.

5. Nothingness and Sound Art

The previous sections of this paper have introduced the lives and ideas of three key Kyoto School thinkers. The remainder of this paper will explore how these ideas have manifested themselves in, and shaped sound art practice.

6. Cage and Suzuki

John Cage is an important figure in the history and early development of sound art. Licht (2007) credits Cage with taking some important early steps towards a sonic art by opening the musical world up to the inclusion of sound as compositional material and the act of listening as a creative process. La Belle (2006) notes Cage's engagement with the immediate

and proximate nature of sound in his attempts to "see each thing directly as it is". He argues that Cage expanded Western art music's understanding of music reminding it that it was composed of sounds and laying some of the ground work for a future sound art. However Licht, LaBelle and Kahn (1997) comment that Cage's work was still limited by the concepts of music and composition as the organization of sounds in time and as such provides a precursor to, rather than an early example of, sound art. Whatever the case Cage's work has played an important role in shaping sound art.

Cage is infamous for importing concepts from eastern thought into western art music and the Zen inspired concepts of chance, indeterminacy, and silence defined much of his work (Larson 2012). Cage attended lectures on Zen delivered by D.T. Suzuki in the late 1940s (Cage 1990) and cited Suzuki is as one of his chief Zen instructors (Brooks 2007; Larson 2012).

Suzuki Daisetsu Teitaro, born 1870, was a Japanese philosopher and scholar who is said to have been monumental in the introduction of Zen to the west during the 20th century (Larson 2012). He was Professor of Buddhist Philosophies at Otani University, Kyoto where Nishida and Nishitani also worked as lectures before joining Kyoto University. He also established the Eastern Budhist Society and The Eastern Buddhist Journal which Nishitani took over as chief editor in 1965 a year prior to Suzuki's death (Heisig 2001). As mentioned previously Suzuki was a lifelong friend of Nishida and he is widely credited with bringing Zen from Japan to the West after the Second World War. In reality Suzuki brought an interpretation of Zen that was deeply influenced by the work of the Kyoto School thinkers. Sharf (1995) and Baumann (2000) note that Japanese Zen had been completely reimagined and transformed in the work of Nishida, Tanabe, Nishitani and Suzuki himself and it was this version of Zen which Suzuki brought to America and which would prove so influential in the history of 20th century art. Sharf (1995) also notes that Suzuki's thought underwent a dramatic shift on the realease of Nishida's *An Inquiry Into the Good* in 1911 as Suzuki adopted Nishida's concept of Pure Experience and made it the central principle in his presentation of Zen to the West. He reorganized his understanding of Zen to position immediate Pure Experience as the essential core of Zen. Suzuki's influence looms heavy over Cage's work. Bramble and Bradley (2015) and Pearlman (2012) document how this rethinking of Zen profoundly influenced the transformation and development of artistic practices throughout the 50s and 60s impacting works by Robert Rauschenberg, Kerouac, Pollock, Feldman, Yves Klein and Marina Abramovic. By the time Cage had begun to attend Suzuki's lectures at Berkley, Nishida, who at this point was deceased, had completed the development of his concept of Pure Experience into the *basho (place)* of absolute nothingness. Pure experience and absolute nothingness became two sides of the same coin in Nishida's thought. Suzuki's lectures at Berkley were deeply influenced by Nishida's work. Krummel (2015) documents how Suzuki's and Nishida's ideas were mutually influential on one another and this is especially typified by the influence of Nishida's logic of contradictory self-identity on Suzuki's interpretation

of the Buddhist concept of *soku-hi* or "affirmation through negation". This concept is seen reflected in Cage's sustained attempts to remove himself from the compositional process, as typified in *Music for Changes*, so that theoretically the music is composed without the participation, or at least without the direct input, of the composer.

Taking silence to be the sonic equivalent of nothingness, Cage's ideas on silence have more in common with Tanabe's idea of absolute nothingness than Nishida's. This makes sense as it has been repeatedly noted that Cage's thinking on silence was informed by his experience in an anechoic chamber at Harvard where silence manifested itself for Cage not as an absence of sound but as the sonorous activity of his own nervous and circulatory systems. For Cage silence was not an absence of sound or the locus in which sounds unfold but instead "silence is all of the sound that we do not intend" (Cage, 1961). This echoes again the logic of self-negation by defining silence in terms of the rejection of the intent of the agent, intender or composer. Cage rejects the existence of an absolute silence that might become an object of perception. This is similar to Tanabe's first reason for rejecting Nishida's conceptualisation of absolute nothingness, namely that an absolute nothingness could not become an object of perception. He argued instead that such nothingness must operate in the world as a mediating principle, which gives rise to and mediates the inter-related contents of the world through a process of self-negation. To experience Tanabe's absolute nothingness then one would be experiencing the broad spectrum of worldly experience as mediated by this creative form of nothingness. A second criticism Tanabe made of Nishida's absolute nothingness was its tendency to ignore and reduce or eliminate the social, cultural and historical world, silencing these dimensions in the process of negation. Kahn (1997) levels a very similar criticism at Cage arguing that his concept of silence silences the social and political dimensions inherent to sound and sonic practices. In reality Tanabe's claims were overstated and Nishida revised and improved his philosophy in light of them (Heisig 2001) nonetheless they are interesting in the context of Cage's ideas on silence. Cage's work was important to the development of sound art and his ideas about silence and nothingness directly influenced a number of practitioners who would also go on to shape sound art. However, the most direct manifestation of Kyoto school thinking in art did not come through Suzuki but instead is seen in the Japanese Mono-ha movement which deserves a brief discussion here.

7. Mono-ha

Mono-ha, often translated mockingly as the 'School of Things', was a loosely affiliated group of post-war Japanese artists who rose to prominence in the early 1970s (Yoshitake 2013). They rejected traditional concepts of representation and production engaging instead in "non-making" and preferring to reveal the materials, properties and inter-relationships

of things as they naturally appear in the world. As such they were concerned with the aesthetic dimensionality of natural and man-made 'things' and the interrelationships between those 'things' in their unaltered states (Sekine 1986). Their works elevated the significance of inter-related things in their own right rather than reducing them to simple materials that might gain significance through their incorporation into some larger work. Some of the works produced by Mono-ha artists have drawn inspiration from the Kyoto school thinkers and Nishida in particular. Lee Ufan was an important Mono-ha artist and a leading figure in the movement. He published a two-part essay between 1970 and 1971 *Beyond Being and Nothingness – A Thesis on Sekine Nobuo*. The essay discussed a number of works by another important Mono-ha artist Seikine Nobuo. One of these was *Phase-Mother Earth* a large outdoor earthwork created in 1968. It was installed at Suma Rikyu Park in Kobe, and consisted of 2.2 × 2.7m cylindrical hole cut into the ground behind which a 2.2 × 2.7m cylinder of the same earth was placed (see Sekine 1980). In his essay Ufan interpreted Seikine's works in terms of Nishida's absolute nothingness and identity of absolute contradiction. Ufan's own work was heavily influenced by Nishida's philosophy and his writings about his work make constant reference to Nishida's concepts of absolute nothingness and pure experience (Kim 2007).

In the early 1960s Yasunao Tone cofounded the seven member free improvisation and noise ensemble Group Ongaku with fellow composer Takehisa Kosugi. The interests and aesthetic sensibilities of the group were so similar to those of the Fluxus artists operating around the same time in New York (Pearlman 2012) that George Maciunas, having been introduced to their work by Cage, Ono and Ichiyanagi, reached out to invite the group to join in on the activities of the Fluxus movement in New York. Tone (1970) noted that Lee Ufan's theories on art making were very close to those of the Fluxus movement and that the Fluxus artists were drawing from the same well as their Mono-ha counterparts. This is of interest when one considers the influence of Nishida's pure experience and absolute nothingness on both Ufan and the Mono-ha movement as a whole. Tone himself went on to create his first sound art installation *Tape Recorder* for the 1962 Yomiuri Indėpendant exhibition at Tokyo's Minami gallery. It consisted of a 30–40 minute long loop playing back on tape recorder and concealed in a cloth bag and intermittently emitting sounds intended to provoke curiosity and further investigation (Tone 2007). La Belle (2006, 151&153) and Licht (2008) note this piece as an early instance of a sound installation presented as a production proceeding Max Neuhaus' early works which are often cited as the first sound art installations.

8. Fluxus

Fluxus was an experimental international art movement that emerged during the 1960s and was comprised of a number of influential artists, poets, architects, composers and designers (Doris 1998). Directly influenced by Cage's Music Composition classes Fluxus was founded

and driven by Lithuanian American artist George Maciunas and counted George Brecht, Yoko Ono, Dick Higgins and Nam June Paik, amongst its members at different times. Cage's thought deeply influenced the Fluxus movement (Larson 2012) and the Fluxus movement would in turn influence modern sound art practice (Kahn 1999). The Fluxus movement was interested in breaking down the division between art and everyday life and a number of prominent artists from the Fluxus movement were engaged with both Zen thinking and the philosophy of Kyoto School thinkers. La Bash (2008) notes how Yoko Ono's *Painting to be Stepped On* structured space in terms of Nishida's concept of space in Eastern art where the observer is situated inside of the space of the art piece and integrated into it rather than positioned outside looking into or at the space as he believed to be the case in Western art. Nishida developed this idea in *An Inquiry into the Good* (Nishida 1913) while developing his philosophy of pure experience. La Bash argues that this conceptualisation of space is a prominent and defining feature of much of Ono's work. Ono would go on to create her own sound art installations. Her 1961 piece *Voice Piece for Soprano* is also notable because, like *Painting to be Stepped On*, it embraces Nishida's concept of space in Eastern Art but introduces it into a sound art context. This may in part be due to the influence of Cage who encouraged Ono to embrace her Japanese heritage in the development of her practice (La Bash, 2008). Whatever the case Ono has continued to produce pieces of this nature with the most recent arriving in November 2016 in response to the US presidential elections. Doris (1998) examines Nishitani's interpretation of absolute nothingness as *śūnyatā* and follows the concept through Suzuki and Cage to Dick Higgins thoughts on mutual interdependence and also to its manifestation in the Fluxus event score. He argues that the *śūnyatā* concept as described by Suzuki, was highly influential on the thinking of the Fluxus artists. Lushetich (2011) also examines the challenges to the prevailing notions of art presented in the Happenings of Kaprow and Watts, the event-score and the Fluxkits of Brecht and Ay-O contextualizing these in terms of Nishida's absolute nothingness and the interexpressivity which she argues that it manifests. Kaprow himself noted that his Happenings were exercises in self-observation intended to move one closer to "pure experience" and were motivated by his study of Zen under Suzuki (Kaprow and Kelley 2003; Zepke 2009). For Kaprow the boundaries between art and everyday life should be blurred so that art might take one closer to this pure experience, a concept he undoubtedly inherited from Nishida via Suzuki. Lushetich (2012) further explores how Nishida's absolute nothingness manifests itself in Nam June Paik's *Zen for Film*, Alison Knowles *Identical Lunch* and in Vostell's 1966 event score *Yellow Pages or an Action Page*. Finally Lushetich (2014) ties these strands together by examining how prevailing modes of thinking on the topics of space and time exhibited by the Fluxus movement, along with the concepts of Happenings, Intermedia, the event score and Fluxkits are indebted to and best characterized, in terms of Nishida's absolute nothingness. Lushetich's work highlights how the Fluxus ethos was shaped and determined by Nishida's absolute nothingness,

Derridian blind tactics and the Gramscian production of social life. Driven by the Fluxus ethos a number of artists moved away from the standard musical engagement with sound through the composition of sounds in time and towards the organisation of sounds in space as typified in La Monte Young's Dream House and Wolf Vostell's *Elektronischer Dé-coll/age Happening Room*, 1968.

9. Sound Art

This paper will now explore how the rethinking of Zen undertaken by the members of the Kyoto School and introduced into the 1950s American Avant Garde by Suzuki has influenced the development of sound art practice. It will focus on a number of key themes in sound art practices that have been influenced by Kyoto School thought. These are the focus on site, place and space over time in sound art, the audience and the art work's co-specification of one another, a focus on the everyday, the removal of the artist, and listening as a creative practice.

Nishida argued that Western artistic practices of his day had historically been concerned with time or the unfolding of art pieces in time (theatre, opera, music etc.) and with observation where the audience members stand outside the piece and peer in (visual arts, sculpture). He argued that art required a *basho (place)* of absolute nothingness in which the pure experience of the art piece unfolds and into which the participant and art piece are integrated and co-specify one another. He further argues that art arises from historical cultural life and so is shaped by and tied to it (Nishida 2011). Tanabe argued that art should be engaged with concrete ordinary life (Heisig 2015). Nishitani argued that absolute nothingness or *śūnyatā* was the original mode of being of the objects and processes of the everyday world, as they exist prior to categorisation or conceptualization. For Nishitani art was a means of revealing the absolute in everyday. Commenting on the Japanese art of cut flowers or *Ikebana* he noted that "finitude in itself, in being thoroughly finite, represents the eternity behind it. Time itself, in being completely temporal, becomes an eternal moment"(Nishitani 1995). Bringing the everyday object to conscious awareness causes it to "float in emptiness" revealing its "suchness"; the aesthetic dimensions of its immediate concrete reality. The discipline of sound art shares these concerns. Sound art embraces spatial presentation and emplacement over temporal organization. It exposes the aesthetic dimensionality of the everyday and the mundane. It enfolds its participants into the work allowing audience and artwork to co-specify one another. In doing so it often removes the hand of the artist and embraces listening as a creative process in this co-specification.

Sound art is a contested term (Kahn 2008; Licht 2009). For the purposes of this paper the term is used to reference the non-musical sonic art form that emerged to prominence in the latter half of the 20th century and is primarily practiced through the sound installation.

A number of practitioners and commentators have differentiated sound art from music by stating that sound art is about the non-performative, site-specific, presentation of sounds in space and music is the performative organization of sound in time (Licht 2007). The spatially distributed installation of Varèse's and Xennakis' work at the Phillip's Pavilion during the 1958 Brussels World Expo is often cited as the first substantial sound art installation (Licht, 2008). The fascination with the interplay between sound and space has, for better or worse, defined much of the narrative around sound art (Khan 2008). For example Kotz (2009) maintains that Neuhaus' 1977 *Times Square* piece "crystallize[d] a set of ideas about sound as a way to define a space" which drove a body of work that explored the spatial and perceptual instability of sound in public spaces. Neuhaus treats space and time in a similar way to that of the Fluxus artists. His concept of the installation bears more resemblance to a Fluxus event or happening than a traditional musical performance. At the same time, as Cox (2011) notes Neuhaus' installation approach also echoes Morton Feldman's attempts to liberate duration from clock time in music. Henri Bergson developed the concept of duration to differentiate between one's direct phenomenological experience of time as a dynamic and malleable phenomenon as opposed to fixed clock time (Bergson 1946). However, Nishida criticized Bergson's duration for not adequately accounting for the "eternal now" which Nishida conceptualised as a present moment that realises absolute nothingness and also contains both past and future simultaneously (Nakatomi 2016). Cage and Feldman were friends and Feldman, like so many of the 1950s Avant Garde, had adopted Cage's Zen-inspired aesthetics in his own compositions (Boutwell 2012). In fact a number of influential early installation artist took their points of references from artists who had been touched by the Kyoto School's reimagined Zen. After the works of Cage and the happenings and events of Fluxus, sound art practices began to move towards a more full engagement with the site in which works were situated. Works were increasingly expressed both in and as environments rather than individual objects. Deriving from a lineage extending back to Duchamp's ready-mades (a similar link is evident in Kim-Cohen's (2009) Non-cochlear sound art) and owing also to the fact that Suzuki had made Nishida's conception of Pure Experience the essential core of his Zen, the concrete and the everyday facts of life were increasingly explored in sound art. La Monte's aforementioned *Dream House*, "a building in which continuous sustained tones would be heard in perpetuity" (Licht 2008) represented a step in the direction of exploring sound in and as an environment. Robert Morris' *Box with the Sound of its Own Making* (1961), a simple wooden box from which emanated a three and half hour recording of the banal process by which the box was created, was reflective of the embrace of the concrete, immediate and everyday in sound art. Dennis Oppenheim's *A Sound Enclosed Land Area* (1969) in which he recorded himself walking a pre-mapped route on the streets of Milan and played it back within the gallery challenges traditional distinctions between the site-specific piece, the gallery installation and the soundwalk. Janet Cardiff and George Bures Miller's

Audio Walks take participants on walks around predetermined routes and introduce an audio component to proceedings delivered over headphones. The practice of soundwalking, which is indebted to Westerkamp (1974) and Schaefer (1977), echoes Nishida's concepts of pure experience and absolute nothingness with its focus on the unmediated experience of the immediate sounds in ones environment. It also echoes Tanabe's belief that art should be focused on the concrete and immediate realities of everyday life (Heisig 2015). The embrace of space in sound art has been linked to concept of site specificity and while early sound art practices were engaged with the conceptual and concrete realities of space, more recent artists and theorists have begun to focus on the concept of place (see LaBelle 2015). A more recent installation to engage directly with the question of space in terms of Nishida's thought was *Presumed Wind Load* by Yves Netzhammer & Bernd Schurer. It was installed in 2014 at the Gray Area, San Francisco for Milieux Sonores: Sound and Imaginary Space curated by Marcus Maeder. The piece drew upon Nishida's logic of *basho (place)* in its juxtaposition of real and imaginary spaces mediated by sound and spatiality in the context of an installation.

In LaBelle's (2006) discussion of Neuhaus' first sound installation *Drive In Music* 1967 he notes that Neuhaus is inviting the audience to participate in the creation of the work because the sounds were received by the individual's car radio and mixed on the basis of the driver's speed, location, and trajectory. There is the sense of a removal of the artist from the equation here, in order for the piece itself to become realized in this work. This recalls Cage's compositional approach and the logic of *soku-hi* or affirmation through negation as interpreted by Nishida and given to Cage through Suzuki. McMullen (2010) argues that Cage's attempts to remove himself from his pieces were misguided and did not go far enough, instead they served to further entrench Cage in the role of composer, gaining him international notoriety as such. She recommends Pauline Oliveros as exemplary of a composer who has negated themselves in their work thanks to her "focus on embodiment, improvisation, and the dismantling of the mind/body dualism". This echoes the ideas of the Kyoto School thinkers who each grappled with and developed philosophies to overcome the subject/object divide. Likewise LaBelle (2006, 5) notes that Cage was still very much in control of the modes in which he chose to remove himself from his work. Whatever the case the removal of the artist and the integration of the audience into the creation of sound art is a recurring theme. This surrendering of control in sound art practices can be achieved by passing control to a participating public or to a technology. Kubisch's *Electrical Walks* provide the audience members with the means and technology to participate in the generation and structuring of the piece, as does the practice of sound walking more generally. Likewise many of Mary and Bill Buchen's public installations have an interactive element that requires public participation. David Rockeby's *Very Nervous System* defers control through his computer vision algorithms and computational sound synthesis techniques to allow the participants to control and determine the behavior of the installation through their physical

gestures. Ximena Alarcon's (2007) *Sounding Underground* deferred control to participants in the creation of an interactive sonic environment from commuters' memories of the soundscape of the London underground. It could also be argued that Alvin Lucier's *I am Sitting in a Room* presents the portrait of a composer slowly losing control over his piece to the room in which the piece is located as the composer's voice subsides and the reverberations of the room begin to dominate the soundscape. In a similar vein Christian Marclay surrenders a level of control over his piece *John Cage* from his album *More Encores*. *John Cage* was created by cutting up a selection of Cage records and a gluing a selection of the pieces together to create a single playable piece thus deferring the agency of the creator to the process and technology in question.

In Neuhaus' *Time Pieces* we see an exploration of what the Kyoto School thinkers describe as a relative nothingness. Neuhaus' own thoughts on the pieces seem to be indebted to Schaefer's (1977) concept of the sound signal. Neuhaus (2006) notes that these works "form the sound signal with a silence rather than a sound". In these works a small sound is introduced into a space and gradually builds unnoticed for some minutes before abruptly disappearing. The absence of the sound becomes obvious to the listener, opening up a space of silence. In this way Neuhaus creates a sonic experience through the removal of sound. From the point of view of the Kyoto School, the silence is relative in that it is defined by its opposite, a sound. Yet the space in which this dialogue between sound and silence unfolds is an absolute silence. In Kyoto School thought, this space might be best defined as aural consciousness, the space of hearing and listening. Drawing from the perception of Tanabe's concept of absolute nothingness, hearing would be a passive process in which absolute silence mediates the interplay between relative silence and sound. Listening would be the act of consciously bringing an absolute silence to a sound in order to experience the self-contradictory interplay of sound and relative silence which define the identity of that sound.

In the culture that surrounds sound art practices, the status of listening is often elevated to become something of an art form, or at least a creative practice, in itself. This reflects Nishitani's idea that the process of paying conscious attention is a creative practice in and of itself. This is probably most true of the aforementioned practice of soundwalking (Westerkamp 1974), in which listening to one's environment is an end in itself. For Voegelin (2010) listening is creative and a listening practice can allow one to both engage with the world and to partake in its generation. Oliveros' (2005) Deep Listening practice aims to "heighten and expand consciousness of sound in as many dimensions of awareness and attentional dynamics as humanly possible". La Belle contrasts Oliveros' Deep Listening with the expanded mode of listening encouraged in Neuhaus' work, which he argues attunes the listener to a space of possibilities beyond oneself. Bill Fontana (2002) too makes the argument for listening as extended through recording technologies as a form of composition. These listening practices tend to move away from the kind of reduced listening introduced

by Pierre Schaeffer (1966) in favor of a more inclusive, expanded listening. In *Listening* Jean-Luc Nancy also argues for a new practice of listening. He critiques Husserl's phenomenology and the mode of reduced listening and its resultant object sonore (sound object) that Pierre Schaeffer developed from his own reading of Husserl's phenomenological bracketing (Kane, 2012). Nancy argues instead for a mode of listening that Hudson (2014) places closer to Vogelins generative listening practice. Krummell (2014) notes the similarities between the thought of Nancy and Nishida with both viewing the world as a relativistic, historical and social dynamism that has as its source an absolute nothingness. Clarke (2012) also appeals to Nishida and Nishitani in his description of Nancy's ontology of sound as a *śūnyatā* of the sonorous drawing a further parallel between the thought of Nancy and the Kyoto school.

10. Conclusion

This article has introduced some of the ideas core ideas of the Kyoto School and examined how those ideas have gone on to influence sound art practice. It has explored how absolute nothingness and pure experience were originally developed by Nishida Kitarō and further refined in the work of Tanabe Hajime and Nishitani Keiji. It also examines how D.T Suzuki and the Kyoto School redefined Zen in terms of these concepts in the early 20th century. It further traces the spread of these ideas into the Mono-ha movement and through Suzuki to Cage and later the Fluxus movement before discussing some recent manifestations of this line of thinking in sound art practice.

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Sound Watching – Travel and Storytelling in Sound

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ABSTRACT: Living in an essentially visual culture, the dominance of sight has dulled our other senses. Through digital media we daily relate to the landscapes and images of places all over the world, but what do these places sound like? If opening our ears may offer insight and raise reflection concerning complex environmental, social, political and economical issues, could something such as *sound tourism* contribute to educate travellers towards leaving behind a smaller soundprint? Assuming that something such as sound tourism could be possible and even useful, what can be said about sound within the context of travel? And what can be written about travel within the context of sound? Can sound art and travel narrative cross-pollinate in order to analyse, understand and describe the sounds that best define each place, ultimately telling its story in a resonant fashion?

KEYWORDS: soundwatching, cartography, sustainable tourism, soundprint, walkscapes, soundwalk, *flâneur*, sound art, travel narrative, soundscape, acoustic ecology, storytelling.

1. Introduction

Is it possible to imagine New Delhi without the echoing chants of the city's *pheriwhallas*? Can one conceive Mexico City without the songs of the street organ grinders, or Manhattan without its whimpering ambulances and unsettling police-car whoops? Can the idea of Granada be stripped of the guitar chords that sprout from each window in the Sacromonte neighbourhood?

Living in an essentially visual culture, the dominance of sight has dulled our other senses. While vision is typically treated as the defining sense of our era, hearing has traditionally been regarded as a secondary sense, which is consistent with a disturbing absence of hearing reports or narratives regarding a great number of major cultural processes.

Figure 1. Sentimiento (CC) 2009 Mikel Cortés Arrondo.

Fuelled by the emergence of recording technologies, the 20th century witnessed a rising interest in the sounds of the environment, both within scientific study and artistic practice. From radio culture, the conceptual works of Futurist artists such as those developed by Marinetti between 1927 and 1938, and Walter Ruttmann's *Week-End* – a film without images directed in 1930 – to the fundamental roles played by Schaeffer and Schafer within concrete music and sound environment studies, respectively, renewed attention and intention concerning everyday sounds began to take off, further developing throughout the late

20th century. The emergence of concepts such as *soundscape*, *acoustic ecology* and *soundwalk* revolutionized our perception of culture, identity and territory.

2. Sound cartography

> In the last few years we have come to believe that image has partially exhausted its semantic strength as bearer of truth, evidence and proof. The world seems to have been fully cartographed and territory cannot be contained into simple recon images. Humans have walked into a doubtful situation concerning image and started using technology as a means to turn back towards a time of *viva voce*. (...) Just like the phonograph in the first decades of the 20th century, (...) sound maps are currently a means to understand the changes concerning life within urban territories, and the relationship between people and their communities. (Ribeiro 2015)

According to Luis Cláudio Ribeiro, teacher and researcher in the fields of Communication Studies and Sound Culture, the map has progressively lost its role as a pure instrument of power to become a catalyser for metaphor and illusion: in some way, looking at a far away destination on a map can practically feel as if one had actually visited the place. To this metaphoric and illusory character of the visual map, sound mapping adds a dimension of presence and immersion, transcending the distant perspective that characterizes the former. Audition brings an expression of the depicted territory, converting motionlessness into effective and affective action, conveyed by the qualities of sound: "opacity transforms into a vibration that affects all." (Ribeiro 2015)

Figure 2. Phonambient.

Since the late nineties, advances in web technologies like audio streaming and web mapping allowed for the emergence of a rising number of online sound maps. Amongst these are global projects such as *Freesound*, *Radio Aporee* or *Soundcities*; regional initiatives such as *Open Sound New Orleans*, *Montréal Sound Map* or *Mapa Sonoro de Curitiba*; and others focused on more particular matters, like *Nature Soundmap*, a global community of nature sound recorders, *Wide Noise*, devoted to the study of sound pollution, or MSELIO, dedicated to the geographic distribution of original indigenous languages from Peru.

Sound cartography has also been extensively adopted within more conceptual approaches. In *Chatty Maps*, for instance, emotions and perceptions concerning urban sounds are central; *Sound Transit* uses a flight search engine interface to let its users book a virtual sound flight between two countries. From Portugal also emerged a few consistent sound-mapping initiatives worth mentioning, such as *Phonambient*, *Cinco Cidades* or *Lisbon Soundmap*. Besides cartographic, sound maps can also assume compositional and performative forms:

> The definition of sound map should not be taken too literally. The idea of map (...) should not be taken at face value, that is, as a two-dimensional means-to-an-end. (...) Not all swans are white, not all maps are two-dimensional. Maps are ultimately representations (...) and should be accepted as subjective truths insofar that the map is an abstraction derived from something – the geographical territory – but it is not the thing itself. (ECHOXIII 2013)

3. What do places sound like?

While sound cartography and the sounds of the environment have acquired growing relevance amongst artists and researchers, and sound has increasingly begun to be understood as a fundamental element concerning territorial and cultural identity, the field of travel remains yet mainly connected to vision: through digital media we daily relate to an immeasurable mass of visual data that depicts landscapes and images from cities and places all over the world. But what do these places sound like?

Figre 3. *What do places sound like?* (CC) 2015 Hugo Branco.

Founder of *Soundcities*, UK-based artist Stanza is interested in the way that sounds reflect the identity of each place, revealing emotional and responsive ways in which people interact with their environment. According to Stanza, found sounds have a lot to teach us about the identity of places and of the people who inhabit these spaces, while they also stimulate our senses in a musical way.

> The city is its own music, constantly evolving, a beautiful composition of squeaks, clanks, and pulses. The city is the orchestra. (...) We are just conductors whose interactive actions compose this music as we walk around. (Sanza s.d.)

4. Sound Watching

It is common today to travel considerable distances in order to attend a certain concert or to listen to a revered musician. But how many of us would travel that far just to experience a particular soundscape or the weird and wonderful acoustics of a specific space? In his book *Sonic Wonderland: a Scientific Odyssey of Sound*, Trevor Cox – Professor of Acoustic Engineering at Salford and President of the Institute of Acoustics – guides us through some of the "sonic wonders of the world" in what may presumably constitute the first travel guide to sound.

Figure 4. *Gol Gunbaz* (CC) 2015 Ashwin Kumar.

Encouraging readers to open their ears to those sounds that they often overlook in their visually obsessed lives, Cox explores a considerable variety of sounds around the globe in his quest for unusual acoustics. From extremely reverberant places to surprisingly long echoes, ancient theatres, bizarre sounding animals and acoustic mirrors; from the booming Kelso Dunes, in the Mojave desert, to the singing roads of Gyeonggi-do, in Korea, the incredibly loud waterfall of the Jökulsá á Fjöllum river, in Iceland, or the whispering gallery of the Gol Gumbaz Mausoleum, in India, the book transports us through a hidden reality of acoustic oddities: a richer, fuller and sonically diverse world, expecting to be properly heard.

> Increasingly, people are going to capture the World's sonic wonders, whether deliberately by recording what they hear on a mobile phone, or almost by accident, as the soundtrack on a video recording. (Cox s.d.)

At his website, Cox published a sound map that features some of the sonic places described in his book, while encouraging users to suggest their own sound watching sites where unique sounds or rare acoustic phenomena can be experienced. By identifying places with singular sound characters, the author explores a new use for sound cartography: rather than just an online library of sounds, this particular sound map is about finding places to visit and inspiring people to become sonic tourists.

5. A brief history of tourism

> Since its inception, tourism has polarised: it reveals numerous views ranging from the total approval of its potential for enriching self-realisation combined with recreation to critical rejection due to the belief that it causes harm through the systematic dumbing down of entertainment and avoidable environmental destruction. (Gyr 2010)

Figure 5. *Cruise ship* (CC) 2009 Hans Christian Haaland.

Accounts of recreational and educational travel remount to the classical world and further back to Egypt under the pharaohs. Although with the fall of the Roman Empire travel became more difficult, dangerous and complicated, according to the history of tourism proposed by Ueli Gyr, the medieval corporate society witnessed the emergence of the desire to experience the world as an individual guiding principle, especially amongst certain professional groups, such as scholars and merchants.

Between the 16th and the 18th century, the grand tour became a common way for young nobles to broaden their education and to discover new exotic forms of pleasure and entertainment: exclusive and elitist, it presumably represents the earliest form of modern tourism. When wealthy members of the middle class started emulating the traveling habits of the aristocracy, the nobles felt compelled to find more exclusive destinations and activities.

During the 19th century, increased mobility, improved labour rights and a rise in real income paved the way for today's mass tourism: in 1804, Thomas Cook offered the first all-inclusive holidays, thus becoming the founder of commercialized mass tourism. In the beginning of the 20th century, summer retreats would become accessible to employees on low income and, between 1933 and 1939, having identified tourism's potential for political exploitation, the Third Reich would propagate a new strain of popular tourism. Promoted by the KdF ("National Socialist Association Strength through Joy") and the RWU ("Travelling, Hiking, Holiday") ministry, to the benefit of the Nazi regime, mass tourism was born.

After a decline period caused by World War II, European tourism began its golden era during the 1960s: ingredients such as the increasingly low prices, new holiday styles and destinations, and the democratization of car and air travel, allowed tourism operators and travel companies to push the industry towards the global phenomenon we know today, so deeply pervasive concerning economy, politics, culture and society in general.

> Artificial holiday worlds in the form of amusement parks and theme parks are becoming increasingly important. (...) These are made up of post-modern pseudo-events, simulated worlds and hyper-realities, which the tourists internalize as adventure, fun, game and competition, despite the fact that the visitors see through their artificiality. (...) The traditional touristic consumption of symbols (sights, other worlds) has been extended or replaced by an experience-laden entertainment culture that is part of a new way of perceiving the world." (Gyr 2010)

6. Is there such a thing as sustainable tourism?

> The (tourism) industry resembles a high-speed train, crammed with passengers with cheap tickets, racing toward a cliff edge. (Pollock 2013)

It is well known that tourism is currently one of the world's fastest growing industries: in many countries, it is now the primary source of employment and income. According to the UNWTO (World Tourism Organization), international tourist arrivals increased from 25 million in 1950, to 527 million in 1995, to a staggering total of 1.133 billion in 2014. But, while the apparent advantages of such ubiquitous phenomenon are widely broadcasted, its disadvantages are less likely to be discussed.

Figure 6. *Rambla, Barcelona* (CC) Chiara Stevani.

According to a study from Scott, Peeters and Goessling, if tourism was a country, its current GHG (greenhouse gas) emissions would rank fifth, right after USA, China, the European Union and Russia. Nevertheless, while other sectors are required to reduce their emissions, GHG emissions generated by tourism are not explicitly included in the 1997 Kyoto Protocol, although there is a high risk that the industry soon becomes the world's main climate killer.

Independent writer and Cultural Sustainability, Landscape Architecture, and Visual Studies researcher Anita Pleumarom believes that the latest rhetoric trends – embodied by concepts such *sustainable tourism* and *low carbon travel* – are actually distracting tourists from the urge to cut down on their emissions. The situation is further aggravated by misguiding calculation methods used by global institutions and policymakers to cover up the actual impact of air travel and *indirect emissions*, as well as other tourism related endeavours, such as the clearance of wild areas for building infrastructures or the transportation to tourist destinations of consumer goods, hotel accessories and equipment of tourist activities.

Moreover, *sustainable* measures promoted by travel companies and tourism operators, which claim to save carbon, are often mere public relations strategies that actually lead to the violation of human rights, increasing land grabs and conflicts with local communities in developing and underdeveloped countries. While major polluters are allowed to buy cheap GHG pollution rights elsewhere, instead of pursuing actual solutions involving non-fossil

technologies, the necessary innovations towards a climate-friendly future will keep getting delayed and ignored.

Finally, although UN's policymaking institutions keep arguing that tourism is responsible for impressive economic development and poverty reduction in the developing world, it is important to notice that the industry is largely controlled by corporations from the developed countries, and that the average level of financial leakage – the money that actually leaks out of developing tourist destinations onto foreign companies – is reported to lie somewhere between 55% and 80%, which ultimately means that the positive economic impact is minimal, and that tourism is rather responsible for further widening the gap between the rich and the poor, both amongst and within countries.

> The erosion of social structures, traditional values and cultural heritage can be experienced in all tourist destinations driven by over-commercialization. Behind the tourist centres' glittering facades, the majority of local residents are suffering from rising living costs, mafia-style politics and corruption, social erosion, sex, drugs and crime, as well as from environmental degradation. Today's international tourism system (...) is one of the clearest manifestations of unsustainable, wasteful consumption. (...) The globalization of tourism (...) is also a form of exploitation, the victims being the urban upper-class people in developing countries who are encouraged to spend their surplus income on dreams and illusions, at the expense of the environment and other members of society. (Pleumarom 2009)

As Portuguese architect Pedro Levi Bismarck points out, it seems clear that our criticism towards tourism cannot be sequestered to our criticism towards the dominant politics of space and towards a political space, discourse and debate which seem to be in an advanced state of decomposition. Tourism as a global phenomenon is inseparable from the "organization of space and time, of bodies and their social, cultural, spatial, affective and political relations under capitalism." (Bismarck 2016)

7. Traveling in sound

Although global policymakers and multinational economic groups can be considered the main responsible for the current situation concerning tourism, the roles of both tour operators and consumers shouldn't be overlooked. Both ends must realize that the world is not a limitless "resource to be exploited, but a sacred place to be protected and celebrated." (Pollock 2013) And while hosts must stop thinking of their customers as mere consumption units, tourists must unconvinced themselves that cheap travel is now a God-given right

and that the world is a huge combination of a department store and a fast-food chain to be consumed and discarded at will.

If the idea of sustainable tourism is not achievable within an unsustainable global scenario, can the praxis of responsible tourism, at grassroots level, be viable as a means to get as close as possible to that ideal, effectively reducing the industry's ecological footprint? And could something such as *sound tourism* be coordinated with the practices promoted by responsible tourism in order to help educate travellers towards leaving behind a smaller soundprint? Furthermore, could it contribute to a more sustainable model of tourism by raising awareness around issues like sound pollution or the preservation of endangered sounds?

While conducting field recordings in Tulum, Mexico, amongst several other social, environmental and economical paradoxes, I stumbled across one that became too evident to be ignored. In the context of a tropical paradise that had been progressively colonized by all sort of *eco-chic* resorts, overpriced raw food restaurants and wealthy yoga enthusiasts, I noticed a specific set of sounds that seemed to stand out from the endemic acoustic ambience, which was mainly dominated by the yet unfamiliar birdsongs, the soft surf of the Caribbean and the whisper of the wind rustling through the palm leaves.

Figure 7. *Power generators* (CC) 2015 Hugo Branco.

Aligned by the road that ran along the beach, behind the scenes of the allegedly sustainable and environment-friendly eco-resorts, were countless power generators. Despite

challenging the singing of the birds, the murmur of the waves and the rustle of the wind in the palm trees with their insistent hums, I realized that these were the devices that actually sustained the natural and serene lifestyle they so absolutely seemed to oppose. Having reflected and inquired about the subject, the sound performance that I later presented at a local arts event included a clear moment of compositional confrontation between the natural sounds and the dozens of generator tones that I had previously recorded.

Such a simple sonic occurrence struck me as a fundamental example of how opening one's ears may offer insight and raise reflection concerning complex environmental, social, political and economical issues.

8. From walking to soundwalking

In his book *Walkscapes: Walking as an Aesthetic Practice*, the Italian architect and researcher Francesco Careri claims that the mere act of walking can be seen as an aesthetic tool "capable of modifying metropolitan spaces to be filled with meanings rather than things." (Careri 2002) In this sense, can't practices such as soundwalks modify public awareness regarding visited locations, granting new meaning to both the experienced sounds, the actions and circumstances by which these sounds are generated, and the spaces where they occur?

Figure 8. *Walking* (CC) 2012 Cristian Carrara.

Together with "long-standing artistic, philosophical and political concepts that theorize through the practice of walking, such as haiku poets' use of daily walks as a creative structure, writing about the figure of the *flâneur* and the Situationist concept of the dérive, as well as the approaches of conceptual artists, such as those in the Fluxus movement," (McCartney 2014) soundwalks can be understood as a way of consciously relating to our environment.

> An inherent characteristic of any soundwalk is the inspiration and insight that listeners gain from noticing the soundscape with its specific qualities and details. It is powerful because listeners are affected on a personal perceptual level first and can then connect this experience with their professional insight and knowledge. (Westerkamp 2006)

Composer, radio artist, sound ecologist and soundwalks pioneer Hildegard Westerkamp claims that, besides opening up our ears to the sounding details of a place, soundwalks also have the power to alert all our other senses, creating a "sense of inspiration, excitement and new energy", while opening our "inner space for noticing" in a "living connection between the listener and the space." (Westerkamp 2006)

Besides raising awareness and helping to connect individuals to their surrounding environment, a rather quiet activity such as a soundwalk can also inspire participants to travel at a slower pace, leaving behind a smaller soundprint in particular and, eventually, a smaller footprint in general. Soundwalks can even be specifically designed towards provoking a deeper ecological awareness on the participants, thus helping educate a new generation of more conscious travellers.

9. What kind of traveller is the sound traveller?

> The tourist is a collector of lived experiences. That's why he marches in a hurry without any time to loose. His anxiety is directly proportional to the amount of objects and situations he feels compelled to live, that is, to consume. The tourist transforms his own life into a product to be consumed. And every *souvenir* he carries along with him is the *Made in China* symbol on the experience that he never ceases to pursue, but that he will never have. (Bismarck 2016)

In direct ontological opposition to the tourist, the sound traveller shares the fundamental traits of the flâneur – the "deliberately aimless pedestrian who wanders around the city without apparent purpose, but who is secretly attuned to the history (and in this case to the soundscape) of the streets he walks." (White 2008)

Though the sound traveller may occasionally put considerable effort into experiencing a very specific sound – like in the case of the sound pilgrimages proposed by Trevor Cox or when passionately determined to record a certain sound – he does not "feed on that which he destroys," (Bismarck 2016) rather taking "the streets as an unfolding and open text comprised of infinite possibilities. He looks for the beauty, the ugliness, the poetical, and the unexpected in order to find inspiration and make a personal sense of the physical spaces." (Torsi 2016)

Figure 9. *Agios Kirikos* (CC) 2015 Hugo Branco.

Declaring both walking and listening as fundamental aesthetic practices, the sound traveller gladly trades-off monuments and museums for busy streets, quiet outdoors or reverberating water reservoirs, aspiring to deeply connect with the city's inner pulse. Being open to all things foreign and unknown, whilst simultaneously aware that uniqueness often comes inside the most mundane of packages, the sound traveller understands the world as one comprehensive musical composition in which we, as listeners and sound makers, are all active participants.

10. Storytelling in sound

Assuming that something such as sound travel could be possible and even useful, what can be said about sound within the context of travel? And what can be written about travel within the context of sound? Language itself is dominated by visual references, and the vocabulary available to describe vision-based experiences is vast when compared to what can be said about senses like audition or smell. Can sound art and travel narrative cross-pollinate in order to analyse, understand and describe the sounds that best define each place, ultimately telling its story in a resonant fashion?

Since 2015 I've been developing a project called *Sound Escapes* that I understand to be a natural evolution of a prior collective project called *Membrain*, which I presented as final project for a Master in Digital Arts completed in 2007 at the Pompeu Fabra University, in Barcelona. In *Membrain*, itinerant field recordings were conducted throughout the Iberian Peninsula. The resulting sound archive was then used to feed a virtual platform designed for real-time audio sharing within a visual 2D persistent multi-user environment. Based on spring-related physical laws and on the organizational system known as Folksonomy, *Membrain* worked as a particular sound map within a dynamic shared environment where the changes operated by users on the semantic relations between its elements caused the environment to visually rearrange in real-time.

Eight years later, departing from a less technological and more personal approach, *Sound Escapes* allowed me to combine sound art with travel writing, while aiming to generate a transmedia narrative that could aspire to analyse, understand and describe the sounds – urban, natural, verbal or musical – that best define each visited place, studying each ecosystem from a sonic *point of view*.

Nomadic in essence, the *Sound Escapes* project departed in February 2015 from Porto, Portugal, and then progressed through Tulum, Bacalar, San Cristobal de las Casas, México, and Ikaria, Greece. Each visited place was perceived as a new episode in a series, and suggested its own underlying problematics and paradoxes. The work developed in each location included research and interviews concerning fundamental acoustic patterns and identity; field-recordings and development of an endemic sound archive; a travel article written from a sonic perspective; and finally a live sound performance presented *in loco* by manipulating the recorded sounds. Along the way, partnerships were established with institutions, media, local businesses and initiatives, local and foreign artists, and local arts residences.

Figure 10. *Sombrero de Brujo* (CC) 2015 Hugo Branco.

The resulting travel articles are currently being published in English at the *Sound Escapes* website, where it is already possible to access the first two, respectively about Porto and Tulum. The same articles are also being published in Portuguese at *Correr o Mundo*, a blog for invited travellers from the *Fugas* travel magazine. Field-recordings and live sound performances are currently being uploaded under a *Creative Commons* license to *Soundcloud*.

On one hand, I'm interested in identifying the processes by which sound can be perceived and used more creatively and wisely as a central storytelling factor in the context of travel narrative. On the other, I propose to detect which mechanisms can be used within travel narrative in order to make people more aware of their sound environment, both when traveling and back to their own ecosystem and daily lives. Finally, I wish to understand how sound performance and installation can ultimately encompass both the pace of travel storytelling and the expansion of awareness, ultimately revealing individuality as a part of a grand, developing song.

By embracing and depicting an approach to traveling that is akin both to the concept of *flânerie* and – as much as possible – to the practices advocated by responsible tourism, I also aim to generate debate over the subject of travel itself, demonstrating that life on the road is not as unattainable as it may seem, and contributing to the education of both travellers and agents towards a more responsible model of tourism. Indeed, travel can be as more rewarding as travellers learn to respect and to positively contribute to the local contexts and

causes – whether social, cultural, economical, political or ecological – that they encounter within the visited locations.

> I woke up slightly before eight in the morning to the sound of an amazing orchestra of unfamiliar birds. I opened the door, listened around and took a deep breath: You're in Mexico! – shouted the birds, the palm trees, the dirt road and the lively colours of the surrounding houses. (...) For the next week I lived in this neighbourhood that had seemed "grimy" when I had first arrived, and that seemed friendlier day after day. I got to know the characters who I had first though of as "dodgy" and that now smiled at me, in between sentences spoken in a strain of Spanish that I slowly started to understand. Listening to the pulse of the town, while playing with stray dogs, I was gently assaulted by a melody yet unheard: the sound of my silly European fears slowly fading away. (Branco 2016)

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Imagine Sound Map – Time, Temporality and Temporariness in the Soundscape of OĀZE

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ABSTRACT: This paper examines temporality in soundscape, exposed as a deficiency in the practice of online co-created sound map making. Despite their ephemerality, soundscapes in such sound maps are often treated with the same approach as landscapes in visual cartography and presented as though they were the definitive sonic representations of the geographical locations. This inadequacy may serve as a point of departure for creating artistic works, in which the essence of such work relies on this apparent lack in representation of temporality in sound maps. I will exemplify this with an analysis of my sound map piece OĀZE, the principal concept of which consciously stems from addressing the mis-implementation of soundscape in sound maps and adopting temporality as an imperative feature.

KEYWORDS: Narrative, Memory, Representation, Virtual Interface.

1. Introduction

It's been nearly two decades since the practice of online co-created sound maps has emerged. These sound maps offer interesting links between geography and the sound of places, in theory. 'Place' being the keyword here, most of these sound maps foreground the site-specificity of soundscape from around the globe, while attempting to preserve constantly changing sonic environment. As useful as sound maps can be in that users can discover what soundscapes of never-visited, faraway places are like, they also exhibit many conceptual shortcomings, one of which is failing to consider that sound and soundscapes are time-based, temporal and temporary. One cannot expect to represent sound in the same way a visual map represents geography, as Holanda, Rebelo and Paz comment on this predicament.

> The limitations of Cartesian representation of sound-place relationships arguably hamper the experiential approach to listening for which many soundmaps strive. For all its spatial authority, the map as a platform for placing sounds in space fails to capture the temporal and narrative characteristics of sound recordings. (Holanda et al. 2016, 80)

I will discuss this very concern within current sound map making practice and also illustrate my work OĀZE in relation to this topic. OĀZE is an imagined sound map that emerged from observing the lack of sound maps in representing the aspect of time and uses the configuration of a sound map as a stage to convey a narrative beyond sonic cartography.

2. Time

I ask a crude question to begin this discussion: what is time? Is it a phenomenon or a measurement? Does it exist, and if so, in what capacity? The answer will be something different to everyone including experts from various disciplines. To me, 'time' as an absolute thing doesn't exist; all I have is the present, and the continuous progression and accumulation of the "presents" constitute the passing of time, with the emphasis on 'passing'. Based on her experience as sound artist, Felicity Ford states "that sound recordings literally record time passing, and everything that takes place during that time making sound recordings."[1] Even by 'mapping sound' with the focus on the locality, the sound recordist always ends up capturing time in its passing form in addition to the soundscapes. Thus, a sound recording archives the moment at which the sound occurred, regardless of its primary purpose.

1. http://www.sound-diaries.co.uk/previous-sound-diaries-projects/2010-2/uk-soundmap-sonic-time-capsule/

This prompts us to regard soundscape recordings, not only in sound maps, but in all deployments, as inherent representations of 'time'. And by attempting to create a geographically inspired platform, sound maps inadvertently contain an archive of time within the collected sound recordings. However, this aspect of time is rarely mentioned in current sound map making practice, which leads me to assume that it is not being acknowledged. Many sound maps promote 'focused listening' or 'sonic awareness' towards our spatial environment. Through our hard effort to encourage listening, to bring soundscapes from one place to another and to preserve the ephemeral in the eternal, the soundscapes often become fossilised in place; 'time' gets lost.

Montreal sound map[2], for instance, seems to make an effort to hold on to the aspect of time within soundscapes by including the option to categorise the archived soundscapes by date. However, no two sound recordings in the sound map originate from one location, making it a successful 'sonic time capsule' as they intended,[3] yet still lacking in translating the fluidity of soundscapes.

An example of the most common configuration used for online sound maps can be found in Radio Aporee Global Sound Map[4]: an interactive visual map with marks for sound recordings that can be played back with a mouse click. The literal experience of looking at such a sound map reminds me of something very elementary: that time, unlike place, is invisible. We can see and touch places whereas we can only sense time at best. Within the practice of sound mapping, a primarily time-based action of field recording is deployed to capture the geographical places; the visible. While it is an ambitious undertaking, the predicament lies in this question: what is the appropriate method to translate this concept by evidently appreciating both elements, 'place' as well as 'time'? In such a configuration for sound maps, this 'visible and invisible' are presented as parallel components: the soundscape is literally positioned 'on top of' the landscape as seen from an aerial view. The purpose of the visual map is to be used as a guidance system that leads the users to the final targets: the sound recordings. These two elements coexist, but never merge; remain disjointed, which brings me to question the feasibility of this configuration in the first place. The visual maps that are incorporated in sound maps are those of a traditional kind: two-dimensional representations depicting three-dimensional realities. They represent the actual by being rendered into drawn or photographed versions of the realities. Yet the sound recordings that are presented on these geographical representations are rather excerpts of the actual than renditions; they are examples; 'representative' of the soundscapes that may be actually occurring. While the visible and invisible both are presented through representations, the implemented means for these representations are of dissimilar types.

2. http://montrealsoundmap.com
3. Ibid. about
4. http://aporee.org/maps/

In order to conceive of a sound map that can overcome the incoherence in the methods of presentation between the geographic and sonic, finding the appropriate way to 'represent' and 'present' sound must be in our interest.

Through my sound map OĀZE, created as a standalone application, I do not look for an alternative way to represent soundscapes, but rather take advantage of this deficiency observed in the prevalent configuration of sound maps. In OĀZE, which is based in an imagined place, time consciously exists, but gradually gets erased through a certain behaviour of the sound map. It comprises twelve locations portrayed in stylised abstraction that contain soundscapes, each of which is set in twelve different moments in time. The audience is invited to choose to listen to the soundscapes in any preferred order between the twelve locations, effectively determining the sequence in which they experience those moments in time. This is executed by each soundscape integrating a voice narration as first person narrative that tells a short description and observation of the exact moments, during which the soundscape is occuring. Each soundscape depicts a situation from a different moment in time to the rest, accumulating to reveal twelve sporadic, chronological moments out of a person's life. However, this is presented in such a way that the audience would experience the entire narrative in a non-linear order. By exploring the sound map and the soundscapes, the audience unintentionally moves through time. Through moving back and forth in time, time is erased.

3. Temporality

In his untreated field recording cycle 'A year's hours behind my father's house'[5], composer Ludwig Berger explores the temporality of soundscapes in a rather literal way, in which he traces time in one place by time-lapsing the respective sound recordings. He has made sound recordings in the exact same place for one year, four times a day, for one minute each time. One recording per week for each time of the day was chosen and sewn together to result in four twelve-minute soundscape compositions.[6] Although the notion of 'place' in relation to soundscape is indispensable in this work, it acts only as a fixture to 'time'; the fluid, which is the actual subject of his exploration. The work acknowledges the temporal aspect of soundscapes within a geographical fixture. Could this be a model for a possible sound map: providing a representation of the place linked with a variety of locational sound recordings to create a sonic 'overview'?

Clearly, landscape changes as well and should be regarded as temporal. However, the rate at which it alters is much slower in comparison to soundscape. Soundscape may not even be described as 'changing', as it does not take one shape: in order to change, an origin

5. http://www.impulsivehabitat.com/releases/ihab098.htm
6. Ibid.

must exist; a formation; a structure – soundscape doesn't possess any feature as such. It is absolutely fluid, fluent and evanescent. Yet, within the configuration of a sound map, soundscape is treated with the same assumption as landscape: as fixed and unaltering, and only gradually transforming. Soundscape as captured by a recording device will never recur naturally in the same iteration.

To acknowledge the continuous altering of the soundscapes, one can consider the constant streaming of the sound as an option for sound maps, as 'Locusstream Soundmap' does with their live worldwide open microphones.[7] This sound map enables users to stream soundscapes from around the world in real time. I can be sitting in my room in Ireland at dusk and listen to the morning soundscape of California. It can provide worthwhile sonic information with the right weather condition and input level of microphones. However, the incoherence in the presentation between the visible and the invisible still persists. And the more time one spends engaging with it, the more it becomes confusing whether the project is a sound map or simply a live broadcasting service.

In OĀZE, the notion of soundscapes being temporal representations is reinforced, by which the work takes advantage of the fact that the occurrence of an event is necessarily linked with a place and a time, with the focus on 'time'. The soundscape recordings introduced in OĀZE are paired with short stories, each of which implies the different age of the protagonist in the narrative.

The following is an example to illustrate the concept behind temporalising the narrative fragments:

> I don't fancy school trips, but I like sleeping in this lighthouse. Everyone else is already in bed downstairs.

From such a fragment, the listener is invited to deduce that the protagonist is in 'school' that takes overnight school trips and subsequently the approximate age of the protagonist. Here are two narrative fragments that exhibit a linking feature to each other.

> Usually I would come here with mama. But the last few times, I'm with papa, because mama needs to rest quite a lot, because she's carrying a baby in her body. [...] I hope I'll have a sister, because I already have a brother.

> My sister is covered in confetti now, and so is her brand new husband.

7. http://locusonus.org/soundmap/051/

These two fragments above exist as independent, ostensibly unrelated entities within the sound map. However, by connecting them with each other with regards to temporality, the listener can assume how many years apart from each other these two stories may take place. In such a way, each and every narrative entity is temporalised, creating the illusion of time traveling within the sound map. Through its exploration, the audience ultimately ends up indirectly experiencing the life of a stranger in its entirety, but in a fractured form, which is reconstructed through storytelling with its basis in the soundscapes. In OĀZE, the role of soundscapes as archives of time is acknowledged through such narrativised temporalities.

4. Temporariness

Archived sound recordings in sound maps commonly vary in length from 30 seconds to five minutes. This, in reverse, reveals the minimum duration of time, during which the sound recordist had decided to keep the recorder activated. The sound recordist was temporarily in the same place as the retrospectively captured soundscape. The sound recording is the evidence of her/his presence, because soundscapes are temporal; constantly moving, which makes them also temporary; constantly changing. So, what is it that enables us to catch an aural glimpse of the soundscapes despite their temporariness?: our presence in them. While it is possible to virtually experience soundscapes through such means as sound maps, within a natural circumstance one would have to be present in a place in person; in flesh and blood, in order to come across certain soundscapes. When one listens to recorded soundscapes, it is the sound recordist who surrogates this activity of being in a place for the listener. The sound recordist has already decided when to press record and when to stop recording. And the sonic experience of any soundscape depends on this decision of the sound recordist, as does the representation of the soundscapes in sound maps. The subjectivity of an individual cannot be disregarded in making sound maps, which also speaks against presenting the soundscapes with the same method as geography in visual maps. Certain landscapes, for as long as they do not alter, will be measured by the same number in dimensions, regardless of the time and the individual in charge. Is it possible to find such communally agreed measurements to represent soundscapes and present them so that everyone will understand it unanimously? Furthermore, one of the aims of the current sound maps, which is to preserve objective representations of soundscapes as in visual maps, prohibits the potential sound recordists from capturing something human; personal; subjective. Artist and researcher Jacqueline Waldock expresses her observation and criticism towards the specific nature of the sound maps:

> The very act of recording involves a series of personal choices and an individualized frame. Despite this, the recorder takes great care not to appear in the recording. Thus, the recordings have a poignant silence, that of the sound-seekers hiding themselves in the frame, the desire to capture the sounds of the other and not their own. The counterargument to this is that the sound recordings are snapshots to be heard and taken in the same way that snapshot pictures are viewed and captured, the photographer never appearing in the image. The question then arises: should the aural reflect, so precisely, the capturing of the visual? (Waldock 2011)

Sound maps have set out with the purpose of preserving the sounds around us; from our daily lives. But how efficiently can this be achieved, if 'people' were excluded from our lives? Without people, who would even hear the soundscapes? Unlike landscape, which can be observed from a distance, soundscape requires closeness; immersion. The existence of soundscape can be only proved through the involvement of personal presence.

In OĀZE, this subjectivity, which is usually determined by the role of a sound recordist inconspicuously, is embraced and played out by the protagonist in the narrative: the audience obtains a window into a few minutes of soundscape that the protagonist allows them to listen in; to experience the soundscape through the metaphoric ears of the protagonist. They hear what she hears, and they hear about what she sees, what she thinks, what she's experienced and remembers in relation to the present moment, at which the soundscape is occurring. In order to achieve this effect, the narration is established in present tense, whenever it actually may be – whether in the present, past or future. It emphasises the temporariness of soundscapes and furthermore of being. This prompts each soundscape to take place in the present and subsequently all soundscapes from different moments in time to occur in the present. Not unlike when we recall memories, time is erased. Sounds, occurrences, thoughts – everything happens in the present, and present is only possible in person. The present happens in its temporariness, and the same applies to sound; hearing sound is being.

5. Timelessness

Within a virtual world where there is no such a thing as time, through the usage of the present tense, OĀZE invites the audience to be suspended in time. As the protagonist tells them fragments out of her presents within the sonic environment, the lines between the present realities and frozen memories get blurred. Memories are contained within a body, as sound recordings are in a sound map, and exist in everlasting present from the moment they are engraved inside us in their timelessness. In OĀZE, nothing in fact is 'real'; it exists

in a virtual space as an imagined place with appropriated soundscapes and fictitious history. As a representation of imagination, this map does become more than the territory. Through the visits of the audience and their actual time spent in this virtual place, OĀZE 'becomes' real.

6. Outroduction

The practice of sound map making is in its developing stage. Contemporary geographical cartography is a result of research and explorations that have been done for centuries out of necessity and desire to find a communally apprehensive method to represent geographical information. In comparison, sonic cartography is like a toddler; it is still finding its appropriate way to behave and appear, through many experimentations by artists and researchers. With some imagination and determination, it may succeed in being shaped into a logical, applicable, sensible and effective entity. It may find its way to appropriately represent and present soundscapes, to merge with the way the locational information is presented if necessary, and be more than a trendy addition inserted onto an already established interactive visual map. As a contribution to this discourse, I can offer neither a solution nor an alternative. I merely present how I imagined one to be and how I took advantage of the current configuration of sound maps including its shortcomings for an artistic exploration. By doing so, I was able to find a way to use the sound map as a platform to execute something beyond sonic cartography.

Putting the predicament of the configuration in question aside, sound maps have their merits in engaging communities, offering to widen the scope of exploration into faraway places, or being a methodology to archive sounds in a visually enhanced way. They enable one to listen in and imagine what it would be like to be in those never-visited places; they let one daydream. Anything that allows us to do that is worthwhile occupying ourselves with. We do not need to only worry about preserving the soundscapes and concentrate on the future-oriented qualities in making sound maps, when, I'm sure, we can find meaning in them that will enrich our lives in the present.

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Museum City – Improvisation and the Narratives of Space

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ABSTRACT: This paper provides four viewpoints on the narratives of space, allowing us to think about possible relations between sites and sounds, reflecting on how places might tell stories, or how practitioners embed themselves in a place in order to shape cultural, social and/or political narratives through the use of sound. I propose four viewpoints that investigate the relationship between sites and sounds, where narratives are shaped and made through the exploration of specific sonic activities. These are: sonic narrative of space; sonic activism; sonic preservation; sonic participatory action.

I examine each of these ideas, initially focusing in more detail on the first viewpoint, which provides the context for discussing and analysing a recent site-specific music improvisation project, entitled "Museum City", a work that aligns most closely with my proposal for a 'sonic narrative of space', while also bearing aspects of each of the other proposed viewpoints. The work "Museum City" by Pedro Rebelo, Franziska Schroeder, Ricardo Jacinto and André Cepeda specifically enables me to reflect on how derelict and/or transitional spaces might be reexamined through the use of sound, particularly by means of live music improvisation. The spaces examined as part of "Museum City" constitute either deserted sites or sites about to undergo changes in their architectural layout, their use and sonic make-up. The practice in "Museum City" was born out of a performative engagement with[in] those sites, but specifically out of an intimate listening relationship by three improvisers situated within those spaces.

The theoretical grounding for this paper is situated within a wider context of practising and cognising musical spatiality, as proposed by Georgina Born (2013), particularly her proposition for three distinct lineages that provide an understanding of space in/and music. Born's third lineage, which links more closely with practices of sound art and challenges a Euclidean orientation of pitch and timbre space, makes way for a heightened consideration of listening and 'the place' of sound. This lineage is particularly crucial for my discussion, since it positions music in relation to social experiences and the everyday, which the work "Museum City" endeavoured to embrace.

KEYWORDS: Narrative politics, space, sound, improvisation, performance.

1. Introduction

There are manifold ways in which narratives of spaces might emerge, as there exist different conceptual approaches that link sound and site, music and place, as well as different ways in which stories are told, political statements are made through the lens of a certain engagement of sounds and sites.

I am going to discuss four particular viewpoints that shed light on the understanding of space in/and sound. These are:

- sonic narrative of space
- sonic activism
- sonic preservation
- sonic participatory action

It must be noted, however, that these do not constitute exclusive ways of thinking about sites and sounds, nor are they rigidly delineated categories; rather, I am hoping to examine different potential ways of intervention, thinking about how sounds might be used in a particular site, or how a specific place incites sonic action and shapes certain narratives.

I build on some of the pivotal discussions in Georgina Born's edited volume (2013) on the politics of sound and space, where several authors have examined how music, sound and space can transform the nature of public and private experience. Born's 'social phenomenology of music and sound' (2013: 7), drawing on the notion of social mediation in a process where music, sound and space become intertwined, is implicit in all four viewpoints that I examine here.

Born argues that, rather than a singular sociality, there exist four planes of social mediation that

> enter in dynamic ways into musical and sonic assemblages. The four are irreducible to each other and each has a certain autonomy; yet they are articulated in contingent ways through relations of synergy, affordance, conditioning or causality (2013: 32).

I stress that Born identifies the limits of her own topological metaphor of the plane, with its absence of embodied, fleshy and human qualities that are present in the socialities reflected within the planes. Whereas Born's first plane considers the intimate microsocialities of musical performance, i.e. the social and corporeal interactions between performers and audiences, the second proposes that music animates communities (with listeners aggregating into virtual communities); her proposed third plane highlights the wider social formations, i.e. social relations to do with difference of gender, class, age, ethnicity, religion and race; and finally, in her fourth plane music is mediated by institutional forms (2013: 32).

I acknowledge one of the central ideas in Born's book, that any auditory experience has the capacity to reconfigure space and is thus able to give way to plural and permeated space, as opposed to singular, perspectival space. My thinking is more concerned with plural and permeated space than with people's personal experiences or their emotional responses to a particular place, or how music, sound and space might engender modes of publicness and privacy (as Dibben, Haake or Rice pursue in Born's volume).

2. Place or space

Before exploring the four 'categories' that I propose here, it is worth noting that I will be mixing quite liberally ideas around place, space and site. This is not to ignore the extensive debates around the space-place conundrum (Agnew, 2011 or Bird et al, 2012), but to acknowledge the close-knit relation between place, space and human agency - a relation that, through rapid movement but also through constantly changing human commitments, can become blurred easily. For the purpose of this paper, it is worth recalling several significant ideas surrounding the debate on the meaning of place and space, especially as it is very common for place to be standing in for 'the local (and traditional)', while space (but also location) represents 'the global, and thus the modern' (Jessop et al. 2008).

John Agnew, in his Handbook of Geographical Knowledge (2011), further elaborates that place is the setting for social rootedness and tends to be associated with the world of the past, whereas space "represents the transcending of the past by overcoming the rootedness of social relations in place[...] through mobility and the increased similarity of everyday life from place to place" (2011: 8). Space is thus linked with the world of the present and future, seen to be progressive and radical, while place can often have something nostalgic, but also regressive or even reactionary (2011: 7).

Already in the mid 1970s, cultural geographer Tuan not only explained place in terms of its spatiality, but, by referring to ideas of social position and moral order (Tuan 1974a), put to the fore the affective bond between people and places, which he examined in his work "Topophilia" (Tuan 1974b). He considered how place gives and also acquires meaning by taking into account what a place might offer socially and morally, anticipating Born's notion of social mediation.

Agnew states that the radical social sciences have tended to devalue place, arguing that the effects of capitalism, and with it people's detachment from their self-creation in place and their geographical alienation from the world around them, have meant that places become reduced to locations.

Writers such as Lefebvre, with his significant work on the production of space (1991), focused on how social life plays out in the creation of space, and Elden's (2004) contemporary reading of Lefebvre positioned space as a 'historical production', understood as both

'a material and a mental process' (2004: 184). Both their readings provide a theoretical shift away from a Kantian categorical conception of space and time, while foregrounding elements of the social, spatial and temporal as shaping one another.

Edward Casey speaks out against the idea that place tends to become subsumed by a plane of "abstract perfection and purity" [attributed to space and time] (1996: 45). Casey critiques the thinking that 'generality, albeit empty, belongs to space; [while] particularity, albeit mythic, belongs to place' (1996: 15). Rather, Casey argues, "space and time are themselves coordinated and cospecified in the common matrix provided by place" (1996: 36).

And finally, Robert Sack eloquently weaves place and space together through movement. In his view, places are constantly changing through different human commitments, capacities and strategies. Sack's relational view of space, which posits space as plural and as a co-product of the proceedings of the world, is also emphasised as such a few years later by Thrift (2009). Sack suggests that, "Place implies space, and each home is a place in space. Space is a property of the natural

> world, but it can be experienced. From the perspective of experience, place differs from space in terms of familiarity and time. A place requires human agency, is something that may take time to know, and a home especially so. As we move along the earth we pass from one place to another. But if we move quickly the places blur; we lose track of their qualities, and they may coalesce into the sense that we are moving through space. (Sack, 1997: 16)

3. Sonic narrative of space

I now turn to the first of the four viewpoints, which is preoccupied with the creation of sonic narratives, the urban condition and the everyday. It is a 'category' that can be situated in the lineage of Cage's experimental practices that set 'the stage for a heightened consideration of listening and "the place" of sound', by which music became positioned "in relation to a broader set of questions to do with social experience and everyday life" (LaBelle 2006: xii-xiii). Sonic Narrative of Space interweaves sites with sounds or sounds with sites, drawing out narratives from the sonic-spatial potential of sites, as heard, imagined and performed by a listener, something that Rebelo refers to as 'performing space' (2003), albeit in the context of interactive sound installations.

The performance/sonic project I take as exemplifying this viewpoint is entitled "Museum City (Cidade Museu)". It was developed for the 2015 Portuguese festival 'Jardins Efémeros', a festival that joins local, national and international arts events and local communities in Viseu, a city in the north of Portugal. The 2015 festival was dedicated to the theme of "Light

of the City", where citizens were urged to think of light not as an absolute and total truth, but as a plurality - as the result of a combination of different colours (URL 1).

Figure 1. Museum City: Musicians and Wall projection at the final performance, July 2015. (http://jardinsefemeros.pt/eventos/cidade-museu) Photo Credit: Fernando Carqueja.

"Museum City" can be situated on the border of conceptual, performance, intermedia and digital arts practices, an artistic interstice which Douglas Kahn and Brandon LaBelle see as embracing sound installation, site-specific and public sound works (Kahn 1999; LaBelle 2006), and indeed "Museum City" has facets of all of these. Georgina Born refers to this particular artistic space as the third lineage, which she associates with soundscape composition and sound art, but also with live and experimental computer music, and mainly with sound installation, site-specific and public sound works, where a different conception of space in/and music is presented, one that radically departs from the Euclidean orientation of pitch space and timbre space (2013: 14–15). In this third lineage,

> space moves out beyond the musical or sound object to encompass 'exterior' spatialities: the spatiliaties configured by the physical, technological and/or social dimension of the performance event... (Ibid: 16).

"Museum City" falls into Born's third lineage as it involved six distinct sites in Viseu, five of these being culturally, aurally and sonically embraced at a preparatory stage of the project, during which four artists explored - through improvisatory performative and recording actions - the sonic properties of each of five selected sites. This preparatory stage informed the design for a technological and social dimension of a final, different performance space – the cathedral of the city of Viseu. The fact that three of the involved artists were Portuguese, one from the city of Viseu, meant that there was a particularly close connection to the sites

and their cultural significance in a local context. "Museum City", a highly collaborative work conceived for a festival of citizens, particularly emphasised ideas of space as multiple and constellatory; it moved beyond sound itself to embrace notions of participation, interactivity, collaboration and community. This was certainly true in the way the artists reconfigured the traditional division of labour between composer and performer, as the artists were all (to some degree) composers, performers, computer programmers, sound recordists and designers.

Figure 2. Museum City: Wall projection of videos at the final performance, July 2015. (http://jardinsefemeros.pt/eventos/cidade-museu) Photo Credit: Pedro Rebelo

I will describe the six physical sites that were used in more detail under the heading 'Developing Museum City' below, but first I point to a further distinction with regards to the orchestration of space, or the understanding of space in/and music, as elaborated by Born. Whereas Born's first distinction includes events that focus on the performance space or situation, the second distinction includes events that encompass the wider sounding environment or acoustic ecology and listeners attentive to a specific site or place. The third distinction Born makes with regards to orchestration of space includes those events that, by means of digital technologies, "configure several simultaneous and shifting locations or virtual spatialities" (Ibid: 16). The work "Museum City" plays with the orchestration of space in multiple ways, being on one level very much focused on a particular performance space (the cathedral where the final performance took place), while also feeding the overall artistic concept off the wider acoustic ecology of the five specifically selected sites and their resonant sonic properties. The final form of the work attended to a spectrum between the space of sonic performance practice and, by engaging with local sites of the city and with objects in those sites, "the space of everyday, 'found', designed or technologically enhanced sonic environments" (Ibid: 16–17). At the heart of "Museum City" was the notion of the everyday, as five physical sites were selected

specifically according to their ordinary meaning for local inhabitants of the city of Viseu, as well as for their sonic properties, which were of musical interest to the artists. As "Museum City" was made for a festival of a specific local community, the inherent social, ethical and political matters formed a necessary part of the conception of the work. In preparation for a final performance of the work, which took place in the local cathedral (seating over 800 people), three musicians (Pedro Rebelo, piano/electronics, Ricardo Jacinto, cello/electronics and Franziska Schroeder, saxophones) explored, through improvisatory musical actions, the acoustic and sound characteristics of five derelict sites located in and around Viseu. A visual artist, André Cepeda, conducted his own photographic exploration of the sites in parallel. The five sites had been chosen according to their immanent transitionality; i.e. all spaces were either derelict and/or about to undergo major changes in their architectural, and thus sonic, makeup. Such spaces undergoing architectural transitioning were of particular interest to the artists and to the festival, as it allowed conceptual room for capturing aural memories while creating a narrative for the piece that could simultaneously engender memories (albeit highly subjective ones) of these transitional spaces, and allowed the artists to produce a kind of frozen aural picture of a specific moment in time.

3.1. Developing "Museum City"

In the development stage for "Museum City", audio recordings of improvised live instrumental performance in each of the five chosen derelict sites in the city of Viseu were captured and later underwent a process of iterative convolution. This process multiplied the spectrum of the original instrumental recordings with the impulse responses of the site in which the recording took place; by doing this iteratively, the instrumental articulation of the original recording gradually gives way to the natural resonances of each site as activated by the instruments. In this way, each space becomes described through its sonic/harmonic characteristics. Sound, in echoing throughout each space, defines each site from a multiplicity of perspectives and spatial locations, since each space is, as Brandon LaBelle has argued, here (close to the sound's source) and also there (along the trajectory that the sound travels), and what we hear close to the sound source is always "more than a single sound and its source, but rather a spatial event" (LaBelle, 2006: x).

During the preparatory stage, the photography artist, Cepeda, captured visual details of each space and the musicians' performative and improvisatory engagement within each site.

The five sites in "Museum City" were:

1. An old mansion home that belonged to the Portuguese national road services (called 'Casa Pais'), which had been sold to a hotel developer who will be transforming the mansion into a 5-star hotel. The mansion consisted of several beautiful stone staircases, leading up to two floors of offices, and a courtyard with a water fountain, which was overlooked by stone balconies on each of the two floors. The materials were mostly stone and there were some internal facing windows and rooms.

Figure 3. Museum City: Preparatory stage of recording in the former Portuguese national road services offices, Easter 2015. Photo Credit: Pedro Rebelo

2. A former slaughterhouse, which had been derelict for some time, and which had no roof and hardly any windows. It consisted of many corridors (abattoirs), some tiled walls with several concrete slabs and walls, as well as discarded rubber tyres and surplus plastic materials covered in a lot of dust. A carcass of a deceased cat further emphasised the abandoned nature of this space.

Figure 4. Museum City: Preparatory stage of recording in the local, abandoned former slaughterhouse, Easter 2015. (https://pedrorebelo.wordpress.com/2015/07/04/cidade-museumuseum-city) Photo Credit: Pedro Rebelo

3. An abandoned music hall (the old Orfeão) with (now) precarious wooden floors and exposed wooden walls, a derelict theatre stage set in an alcove plus several wooden doors and windows that were still intact. At the back of the hall were remains of the previous lavatories, with a few of the latrines still working.
4. A three-storey family house with its grounds in Rua Silva Gaio, an abandoned domestic dwelling which had already found a new buyer by the time of the July 2015 festival. Most of the materials here were wood and glass, with wooden staircases leading up to each floor and pigeons nesting in many of the house's small, ruined and abandoned rooms.

Figure 5. Museum City: Preparatory stage of recording in a local abandoned house, Easter 2015. (https://pedrorebelo.wordpress.com/2015/07/04/cidade-museu-museum-city) Photo Credit: Pedro Rebelo

5. The building of the local wine federation, which had long been abandoned and was on the market for sale. As one can imagine, there were huge warehouse and storage spaces over two floors, filled with (mostly) empty wine bottles covered in dust, wooden wine barrels, and also some tables and chairs that had been discarded in situ. Gigantic wine tanks with over 1000l filling capacity built into the walls were an exciting sonic feature of this site.

This preparatory work of visiting each of the five abandoned sites, spending days improvising acoustic musical materials and listening to the sites' intrinsic acoustic responses, and finally capturing and then exposing the natural resonances of each site through convolution processes, allowed the artists to explore the intimate relations in the five spaces and the sonic-musical connection between the five spaces.

The working processes involved, concerned with the relational, spatial and temporal nature of sound in each site, are reminiscent of Brandon LaBelle's idea of sound as intrinsically relational. According to LaBelle, at the core of sound art is the

"activation of the existing relation between sound and space... Sound and space converse by multiplying and expanding the point of attention, or the source of a sound: the materiality of a given room shapes the contour of sound, moulding it according to reflection and absorption, reverberation and diffraction" (2006: ix, xi).

In this reading, "Museum City", experienced from the subjective, embodied, and social locations of four different artists, was concerned with the sonic-spatial politics of the urban conditions and the everyday objects and meanings of each site. The intention was, by means of the activation and capture of these derelict spaces, to develop an audio-visual narrative that could reflect architectures, inherent memories and stories, as well as individual listening experiences, while creating a sense of place through sounds and images. An audio-visual story was crafted into an overall 50-minute final performance event in the main cathedral of Viseu. The images derived from the photographs, taken in each of the five derelict spaces, were projected onto the stone walls of the cathedral during the final performance in order to illuminate the performance space, while also exposing details, symbols, lines and textures, so characteristic of each derelict space.

3.2. Performing "Museum City"

The final performance of "Museum City" constituted a fairly traditional setting, with an elevated stage area built in front of an 800-seat audience in a Catholic cathedral. Although the artists' concerns with everyday objects of the five derelict sites and their sonic narrative potential were integral in developing the work, in order to produce a 'final product' (a live performance for an audience) the artists felt the need to develop a firmer structure – a compositional framework that was flexible enough to enable improvisatory approaches during the final, live performance. Enabling improvisation within a slightly more set compositional structure was essential in order to guide the final performance, as it allowed better alignment of video and audio aspects, enabling the videographer, technicians, lighting designers and musicians to communicate more easily. Improvisation was an important component of the final performance of "Museum City", as it had been integral in the development stage, i.e. in the recordings and activation of the existing relations between sounds and the five derelict spaces. Further creative decisions involved the overlaying of multiple stories / narrative planes to represent the sonic characteristics of each site, while also taking into account another narrative layer, that of performing in and performing the opulent cathedral itself.

Local cultural artefacts - traditional Portuguese bass drums associated with local festivities - were suspended at the back of the cathedral for the final performance. These bass drums served both as a visual counterpoint to the frontal optical stimulus of the three

performing musicians and as an acoustic counterpoint to the spatial resonances of the five derelict sites, as the drums, through an electro-acoustic device, 'played' rhythms which were derived by slowing down the impulse responses of the derelict sites, thus bringing acoustic reflections of the abandoned spaces into the cathedral performance.

Figure 6. Museum City: Final Performance in July 2015, showing the suspended drums at the back of the cathedral. Photo Credit: Fernando Carqueja

In line with Born's third lineage, space in "Museum City" was conceived as multiple, as mediated and mediating – not only due to the fact that five abandoned sites were recorded and performed through sound, but also due to the artists' conceptual approach of linking each space to a suspended drum in the final performance space, and by selecting (composing) musical materials that were closely linked to each space. In other words, the specific resonant frequencies of each of the five derelict spaces informed the loose compositional framework for the final performance – an improvisatory approach nested within a loosely conceived compositional framework. The final live performance made use of computer music elements based on site-specific sounds, live improvised compositional materials played by three musicians and projected photographic materials of each of the five abandoned sites. It exposed many contrasting elements, including the juxtaposition between the splendour and opulence of the Cathedral and the five derelict spaces spread across the city of Viseu.

By interweaving sites with sounds and sounds with sites, "Museum City" is most closely associated with the viewpoint of *Sonic Narrative of Space*; however, it is also connected to the other three categories, which I will now examine, beginning with *Sonic Activism*.

4. Sonic Activism

I now turn to the second of my proposed viewpoints, that of Sonic Activism, which entails the idea of a public site, perceived to be politically or culturally meaningful (such as a church or a significant town square), being infiltrated with, or appropriated by sonic activities in order to voice political messages. In Sonic Activism practitioners embed themselves in a place to shape political narratives using sound. Sonic Activism has certain parallels, or indeed might be read as a subset of what Goodman has explored at length under the notion of "Sonic Warfare" (2010). Goodman specifically constructs a concept of a 'politics of frequency' that questions the underlying vibrations, rhythms, and codes that affect bodies. He defines sonic warfare as "the use of force, both seductive and violent, abstract and physical, via a range of acoustic machines (biotechnical, social, cultural, artistic, conceptual), to modulate the physical, affective, and libidinal dynamics of populations, of bodies, of crowds" (2010: 10).

It might be worth noting that both Sonic Activism and Sonic Warfare, due to their inherent relations with noise, could be seen to have traces in experimental music, specifically the sonic avant-garde movements fronted by Luigi Russolo's Futurist manifesto (The Art of Noises, 1913/1967), which heralded noise as something radical and as that which, by means of its glorification of dissonant industrial machinery sounds, introduced much needed new energies into a decaying bourgeois classical music trend. Following the Futurists, Attali suggested that noise, before it was further developed in information theory,

"had always been experienced as destruction, disorder, dirt, pollution, an aggression against the code-structuring messages. In all cultures, it has been associated with the idea of the weapon, blasphemy, plague..." (1985: 27).

For the purpose of my discussion I understand Sonic Activism as bearing slightly less violent connotations, where physical violence is not the primary object (as in the bin Laden or Hitler examples referred to in my footnote), but rather where sound is used to voice a specific narrative, and used as an affective, mobilising, cultural weapon, as opposed to an acoustic weapon intended to kill. However, I certainly acknowledge Goodman's description of the potentially deadly effect of noise when he says that "noise, like anything else that touches you, can be a source of both pleasure and pain and that beyond a certain limit, it becomes an immaterial weapon of death" (2010: 10). Sonic Activism can result in aural and emotional assaults (depending on which side of the political fence one observes from) - a 'politics of frequency' being employed to monopolise physical spaces and to modulate physical and affective dynamics of populations within those sites.

To mind come coordinated parades of 'sound trucks' as used in Japan by right wing activists (also referred to as 'rightist sonic activism' by Hankins and Stevens, 2013). Sound here is used to trace boundaries of space, in order to produce ethno-nationalist sentiments; thus, through sound and movement, activists move through the streets of Japan, creating or

delineating emotionally powerful territorial boundaries. They put political messages across that bear intimidating aural charges.

Other forms of Sonic Activism can be seen in the ways the Brazilian special police unit of the Military Police of Rio de Janeiro, the Batalhão de Operações Policiais Especiais (BOPE), has been seen to enter some of Rio's shanty towns (favelas) with their fleet of armoured fighting vehicles (also known as "Pacificador - Peacemaker" or "Caveirão - Big Skull"), while playing very loud funk carioca music. In a move to 'pacify' the favelas, sound, particularly played at very high volume, is used to intimidate and frighten the favela's population. Murray Schafer once stated that "noise equals power; it induces fear" (Schafer 1994: 50). Sound imposed onto a particular territory (the living places of the favelados) thus becomes one of the weapons employed by the BOPE.

"Museum City", although placed more concretely under the above category of Sonic Narrative of Space, has clear linkages with Sonic Activism in that one could easily argue that musicians bringing their instruments and digital devices – alongside a highly elaborate 8 channel loudspeaker system – and suspended bass drums into a sacred place (the cathedral of Viseu) is a way of 'imposing' onto a site. (Indeed, lengthy discussions with the local priest and archbishop of the diocese of Viseu took place leading up to the performance in order to gain access privileges to suspend the five bass drums from the rather fragile back choir gallery of the cathedral.)

And finally, one might see traces of Sonic Activism in the political protest songs and performances by the Russian feminist punk/rock group Pussy Riot. The band's activities are sometimes referred to as 'dissident art' and understood as civic performative activity, voicing anger and frustration against perceived oppression by the Russian political system, which, under the leadership of President Vladimir Putin, has been criticised many times for the violation of basic human rights, discrimination against women, as well as intrusion on civil and political liberties. Pussy Riot stage mostly unauthorised, provocative guerrilla performances, often involving blasphemous lyrics, in unusual civic spaces, such as churches or public squares. In this type of Sonic Activism, sites are selected according to their political significance (churches), and song is used for voicing political messages ("Virgin Mary, Mother of God, banish Putin"), as in Pussy Riot's song Punk Prayer (URL 2) or "Putin ignites the fires of revolution. He was bored and frightened people in silence..." as in the song 'Putin Lights Up the Fires' (URL 3).

Pussy Riot's performance in Moscow's Cathedral of Christ the Saviour, located very close to the Kremlin, is part of a series of actions protesting against Putin and particularly against the relationship between church and state. Pussy Riot are known to have selected other, more controversial, performance sites, including the roof of a detention centre where anti-Putin protesters were held, as well as Moscow's Red Square.

Stone-Davis writes, in an article on worldmaking and worldbreaking in Pussy Riot, how the context and sites are so integral to their performances, with the band symbolically disrupting "the 'normality' of the chosen location and [attempting] to alter the usual mode of engagement that onlookers have with it" (Stone-Davis, 2015: 108).

In short, in Sonic Activism, sites that are politically or culturally perceived as meaningful or significant become occupied or filled with sound - often reaching levels closer to noise and thus frightening, shocking or upsetting inhabitants in the respective sites. Sound is used in order to rewire the body and its sonic sensations, i.e. as Goodman describes it, "to modulate the physical, affective, and libidinal dynamics" of crowds (2010: 10). Sonic activities are designed and used in order to voice political discontent (as in Pussy Riot), and often, to intimidate (as in the favela example). The site becomes appropriated through sound, with sound being imposed onto the space as a cultural-political weapon, with no particular direct concern for a site' s architectural make-up or meaning. There tends to be an overt delineation between those who produce and project sounds and those who (often involuntarily) receive and listen.

Thus, in Sonic Activism, through an enactment of power, the performing of spatial boundaries and an assertion of identities, sound is used as means of social regulation and control.

5. Sonic Preservation

In contrast, in Sonic Preservation, a real concern for the architectural, emotional or social meaning of the site is highly relevant. Whereas in Sonic Activism sounds are created for the purpose of political and cultural subversion, in Sonic Preservation artists tend to use sound recording as a primary means to preserve a particular space and its sonic properties, and with it preserve what Marques and De Araújo refer to as 'an acoustic memory of habitats and ecosystems' (2014: 3). Sound is not produced, appropriated or made specifically for, nor imposed onto, a culturally or politically meaningful site, but is extracted as an essential feature of an environment, with the values, associations, and memories that humans give to these sounds being an essential focus. There is a real concern with the psychological, physiological, at times even pathological, impact that soundscapes can have on humans. The work of sound artist John Levack Drever comes to mind, whose work and thinking around acoustic ecology take evident influences from Murray Schafer's seminal work The Soundscape: Our Sonic Environment and the Tuning of the World (1977) and Schafer's research group the World Soundscape Project (Schafer 2016). "Museum City" bears resemblances to the idea of Sonic Preservation, in that the five chosen derelict spaces in Viseu were somewhat preserved and archived by means of recordings of improvised acoustic sounds of the three musicians. However, the sounds that were captured as part of this recording stage were later mixed and re-appropriated for the final performance of the work, and thus became less 'authentic' or

less recognisable. The final performance of "Museum City" in the sixth space, the opulent cathedral of Viseu, made use of selected improvised materials of the five abandoned spaces in order to sonically represent the intimate relations of the five sites selected by the musicians.

However, in contrast to most works that align with Sonic Preservation in my argument here, the sonic materials in "Museum City" were not intended as a way of preserving a site or of creating an 'accurate' acoustic memory of the sonic make-up of a place, but rather the original sounds of each site in "Museum City" were processed and changed significantly to suit a creative purpose.

Also, in Sonic Preservation the focus tends to be on the outside environment (the italics acknowledge that this might not be exclusively so), which is seen as both culturally determined and, as a result, as determining culture. Acoustic ecologists are partly preoccupied with 'endangered' sounds, with probing questions such as, what are the sounds that we might potentially lose in the future, with environments constantly changing? Drever's sonic preservation work, specifically his impressive recordings in national parks, particularly in south Devon's Dartmoor National Park, has been detailed in his 2002 publication Sounding Dartmoor: A case study on the soundscapes of rural England at the opening of the 21st Century. Drever is interested in understanding whether soundscapes of a particular site should be seen as an integral part of our heritage, in the same light that we think about preserving historic buildings (BBC Worldservice Interview, 2009).

Also worth mentioning are the works by sound artist Peter Cusack, in particular his 2012 sonic preservation work that documents sounds of 'dangerous' (not necessarily 'endangered') places, including the Chernobyl exclusion zone in the Ukraine, the Caspian oil fields in Azerbaijan, and the Tigris and Euphrates river valleys in South Eastern Turkey (URL 5). When thinking of Sonic Preservation, I am particularly drawn to the highly sensuous sound recordings by Steve Feld and his method of what has come to be termed 'anthropology of sound' - a representation of a culture in and through sound, both 'as a pleasure and an intellectual provocation' (Feld 2004), something that allows one's ears to come close to the people that are being recorded. In particular, Feld's recordings in the rainforests of the Kaluli people in Papa New Guinea, entitled Bosavi (2001) and Rainforest Soundwalks (2001), clearly fall under my category of Sonic Preservation, with its concern for the architectural, emotional or socio-cultural meaning of a place and its people. Specifically, through Feld's ethnographic work, we come to understand the notion of 'acoustic epistemology' (acoustemology), or 'acoustic knowing', as a central aspect of the experience of the Kaluli people. 'Acoustic knowing' is an experiential knowledge based on the Kaluli's relations between sound, space and place (Feld 1996). Sounds, and the sensual bodily experience of sound, are the Kaluli's way of knowing; they are integral and constitutive of their environment, their collective experience of space and time, as well as of their rituals, emotions and social relations.

In short, in Sonic Preservation, sites and cultures become preserved in a process of creating an acoustic memory of the sonic make-up of places and people. The sites tend to be selected in accordance with whether these might be meaningful for natural or cultural heritage purposes. Sounds are extracted rather than imposed; sounds are considered as culturally and politically meaningful as they appear in a particular site and within a specific culture. One might say that the chosen site is not so much appropriated through the use of sound, as in the Brazilian favela example above, but rather that the site's meaning and significance are selected and interpreted by means of sound recordings, often carried out by one single artist rather than by a community of people. The sonic makeup of the site's architecture, as heard by the artist, can become the defining characteristics of place. Place and culture become represented, and later remembered by others, through recorded sounds, selected as part of a highly personal listening experience and choice by one artist.

6. Sonic participatory action

The often highly personalised representation through sound recordings in Sonic Preservation becomes more of a matter for communities in the next category, that of Sonic Participatory Action. Here, one of the main foci is to engage a variety of people, usually from within a specifically selected community, through sound recordings and listening, in questioning and re-examining their immediate environment via sonic activities. The communities often tend to be less familiar with (or interested in) the idea of listening to sounds and their particular places in their everyday life. Sound thus becomes a medium for enabling community action and the telling of personal stories, carried out in meaningful spaces for these particular communities.

Hand in hand with Sonic Participatory Action goes a fascination with the 'local' as a site of action, of tension, resistance and human living, but also the 'local' as somewhat representing tradition (as Jessop (2008) has argued). There can be a sense of nostalgia of places, of memories of places past or changed, and a melancholic preoccupation with sounds disappeared, forgotten or about to disappear.

The project 'Sounds of the City' (see URL 6), carried out in Belfast and Rio de Janeiro, is one such project where everyday relationships of sound and place were teased out and captured, allowing people to understand a different facet of their environment or to question – and, at times, revive – their memories of places through the experience of listening. It must be noted that the communities involved in 'Sounds of the City' were themselves integral in setting the creative agenda, deciding what sounds to record and when, and, indeed, they were responsible for producing collaborative research as part of their involvement. This type of research, carried out by a community of people rather than by a single author, is a model that was made prominent through the work of Brazilian ethnomusicologist Samuel Araújo and his

work in "Musicultura" (Rebelo 2014), a model based on the pedagogical tradition of Paulo Freire (1993). Rebelo further referred to such a collaborative way of researching as 'distributed production' and 'horizontal decision making', with different tasks being self-assigned amongst participants (Rebelo 2014). These two participatory sonic art projects, 'Sounds of the City, Belfast' and 'Som da Maré' (URL 7), build on a mix of methodologies for engaging communities through reflecting on everyday relationships between sound and places that are meaningful for the involved community members. The methodologies employed aim to engage participants in activities that enable the articulation and awareness of their listening experiences. Sonic Participatory Action is here enabled through sound walks, field recording, sound diaries, annotation of photographs with sounds and informal interviews. In both the UK and the Brazil project, a team of sonic artists worked over several months with specific communities. In Belfast these were a catholic and a protestant community, and in Brazil the team worked with a community in Maré, one of the largest clusters of favelas in Rio de Janeiro. The Rio project ran in partnership with a museum situated within the favela, the 'Museu da Maré'. The main aim was to tease out Sonic Participatory Action, using listening as a way of linking daily life, identity and memory, sounds of places or events and people's personal stories. Sounds were captured through workshops that represented sonic materials including sounds from Belfast's industrial heritage (the building of the Titanic and associated factory sounds recalled by those working in the shipyards at that time) and from local family homes, while in Rio de Janeiro the sonic material was informed by the exploration of the relationships between sound and the everyday. In the Rio project, Sonic Participatory Action resulted in using sound materials including street vendor calls, children playing outside, sounds of the favela's football pitch, and rain water entering poorly built houses.

Both projects ended in a shared creation, presented as installations with themes focusing on the relationship between sound and memory, sound and place, and the documentation of everyday personal auditory experience. The final design of both exhibitions was rooted in the experiences of the participants and enabled by the artists' contributions.

It is not difficult to see links between Sonic Participatory Action and Sonic Preservation, in that people engage, even if sometimes initially unknowingly, in the preservation of sounds and sonic memories. However, it is desirable, and central to the idea of Sonic Participatory Action, that authorship is moved from a single author (as tends to be the case in Sonic Preservation) to become distributed amongst a whole community. Artists working in the area of Sonic Participatory Action celebrate notions of horizontality, with the community inputting in a distributed fashion, celebrating their sites, places and the everyday meaningful objects and stories belonging to them.

"Museum City" exemplifies work marked by multiple authorships, as it engaged a variety of people, not only the artists and technicians, but also the larger community of the city of Viseu. In this way "Museum City" also bears resemblances to my proposed viewpoint

of Sonic Participatory Action, in that it was conceived in a collaborative fashion, with the artists performing in a multiplicity of spaces and performing various spaces themselves. "Museum City" most certainly displayed a fascination with the 'local' as a site of action, of tension and human living and abandon. In the process of recording in the abandoned five sites, many stories were told by locals who had known the original sites, bringing a sense of nostalgia of places and a melancholic preoccupation with sounds forgotten.

7. Final remarks

I have proposed four different viewpoints that allow us to reflect on how places tell stories, as well as on how practitioners embed themselves in a space in order to shape cultural, social and/or political narratives through the use of sound. The four viewpoints shed light on ways in which we might understand space in/and sound, allowing us to examine different ways of thinking about how sonic activities are used in particular sites, or how a specific place in turn might incite sonic action and shape spatial and cultural narratives. The four proposed viewpoints trace elements of Georgina Born's 'social phenomenology of music and sound', building on the notion of her four planes of interconnected and inherently non-linear social mediation, which embrace the intimate microsocialities, i.e. the social and corporeal as well as institutional interactions, inherent in any sonic event. Although I have focused in greater detail on the viewpoint of Sonic Narratives of Space, as it allowed me to discuss and reflect upon the performative project "Museum City", it has become clear that the work showed elements of each of the four viewpoints.

In discussing "Museum City" in detail, I have aligned it with Born's proposal for a third lineage that provides a different understanding of space in/and music. This is a proposal for conceiving space as multiple, as mediated and mediating, where a different conception of space is presented. In "Museum City", the recorded sounds of the five abandoned spaces and the overall final improvised musical materials were conceived for their capacity to catalyse and to augment relational predispositions of lived, un-lived, and deserted spaces. The artists moved their intention from a single object of attention toward a multiplicity of viewpoints, from performing in a multiplicity of spaces, to performing different spaces themselves. "Museum City" attempted the creation of a poetics of space, using sounds as conduits for spatial experiences, with the intention to bestow a capacity both to compound and to orchestrate in creative ways the spatial affordances of social life of the collective community of Viseu.

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Urban Sound Design Studio_L28 – Urban Sonic Research as Critical Spatial Practice

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ABSTRACT: The undeveloped open space along the Western railway ring L28 has long been marginalized in Brussels planning processes. Thanks to its natural, historical and ecological richness this urban edge area is an excellent research object, especially in the context of urban sound design. The site in question is the L28 railfield, located in Anderlecht and Sint-Jans-Molenbeek, Brussels. To date, Brussels urbanism is little concerned about the quality of the sound environment. Studio_L28 was conceived as a research parallel to the analysis phase of the urban renewal project for that area. The studio facilitated a critical outsiders' perspective on the current planning process. The studio, was composed of two parts: A morning program with talks and transversal discussions, during which topics related to sound, urbanism and the area were debated. And afternoon sessions with fieldwork on site. In constant dialogue with experts from the fields such as field recording, acoustic ecology and urban planning we reflected on new urban sound strategies for public urban space development along the L28.

KEYWORDS: urban transition, public urban space, critical practice, urban sound strategies, transdisciplinar research.

1. Introduction

Urban Sound Design Studio is an urban platform for transdisciplinary research on the role and position of sounds and sound art in public urban space development. It is conceived as a design practice for counteracting planning situations where sonic awareness and sound design strategies are limited to noise control. Content driven process is considered as the primary force for alternative sonic design strategies – in physical or other manners. Rather than proposing one single design solution for the sonic environment of the area in question, *Urban Sound Design Studio* combines theory with practice to collect thoughts on possible sonic approaches of post-industrial public urban space development.

In what follows, I will explain how it works in practice by describing "Studio_L28[1]", a studio Caroline Claus (myself) organized in autumn 2016, together with Q-O2, a Brussels workspace for experimental contemporary music and sound art & the public school for architecture Brussels. With "Studio_L28" we have focused on public space development along the L28 in Molenbeek and Anderlecht, Brussels. Together with (landscape) urban designers, architects, musicians, sound artists and performers the potential of urban sound design for public urban space has been explored from a fourfold perspective: territory, cartography, urban design and site- sounds. The studio happened in four sessions and was organised on two strands: a morning program with talks and a transversal discussion, and afternoon sessions with fieldwork and on site reflection and discussion. A Ph.D. research developed from this project.

2. Studio_L28

2.1. Territories

The site in question is a section along the Brussels L28 railway line, located in the municipalities of Anderlecht and Sint-Jans-Molenbeek, with the *Masterplan and Transitional Project for West Station*, the *Canal Plan* and the *Regional Green Network* as priority projects of its development. The L28-railway area is located in a basin formed by three former river valleys which became fully industrialized in the nineteenth century. The construction of the canal between Brussels and Charleroi, the railway L28, and the industrial buildings and housing alongside the rail line, contributed highly to the fragmentation of the original landscape structure. With the reorganisation of the Brussels metro network in spring 2009, West Station became a major hub for public transport in the metropolitan Brussels area. Where frogs once croaked over the ponds of marshland, now freight trains are rumbling, the dull thuds of truck maneuvers, the immersive drone-waves of airplanes, the piercing sounds of

1. https://urbansounddesignblog.wordpress.com/

trams and underground trains sliding over iron, and the buzzing drone hovering produced by helicopters flying over the area, can be heard. After decades of neglect with wastelands and empty buildings as result, the open space at West Station receives new attention. Today West Station is one of the strategic areas for Brussels regional development. A recent research by design, realized by Coloco, Devspace and Gilles Clement in the context of the study *Metropolitan Landscapes* (Mabilde and Loeckx, 2016), argued in favor of more research into the quality of the soil and associated use, but also into the identity and experiential value of the sites. This recommendation is in line with the conclusions of a study conducted by the Brussels Agency for Territorial Development, that acknowledged the temporary physiognomy of the L28 area as an important condition for the future urban development of the area (ADT/ATO, 2015). In its more recent projects for the L28 area, Brussels has chosen for a dynamic approach to landscape urbanism, hereby challenging the assumptions about the landscape being a mere inert primitive lacuna or pause in the urban of development of its territory. In 2016, Brussels Region commissioned a large scale urban renewal project for the L28 area in Molenbeek and Anderlecht, Brussels. The project was assigned to the consortium of three Brussels based offices 1010, Taktyk and Alive Architecture.

On the first day of "Studio_L28", architect and urban planner Nadia Casabella from the office 1010 presented her research work on time and mobility and the idea of a metropolitan hub at the West Station. She formulated two research questions for the studio: (1) How can infrastructure become more like a civic hub? (2) How can time become an active part of urban development? At the time of Nadia's presentation, sound had not yet caught the attention of the team working on the analysis and definition of the project for urban renewal.

If sound does attract the attention of Brussels policy makers and users of Brussels public space, it is usually in the context of noise and vibration control. Marie Poupé, head of the noise and vibration control department at Brussels Environment (BE) explained how Brussels wants to control noise pollution by reducing its decibel levels. Marie illustrated this approach by some concrete situations. She explained how her administration and other acoustic experts are mostly consulted only in the later stages of planning and design processes, when it's too late to intervene structurally. With Marie's presentation it became clear that, although sound is among the most discussed aspects of city living in Brussels Capital Region, it stays one of the least discussed in a context of urban planning and design processes.

Following the presentations of Nadia en Marie, Caroline Claus opened up the discussion to some alternative sonic perspectives with a presentation on sonic territories. She started her presentation with an introduction to her work and research on the transforming public space in Molenbeek and Brussels. An introduction to a critique on the "soundscape-" concept, saying that this approach would be too anti-urban (Nadrigny, 2010), brought her to a presentation of alternative sonic approaches such as the sonic ecology of Jean – Francois Augoyard and Henri Torgue (2005), the idea of "sonic territories" as explored by Brandon

Labelle (2010), the concept of "vibrational nexus" as researched by Steve Goodman (2010), and the "sonic rupture-" approach as developed by Jordan Lacey (2016).

The first seminar of "Studio_L28" ended with a transversal discussion organized by public school for architecture Brussels. The introduction to the official planning revealed some ambition for a more active approach of the urban landscape. But it also pointed to a critical need for an alternative sonic approach. The presentations of Nadia and Marie raised the question of noise control as the only sonic approach for urban regeneration. As urban (sound) designers and sound artists with expertise in initiating social- cultural processes that make a difference in the on-going creation of sustainable and attractive cities, we observed a critical need for reflection and discussion on the sonic dimension of urban regeneration. Theoretical insights, questions and ideas on the position and role of sound in the development of the L28-area, were explored on site through field work and collective reflection during the afternoon session of the first day of Studio_L28. On site we discussed and mapped different components shaping the existent sonic environment of the area. Insights and some first ideas were tested and discussed during a soundwalk from Beekkant Station to West Station. While walking along the line L28, sound artist Stijn De Meulenaere demonstrated some basic recording methods and techniques.

2.2. Cartography

Following Augoyard and Henri Torgue (2005) sonic mapping demands an understanding of the environmental conditions leading to a particular sound. In "Studio_L28" we approached sonic mapping not merely as representing the movement and experience of sound in space: we think maps inevitable chart how cultures perceive not only the urban environment but also how they live in cities. A typical approach to sonic mapping we wanted to test on site, is the survey, the creation of a catalog, which is essentially a record of all kinds of sounds and sonic experiments in a defined urban space and time.

For the second day of "Studio_L28," we invited Peter Cusack, a London and Berlin-based field recordist, musician and sound artist with a long interest in the sound environment of places, to talk about mapping techniques he uses for the observation of large urban areas. His sonic approach is based on the idea that people's personal and social interactions with urban areas, including new developments, are deeply affected by the local soundscape. For Peter, city soundscapes are very dynamic and he thinks it's important to know the sounds of an area, also by their spatial diffusion. He uses maps to distinguish between the momentary and the underlying sonic characteristics of an area. Peter considers them both important, not least for predicting and constructing possible future combinations. He concluded his lecture by showing some word clouds based on data obtained from his comparative survey

Favorite Sounds.[2] According to Peter graphical representations such as these can be part of our navigating and intervening in urban space.

Even when not displaying contested territory, the production of a sound map is inherently political. Dr Burak Pak, architectural researcher and coordinator of the Design Studio at the Ku Leuven Faculty of Architecture in Brussels and Ghent, talked about critical cartography and its potential for urban sound design. Countermapping, a niche of the discipline, he described as countering an accepted map or an accepted set of relations within an existing map. Burak confirmed that we need a transdisciplinary approach to challenge dominant sonic approaches to urban development. Via a reframing of Nancy Fraser's (2009) tripartite theory of justice, Burak demonstrated and suggested some alternatives for the categories of knowledge and approaches we use for recognizing, representing and redistributing qualities of urban spaces.

In the afternoon we went outside for a second field recording session on site. Peter and the participants made several recordings we later uploaded to project maps on *Favorite Sounds*[3] and *Radio Aporee ::: Maps* project.[4] Peter experienced this session as the most valuable part of our second day:

> Even in the few hours spent there it was possible to recognise that the existing area (pre-development) is sonically rather varied. Busy streets quickly give way to narrow paths with gardens. Transport hub areas with all the associated sounds dissipate across large open spaces. Some places are sonically intimate; others give access to a sense of distance. In this area one moves from one to another regularly and quickly. For me these kinds of ideas – those still to be heard in the existing areas - should inform any new development. In my view planning should aim to maintain sonic variety of the areas that it touches. (Cusack 2016)

2.3. Urban Design

Thinking about urban sound design for future public space along the line L28 encouraged a different understanding of the designers' place in the social physical world. Approaching urban space through sound opened up to a more critical approach to urban design as we know it. Engaging with the sounds and music present in an urban environment, enabled us in earlier projects to realize people's existence (including ourselves) as part of a transforming social material environment. How can urban sound designers contribute to urban

2. favouritesounds.org
3. http://favouritesounds.org/?projectid=53
4. https://urbansounddesignblog.wordpress.com/2016/10/14/radio-aporee-project-l28/

transformation? How can they take responsibility in terms of negotiating, enabling relationships so that people can perform, move through, and experience sounds in an urban environment? And by doing so, how can they establish a relationship with conflicting individuals, groups and thus the cultural, social and political context.? Can they intervene in the urban environment by changing its sonic fundamentals or maybe just some elements? Can urban sound designers shape or contribute to inclusive urban space? What is the role of sound artists in this process of intervening? Can we connect disparate sonic topographies with subjects, creating space for new understanding and experiences?

Architect and scholar Petra Pferdmenges opened the third seminar of Studio_L28 with a presentation on founding her practice *Alive Architecture*. Petra explained how observing and drawing people who appropriate the public realm informed the development of her architectural practice. She revealed how she was triggered by drawing "lived space," a category she uses for researching the ways people experience the spatial dimensions of their day-to-day existence, how her practice evolved through observing and re-producing "lived space," into co-producing together with other people. Petra concluded her talk with a presentation on her most recent project *Parckfarm Tour & Taxis*[5] explaining how *Alive Architecture* became a practice that is initiating "lived space" by curating other people to produce the public realm, hereby allowing for the transformation of an ephemeral event into a durational project.

After Petra's presentation Thomas Laureyssens, artist, interaction designer and Ph.D. researcher at Ku Leuven MAD-faculty, talked about the role of shepherds and platforms in urban intervention design. Contrary to Petra, he sees himself rather as a tool maker than as an activist. He explained how he makes tools for people and that for him, it's up to the social activator to bring it to live. He illustrated his approach by talking about *The Sparrows of Hasselt*[6], a social urban game based on three interactive whistling sparrows. The goal of this game is to highlight the "hosts" of the sparrows by giving them the task to promote their sparrow via social media, events and audio and visual signs. Thomas explained how the project can be understood as an example of "urban platform design": the idea of not only adding one intervention but rather spreading interventions across the space. He used this multiple or what he termed the "modular component network-" approach, in several projects to trigger various factors of community participation such as perception, relations, sense of control and empowerment. Thomas concluded his presentation with some ideas and suggestions for a more interactive sound environment.

The final presentation on day three of "Studio_L28" was given by Nicolas Remy, Ph.D. researcher, lecturer at the Department of Architecture of the University of Thessaly in Volos, and member of The Research Centre on Sonic Space and the Urban Environment (CRESSON).

5. https://www.vai.be/nl/project/parckfarm-brussel
6. http://www.demussen.eu/

His work deals with the conception of "ambience" as well as a method and a tool for architectural design. More specifically, he focuses on the relationship between physics, perception theories and architecture. At the studio Nicolas introduced us to some strategies for urban soundscape design by explaining some tools he and his research-colleagues have developed at the CRESSON Research Centre. *Esquis'sons!*[7], is a research project on the sound qualities of intermediate facade space of building. It can be understood as a parametric tool for sketching the sound qualities of future projects and testing the sonic impact of design decisions. The tool combines a 3D spatial model with a real time 3D virtual sound environment. It can be used for cross-analysis of the physical dimensions of built space, the sound environment and user's perceptions of urban space. Nicolas finished his presentation by questioning the perception of sounds, hereby opening up to ideas on sounds as possible design tools, intentions, and strategies to listen differently.

In the afternoon session on site, participants outlined their first ideas for public urban sound strategies. In this stage of "Studio_L28" some participants had difficulty to produce, hierarchize and visualize their observations and intentions. In dialogue with Thomas and Nicolas we discussed some first lines of urban sound strategies developed by the participants on site. The visit to the Brussels West Station site brought Nicolas Remy to the following observation and suggestions:

> The space situated at the level of the train platforms and the subway tunnel is an acoustically complicated space. It is crossed episodically by lines of 'sound leakage' constituted by the railway vehicles. These lines are impassable obstacles for the moving body in action. They create sound masking on others activities (temporal windows), otherwise any sound produced inside this space is strongly reflected on the immense facades of the buildings. On the other side, the very urban sounds of the boulevard (traffic cars, washing car station) are very present but not visible because of the vegetation (can we hear any sounds of nature?). The access for people to this area is denied due to security reasons, because of development projects that want to privatize this neglected space. Space design and sound design should support the same idea and work on the physical and sound strata of space and on the ways of crossing and connecting them (with the body or/and with sound). Temporality of the soundscape in also a major issue and might be thought as the collage of sound sequences in which trains and metro passages are expressing the rhythm of the neighbourhood. (Remy, N. 2016)

7. www.esquissons.fr

2.4. Site Sounds

Sound art engages with public urban environments in various ways. Sound artists working in public space develop sonic strategies to analyze, reflect, challenge and/or improve the quality of sonic environments and the listening experience of people using the space. We think, the expertise and knowledge developed through artistic practice can inspire and may lead to new ideas on public urban space development (Claus and Kijowska, 2015).

Flavien Gillié, a Brussels-based sound artist and socio-cultural worker, explained in the final seminar some of his strategies for dealing with public urban environments. Flavien presented three different sonic approaches: the first one is about collecting sounds what he defines as field recording. Flavien emphasized the importance of listening and the positioning and selection of recording material. He considers the archiving of field recordings as important too. Flavien explained how a feeling and probably a fear of loss, together with a memory of moments and places, were the reason for his collection and how the use of geolocation via *Radio Aporee ::: Maps* gave more coherence to it and made it possible for him to work on what he defines as a "relational memory." The third and last approach Flavien talked about was the performance, an approach he considers as completely different than field recording. As a performer, Flavien prefers to take distance from the recordings, he considers as raw material. In a performance he plays with filters and mixes his field recordings in an impure way. On stage he experiments with movement, natural drones and error: what is rejected becomes important. For him performing is about creating a new imprint of the urban recordings and being disrespectful in contrast to his recording and geolocating practice.

Robin Koek, composer, musician and sound designer closed the final seminar with a presentation on sonic strategies based in field recordings, and developed from the perspective of a composer. In his work, Robin explores states wherein acoustic, digital and analog signals intertwine and merge into bodies of sound. His compositions follow a line of research in acoustic ontology, urban transcription and the spatial potential of sound. He currently works on a series of sound structures and systems grounded in city soundscape phonology, electronic processing and scores for instrumental improvisation. At "Studio_L28" Robin presented some of his projects and explained different approaches he uses such as capturing, transforming and projecting sonic space. The project "Lines of Hearing," is a composition he made for bass clarinet and electronics (Koek, 2013). The title refers to the sonic horizon that he used as a metaphor, like a physical horizon. The work explores audible horizons of specific locations of New York and Amsterdam and uses open-source geo-tagged field-recordings mapped in a virtual space. Another project Robin talked about was the project "Inner Noises", an 8-channel composition exploring the hidden resonances produced by the urban life (Koek, 2013). Robin explained how, by capturing the urban activity with surface and boundary microphones, he wanted to tune in to the resonating body of a city. The idea

was that urban sound spaces of different cities across the globe would collide and fuse into an immersive sonic environment hereby allowing the listener to hear it from the inside.

Flavien and Robin combined and mixed their methods and techniques for an improvisation session at the end of day 4 of "Studio_L28." They opted for an abstract improvisation using field recordings they and Caroline collected earlier that week. The recording can be used as a sound map for navigating a possible future L28-area. Participants of the studio finished the workshop part of the studio with a proposal for urban sound strategies. Some participants chose for a tactical rather than a strategic sonic approach. The first presentations of their ideas took different forms such as a plan, a performance and a participatory intervention. By way of conclusion, based on their proposals, we composed a sound walk for a final discussion and reflection on their work and future plans.

3. Conclusion

"Studio_L28" was conceived as temporary urban platform for transdisciplinary research on the role of sounds and sound art in public urban space development along the Brussels Western ring railway (section L28). In four sessions, landscape and urban designers, architects and musicians, sound artists and performers explored the role of sounds and sound art from a fourfold perspective: territories, cartography, urban design and site-sounds. From these perspectives several possible sonic strategies were proposed, discussed and analyzed on site. Which territories deserve attention when considering urban sound design? How to create a map based on urban sound observations? How can a mapping of urban sounds contribute to the development of new approaches for transforming public urban environments? How to create a sonic cartography that allows you to negotiate and break into the design process? How may a designer shape the sonic environment of a future public space and the possible experience of its users? At the time of this writing the development of Brussels Western Station arrives at a next phase with the finalization of the competition for defining the masterplan. Until today the sounds of the transforming area has attracted hardly any attention of the architects, engineers and urban planners involved in the planning process. When redefining and designing future public space along the railway line L28, designers and planners invariably stress the visual and not the sonic aspects of their projects. They have minimal attention for the aural consequences of their interventions; sound tends to be considered mainly as an inevitable byproduct of traffic, industry, commercial activity. Based on the collected insights and idea, and the proposals of participants at the studio, we develop a guide for future sonic interventions that will be proposed as an additional planning tool in the next phase of the development of the L28-area at West Station.

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Geos, Topos, Choros – Approaches to Place for Sonic Practice

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ABSTRACT: The Ancient Greek philosophers developed three approaches to place. Formulated from geometry, *Geos* distances the observer from her subject, abstracting place into a coordinate grid. This instantiated an ocular bias that has since dominated philosophy, aesthetics, and the study of place. Against this hegemony, two alternative models deserve consideration. *Topos* derives from tales of circumnavigation and peripatetic narratives such as the *Odyssey*. Places are fluid and multivalent, experienced from an individuated subject, narrated in spatial and temporal sequences. *Choros* identifies regions of difference by symbolic correspondence with the heavens. These *klimata* are built from patterns accumulated over time within a social milieu, into myths that act as guiding metaphors. This paper proposes that Topos and Choros have useful explanatory power when applied to sonic practice. Four examples are considered in detail: Hildegard Westerkamp's "Kits Beach Soundwalk", Janet Cardiff's *The Missing Voice*, Robert Curgenven's *Climata*, and the author's installation *In that place, the air was very different*.

KEYWORDS: Claudius Ptolemy, Michael Curry, Hildegard Westerkamp, Janet Cardiff, Robert Curgenven, the Odyssey, human geography, place, sound walk, field recording.

1. Introduction

When we study the world and its effects we are engaging with the discipline of geography. This takes its name directly from Geos, which is but one of the three approaches to place known to the Ancient Greeks. The other two, Topos and Choros, have largely been forgotten. This is a measure of the dominance of empiricism through the history of Western philosophy and language. At the outset, it is important to note that the meanings of these terms have changed over time (Curry 2002, 503)[1]. To avoid confusion with contemporary usage, proper noun forms will be used throughout this paper.

Two definitions can be taken as a starting point for the discussion that follows. Michael Curry has associated Topos with place, Choros with regions, and Geos with "the earth as a whole" (Curry 2002, 503). Second, the *Oxford English Dictionary* defines chorography as:

> The art or practice of describing, or of delineating on a map or chart, particular regions, or districts; as distinguished from geography, taken as dealing with the earth in general, and (less distinctly) from topography, which deals with particular places, as towns, etc.

This paper will describe each approach in turn, presenting particular sonic works as illustration. The goal is to demonstrate the usefulness of these terms in developing an understanding of place that is grounded in a multisensory (specifically sonic) phenomenology.

2. Geos and the empirical

Claudius Ptolemy was a Greek, resident in Alexandria, sometime in the second century. He wrote three influential works, one each on geography, astronomy, and astrology. The first of these, *Geographica*, is the only cartographic work to survive from antiquity. This volume improved on the incomplete maps of Marinos of Tyre and the work of Hipparchus on earth sciences (Berggren and Jones 2002, 3). Though not without its own systemic errors, Ptolemy's grid-calibrated metrics were unprecedented in accuracy and scope, and maintained their superiority for fifteen centuries (Schütte 1917, 12 and 15).

Amazingly, *Geographica* does not contain maps, but instead presents an algorithm for devising maps. It consists of a gazetteer of place names with their coordinates, plus instructions on how to create map projections (Berggren and Jones 2002, 4). The innovative geometric tool that facilitates this process is a grid of latitude and longitude lines overlaid

1. For example, referring to a map as "topographic" is *not* in accordance with Topos as used herein; but is instead an instantiation of Geos.

on the globe. This creates a uniform and homogeneous space that pre-exists location. The system requires an ideal observer positioned superior to the globe, hence abstracted from the realms they measure. This person requires only the sense of sight and a facility with geometry to fill the empty grid with places. Vision is here equated with mathematical reason in particular, and rationality in general.

In this way, *Geographica* instantiated a regime that was reinforced in the Renaissance by two key works. The first was Leon Battista Alberti's *De Pictura* (1435), which established the fundamentals of perspective theory (Parmar 2014a). The second was Isaac Newton's *Principia Mathematica* (1687) which laid out the empirical method. The relationship to geography was not incidental. It was Newton who "produced the illustrations for Varenius' *Geographia generalis* (1650), seen by many as the founding work of modern geography" (Curry 2002, 507). The ocular and the empirical have since worked hand in hand, dominating philosophical thought, language, science, and aesthetics. In our age of satellite imaging and Google Maps, it is difficult to read the world in any other way.

Several practices of sonic ecology are due to this method, most especially sound mapping. In his discussion of notation, R. Murray Schafer suggests that "the best way to appreciate a field situation is to get above it", proposing "aerial sonography" as the most fitting way of mapping sound (Schafer 1994, 131). Hence, his observer position is congruent with Ptolemy's. Tools such as the isobel map and events map are beholden to Geos, just as his hierarchical classification schemes are manifestations of the empirical (133–145). While these are certainly useful techniques, they present little challenge to ocular hegemony[2].

3. Topos and the wandering subject

The Tabula Peutingeriana is the only existing map of the Roman Empire road network. It was created by a monk in Colmar in 1265, but is likely based on a map prepared almost thirteen centuries prior, by Marcus Vipsanius Agrippa for his friend the emperor Augustus. The map has pictorial elements but neither the linear scale nor areas are represented accurately. Unlike Ptolemy's work, it has no regulating grid or scale. Instead, this map functions as an *itinerarium*, a "register of road-distances, meant for wrapping up and transporting in a traveller's bag" (Schütte 1917, 15). It's not a tool for measurement, but is instead designed to get the user from one waypoint to the next.

This map is emblematic of Topos, a model of place first heard in the *peripli*[3], stories of circumnavigation taken from the journals of the Carthaginian Himilco, the Persian Scylax of Caryanda, the Greek Pytheas of Massalia, and others. These narratives of sea voyages trace

2. *The Soundscape* is a rich work and many of Schafer's ideas do not conform to Geos; see below.
3. The singular *periplus* is the Latin form of the Greek *periploos*, literally "a sailing-around". The first preserved *peripli*, transcribed by writers such as Pliny the Elder, are from the 6th century BCE. But the oral tradition is likely to be much older.

coastlines, both in time, as one locale follows another in a sequence of days travelled, and in space, as greater distances are put between the traveller and home (Curry 2002, 506). Places are experienced by an individuated subjectivity; it is difficult to trace the same path twice. Not only are new places found with every journey, but the places themselves are inconstant.

A famous literary example of Topos is the *Odyssey*. Composed circa 700 BCE, and attributed to Homer, this epic poem is often described as the voyage of Odysseus from Troy back to his home in Ithaca. In fact, the story only provisionally concerns the journeys of the titular hero, whom we do not even encounter until Book Five. The first journey is instead made by his son Telemachus, and this is as much a metaphor for his maturation (a "journey" into manhood) as it is about traversing territory. Known locations largely do not figure in the *Odyssey*; instead the places described are "sheer fancy", based on "bits and pieces of solid unassimilated fact" (Lattimore 2007, 15). Places are described largely through the distinctive peoples who inhabit them: the Lotus-Eaters, Phaiakians, Laistrygones, and so on (9). The *Odyssey* is emblematic of Topos in its wandering heroes, divergent narratives, and reliance on the experiential.

A contemporary encounter with Topos occurs when your smart phone is out of satellite range and you become lost in non-Cartesian space, "off the grid". At such disorienting moments, you might ask a stranger for directions. You will then receive an account of how to get from "here" to "there", told from the narrator's point of view. In Ireland, the sequence of directions might go something like this: "Continue down to Fennessy's, take a left up towards St. Anne's. Then turn right and walk towards Kelly's Bar". These directions are given in terms of pubs and churches, landmarks that reveal much about the specific community in which the narrator is embedded. In a different social milieu, you would be provided different landmarks[4]. Topos, then, is about individual experience constrained by the characteristics of places, that are themselves in the continuous process of formation by the social.

> A place owes its character to the experiences it affords to those who spend time there – to the sights, sounds and indeed smells that constitute its specific ambience. And these, in turn, depend on the kinds of activities in which its inhabitants engage. It is from this relational context of people's engagement with the world, in the business of dwelling, that each place draws its unique significance (Ingold 2000, 192).

Following Heidegger, Ingold develops a definition of landscape as dwelling place, as described more fully elsewhere (Parmar 2014b).

4. In the suburbs, directions might be given in terms of malls and traffic lights. In certain Canadian locales, directions are given in terms of doughnut shops.

From "landmark", R. Murray Schafer extrapolated "soundmark", noting the importance of those "unique tones" that mark "every natural soundscape" (Schafer 1994, 26). Navigation by soundmarks occurs when people follow bells to church, demented children's tunes to an ice cream van, or a distant thundering roar to a waterfall in the forest. Indeed, Topos is especially strong in cultures which have well-developed non-visual sensibilities. Steven Feld has written extensively about the Kaluli people of Papua New Guinea, who navigate the rainforest by sound more than sight, and name places for the sounds they produce. For the Kaluli "sonic sensibility is basic to experiential truth" (Feld 1994, np).

Though the Kaluli might be an extreme example, this relationship to place is not unknown in Western European traditions. For example, it manifests in *walking*, an activity that encourages engagement with one's own body, facilitating close encounters with environments both natural and constructed. Rebecca Solnit's *Wanderlust* provides a wonderfully nuanced reading of the various purposes to which walking has been put, and how this activity has been framed through cultural prohibitions, aesthetics, and morality. She credits Wordsworth with founding "the whole lineage of those who walk for its own sake, and for the pleasure of being in the landscape" (Solnit 2014, 82).

Urban walking finds its exemplar in Walter Benjamin's study of Charles Baudelaire. He is described as a *flâneur*, a person of leisure and means, who wanders the arcades of Paris. This engagement with the city is special in having no specific goal, being conducted without maps or guides. But this should not be taken as an innocent attempt to engage with the urban environment on its own terms. Rather, the *flâneur* explicitly formulates walking as a means of subverting the sensory bombardment of capitalist excess.

> (T)he man of leisure can indulge in the perambulations of the flâneur only if as such he is already out of place. He is as much out of place in an atmosphere of complete leisure as in the feverish turmoil of the city (Benjamin 1955, 172–3).

This perambulation was taken up by the Situationists in the form of the *dérive*, defined by Guy Debord as "a mode of experimental behaviour linked to the conditions of urban society: a technique of rapid passage through varied ambiances" (Debord 1958, np). The aim of this "drift" is to derive a new personal experience in an otherwise oppressive urban environment, by means both disruptive and revolutionary.

These excursions are similar to the *peripli*, in that specific destinations and social encounters are not entirely known beforehand, even if the scope of such activities is constrained. Though Odysseus had a specific goal in mind, his route was circuitous in the extreme, directed both by his own intent and that of various interfering deities. Topos is less concerned with directed travel than peripatetic wanderings and the experiential nature of the journey.

4. Topos and the soundwalk

As walking has increased in popularity, so have activities that combine excursions with listening practice. Field recording has been enabled in part by technologies that allow high fidelity location recording, but also by changing aesthetic sensibilities. The *soundwalk* was introduced by the World Soundscape Project (at Simon Fraser University, British Columbia) to increase awareness of the auditory environment. In an article originally published in 1974, Hildegard Westerkamp defined the soundwalk as "any excursion whose main purpose is listening to the environment" (Westerkamp 2001, np). She explicitly relates this to the history of urban walking as a way "to regain contact with nature", and contrasts this excursion with the "purely visual" experience of driving a car. The soundwalk is multivalent; besides listening, it can include sound-making, imitation, and composition.

Westerkamp is among those sonic artists who have produced sophisticated compositions that engage with Topos. These arose out of her involvement with Vancouver Coop Radio, which provided a forum for dissemination as well as a welcoming community of fellow practitioners. As early as 1978, she was producing the pioneering radio programme *Soundwalking* (McCartney 1999, 226[5]). In "Kits Beach Soundwalk" (1989) the composer provides the narrative, in a comforting voice that describes and reflects in turn. The piece is cinematic in form, a monologue delivered as a series of linked scenes. It begins with lapping surf and sea bird calls, over which Westerkamp creates the equivalent of an establishing shot:

> It's a calm morning. I'm on Kit's Beach in Vancouver. It's slightly overcast and very mild for January. It's absolutely wind-still. The ocean is flat, just a bit rippled in places. Ducks are quietly floating on the water.[6]

The language becomes more particular as Westerkamp describes what we are hearing in the foreground of the soundscape, as contrasted to the background sounds of the city. The composer changes the volume levels and calls our attention to these changes, so that we must confront the piece as an overt manipulation of sonic events.

> The city is roaring around these tiny sounds but it is not masking them. I could shock you or fool you by saying that the soundscape is this loud. [Volume increases.] But it is more like this. [Volume decreases.] The view is beautiful; in fact, it is spectacular. So, the sound level seems more like this. [Volume decreases further.] It doesn't seem that loud.

5. These page numbers follow the PDF file version of the paper, since the document itself has no explicit numbers visible.
6. The text is the author's own transcription, following the version recorded for the CD *Transformations*.

After a further exposition about city noise, we are transported from the beach to a post-production studio. Here, the narrative makes another break, this time into the world of images and metaphor. Various dreams are recounted in association with the barnacle sounds, their commonality being that they are "healing dreams, energising". We have departed a long way from the title of the piece by this point. "Kits Beach Soundwalk" begins in Kitsilano as location, but soon relocates itself to a recording studio, and then to the imagination. Westerkamp has described this as speaking

> from inside remembered soundscapes, from inside my experience and knowledge of soundscape, from inside the musical, artistic aspects of the soundscape (Westerkamp 1998, 68).

The soundwalk is not necessarily or only a physical perambulation; it is a walk *through* and *with* sound. Westerkamp is the pathfinder, forging a trail with her very subjectivity. Though this is an internalised activity of memory and perception, the metaphor of the journey is still apt, as the composition encounters places literal and otherwise.

5. Topos and remediation

Janet Cardiff has created an extensive body of work, often in collaboration with George Bures Miller. One extended series of pieces is simply labelled "walks". To date there have been 26 of these, from "Forest Walk" in 1991 to "The City of Forking Paths" in 2014 (Cardiff 2017). These sound pieces combine field recordings made *in situ* with voice-overs and extensive post-production. Cardiff discovered the underlying method by accident, when she inadvertently played back a tape recording while on site. "I heard the sound of my body while walking, my voice describing what was in front of me and also my breathing. I began to walk with my virtual body" (Schaud 2005, 79). She draws extensively on literary and cinematic devices when constructing her walks, which she often describes in terms of virtuality.

One of the most successful of these walks is *The Missing Voice: Case Study B* (1999), commissioned for the Whitechapel Library, London (128). A participant gets a portable music player and headphones from the front desk, presses play, and then follows the narrative where it leads them. This process is familiar from those audio guides that are provided to museum visitors. But rather than a simple tour, this piece creates from the outset a complex fictive world:

> I'm standing in the library with you, you can hear the turning of newspaper pages, people talking softly. There's a man standing beside me, he's looking in the crime section now (284).

This text is dissociative; the artist is in impossible proximity to the listener. How can she be standing in the library with us if she made this recording years ago? Cardiff invokes time travel by manipulating the listening experience (5). Instead of a simple excursion, we inhabit a mediated narrative, as though participating in one of those crime novels. Soon we will be out on the street, walking the same alleys that Jack the Ripper once traversed. The potential threat is palpable, Cardiff imbuing the story with her own paranoia; her visit to London to create *The Missing Voice* was her first time alone in a big city (283).

Sometimes explicit directions are provided, just enough to keep us on the path. But these immediately morph into the fiction. Once outside the library, we are instructed: "Turn to the right, Gunthorpe Street. A man just went into the side door of the pub" (284). Then we hear the tape recorder being stopped and restarted. For a second time, we hear "A man just went into the side door of the pub", but this time filtered as though played from a cassette deck. This remediation is characteristic of Cardiff's walks, in which the listener at all times inhabits "at least two acoustic spaces" (16). In *The Missing Voice*, one "Janet" walks the street with a recorder, giving us directions and telling a story. A second "Janet" is discovered as a recorded voice on a cassette tape, a clue to a possible crime. The overall effect is to involve us in the action as a complicit partner.

This self-reflexive narrative comments on mediation and the position of a woman in the city. But it has more again to say about place, since from the beginning the instructions are impossible. We cannot stand with the artist in the library, since it has since been closed and replaced with an art gallery. This is an inevitable consequence of the ongoing development of urban spaces. Changes to the built environment risk eroding the effectiveness of any work that depends on physical permanence. If we cannot follow the path indicated by artist-narrator-protagonist, we cannot inhabit their world. But Cardiff has deliberately integrated the fragility if place into the piece, which was "originally conceived as a farewell gesture for a site that was in the process of disappearing" (128). Rather than eroding the efficacy of the fiction, the self-conscious references to loss increases the potency of the narrative. This is already apparent in the title, *The Missing Voice*. We will never find what is absent, and so must be content with the pleasures of the search itself. In this quest, the whims of the controlling agency dictate our travails, sweeping us off course as often as not. The composer as Olympian god? Perhaps "Janet" smiles at this conceit as she disappears behind the railway car window (285). In any case, *The Missing Voice* has much in common with the *peripli*, an example of Topos as self-conscious remediation.

6. Choros as symbolic exchange

Besides the *Geographica*, Ptolemy published two other authoritative texts, the *Almagest* on astronomy and the *Apotelesmatika*[7] on what we might now call astrology, but which more literally translates as "effects" or "influences". This book provides a system of classification that identifies separate and distinctive regions on the earth. The surface of the globe is divide into *klimata*, horizontal bands governed by different gods and their temperaments. These zones indicate the characters of the peoples who live within them. Those who live in the north are cold and those who live in the south hot, since their character is influenced primarily by the sun. Sunrise and sunset have their effects, as do the planetary bodies. This chorographic model of place is long-standing, extant for eight centuries before being codified by Ptolemy (Tuan 1977, 97)[8].

There are no distinct lines that demarcate *klimata*, and if there were they'd operate very differently from lines of longitude and latitude. Rather than provide a homogeneous substrate, a system of measurement in which all coordinates are provisionally equal, these zones delimit "regions of difference" (Curry 2002, 506). Unlike Topos, Choros is not based on a singular subjectivity, but is rather indicative of tacit knowledge, shared within a community. The relationships are not hierarchical, as in Geos, since it does not propose a singular viewpoint. Rather than a Judeo-Christian god looking down on us from above, there are many gods, each with different overlapping domains, attributes, and internal disputes. The forces of governance are themselves internally heterogeneous. Further, as demonstrated in the *Odyssey*, the gods step among us and interfere in our affairs; their actions and desires are not held at a remove, but are instead intertwined with the human.

In Choros, events are described in terms of recurring patterns governed by hidden forces. For example, the budding of trees (an event) is observed every spring (a recurring pattern) and signifies fruition and bounty (an outcome). The hidden governance that "makes sense" of this cycle is Persephone returning from the Underworld. Such relationships express a poetic view of the world, rooted in metaphor. These circuits of symbolic exchange are complex and interwoven. Gods and other mythic figures engage in activities on the earth, but are then abstracted into the heavens, represented by configurations of stars. These constellations become aspects that influence the zone under their sway. This continuous flux between particular and generalised patterns, between the observable and the unseen, and between different metaphorical registers, is characteristic of Choros.

We have already seen how Debord used Topos in writings from 1958. But in an account three years earlier, he also evokes Choros:

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7. This work is also known as the *Tetrabiblos*, as it is structured as four books.
8. Though important to Ptolemy, this paper will not consider Choros as divination, nor Choros as a means of stereotyping people based on their place of origin.

> The sudden change of ambiance in a street within the space of a few meters; the evident division of a city into zones of distinct psychic atmospheres; the path of least resistance that is automatically followed in aimless strolls (and which has no relation to the physical contour of the terrain); the appealing or repelling character of certain places – these phenomena all seem to be neglected (Debord 1955).

Debord explicitly ties the chorographic in with marginalised approaches to place. The *dérive* is indicative of an outsider position, one that has only grown in popularity and application in this century. It may be explicitly linked to practices of the soundwalk and field recording, where these allow for non-directed activity guided by a sense of the poetic. This psychogeographic approach has already been illustrated by Westerkamp and Cardiff, but Choros is more explicitly demonstrated in the works to be considered in the next two sections.

7. Choros and the paradox of the particular

Robert Curgenven is an Australian artist whose training as an organist informs his field recordings and sound installations. While living in Cornwall he discovered a Skyspace, an architectural light installation designed by American artist James Turrell. Curgenven subsequently travelled to fifteen of these locations worldwide, "recording a piece of music one note at a time" (Csoma 2016, np). His method was to tune two oscillators to produce a beat frequency, resonating the air in the space. Curgenven's interest is in the sculptural aspect of sound, and how this impacts the listening body. With *Climata*, he aims to produce a tactile experience similar to loud concerts:

> This physical movement of the air is the swooshing/fluttering sound that moves between your legs, in and out of your mouth and nose, that makes your shirt move – that also makes the sound appear to come from everywhere, with no definable source.

As the name implies, Skyspaces are designed for observation of the sky, mediated by the topology of the interior and installed LEDs. Hence these structures have an aperture in the ceiling. Curgenven leveraged this interplay of exterior and interior, attending to weather patterns and other local specifics as he made his recordings. The decision to combine sounds from multiple locations follows Turrell's own model, which views the many Skyspaces (over eighty exist) as a singular interconnected work.

> [This] was ideal for the connected, rhizomatic concept that I wanted to present with my project, especially expressed by the name *Climata* and the relations that that has to ancient ways of connecting and dividing the world.

Curgenven names the piece with an explicit invocation of Choros, recognising that this ancient view of place has relevance to post-structuralist attempts to get outside established hierarchies and organising principles. His piece re-integrates disparate zones, under a guiding principle established by his own precise method. This is evident even in the retail package, which consists of two compact disks. These are, designed to be played simultaneously, allowing the listener to re-enact in miniature the process of the composer.

Climata represents a form of escapism, an escape into pure sound. But paradoxically this is also an "escape into the world":

> A planetarium usually projects the stars onto the ceiling, but imagine instead if the layered projections of the world were up on that ceiling and you could be in them [all at] once. That's what *Climata* is under the best listening circumstances and one of the reasons to play both albums together: to experience the differences in those layers and combinations physically as a world you can escape into, an augmentation of what constitutes your present physical reality and what it is to inhabit that space.

Choros reduces the world to zones in which certain generalisations can be made. Yet at the same time it makes us aware of difference, of those particulars that distinguish one place from another. "Skyspaces don't exist in a social, cultural or geographical vacuum", Curgenven acknowledges.

8. Choros and sonic memory

This author has been engaged for some years with field recordings as material for sound installations, fixed compositions, and performance. The goal has been to present sonic aspects of place in a manner that de-emphasises the overt manipulations typical of acousmatic music. The aim in eschewing sonic transformations is not to pretend to any inherent "purity" of nature recordings, but rather to de-emphasise the hand of the composer, to reveal the context of the original sounds as recordings, within a chorographic system. A successful example of this approach is "Caged Birds (Augmentation)" (2012), a fixed composition that derives from a suburban recording of the dawn chorus[9]. Various subtle transformations were

9. This premièred at 100x John: A Global Salute to John Cage in Sound and Image (New York City, 2012) and has subsequently been presented in Ireland, England, and Portugal.

made to the birdsong, analogously to how their calls have been shaped by life in an urban environment. The title is a play on John Cage, but also a reminder that a recording is a sound that is no longer at liberty (Parmar 2014b).

This approach reached its apotheosis with *In that place, the air was very different* (2016). This sound installation proposes an integrated approach to place, invoking Topos in its construction and Choros in its presentation[10]. This piece explicitly incorporates the recording process into each instantiation, by insisting that the installation must follow a period of local residency by the artist. During this time, place is "sounded" through walks, social encounters, and quiet listening sessions. These activities are not constrained in advance of each encounter, but instead develop in an improvisational manner. Audio recording is an important part of this sounding, but it also might include documentary writing, poetic reflection, still photography, video, and even dance[11]. Following the field recording process, sounds are selected and edited into a collection that represents this specific encounter with place. This *sound pool* is added to those that exist from previous soundings[12]. In this way, the piece accumulates an auditory record of the places it has previously been installed, a *sonic memory* of its own circumnavigation, the artist's *dérive*.

Admittedly, this reliance on Topos might not be evident to those who visit the resulting installation. Instead, the presentation is beholden to Choros. This begins with the configuration of the playback system. Though the installation requires a multi-speaker array, it does not use the symmetrical layout typical of academic concerts, or even cinema. Instead, several pairs of speakers are arranged in the playback space so that each creates a distinct stereo field. The specific arrangement depends on the topology, furnishings, and acoustics of the given room. A sound pool feeds each set of stereo speakers. This creates an environment in which listeners can find their own preferred listening position, or move about the space devising their own mix in the system of overlapping zones. Sounds vary from the very quiet and detailed, to loud swathes of electromagnetic static, rivers roaring in cave systems, and metallic cityscapes. After a long interval, sounds in each pool change. Patient listeners will hear a transition that encourages movement, as one zone goes quiet and another across the room becomes audible. Listeners who happen to revisit the installation might return to quite different sounds. These encounters with changing zones of influence and activity typify Choros.

In that place, the air was very different recognises difference in its title, evoking encounters that are experiential and elusive. The sound pools are a result of traces made by the artist in his encounters with socially-constructed place. The diffusion of these creates new regions

10. This premièred at Echo Echo Dance Theatre, Derry-Londonderry, Northern Ireland as part of ISSTA 2016: Temporary Autonomous Zones, curated by Brian Bridges.

11. On the final night of the première, dancers from Echo Echo Dance Theatre interpreted the installation through movement.

12. The piece currently has sound pools from residencies in Cobh, Ireland; Škocjan, Slovenia; La Fatarella, Catalonia; and Derry-Londonderry, Northern Ireland. To these will be added Azores, Portugal.

of difference in which the participants take active listening roles. As the piece travels, the evolving sonic content highlights the changing nature of place itself, commenting on what it means to circumnavigate the globe, in a society in which travel is now perhaps *too* easy.

9. Conclusion

This paper has described three approaches to place known from Ptolemy: Geos, Topos, and Choros. The geometric approach agrees with the empirical thesis and concurrent ocular bias that has dominated centuries of Western linguistic and philosophical tradition. The author proposes that though this method has great explanatory power, it is ill-suited to a phenomenology based on an integrated sensorium. Instead, Topos and Choros deserve greater appreciation as productive models of place especially suited to understanding contemporary sonic practice.

Several artists have taken distinct approaches to expressing subjective experience that traces Topos. The "soundwalks" of Hildegard Westerkamp navigate *through* and *with* sound, a reflective process that enfolds memory and perception with the actual physical places encountered. Janet Cardiff's "walks" present fictive places and missing people, implicating the listener in sonic time travel. Other examples await further study. Notable are the "electrical walks" of Christina Kubisch, tracings of hidden domains that evade both mapping strategies and the unmediated senses (Kubisch 2016).

Robert Curgenven's *Climata* integrates resonant tones from geographically dispersed spaces into a single composition. This models how Choros distinguishes places through difference, while highlighting the process that takes us from the specific to the general and back again. This is the nature of place; though shaped by myriad historical encounters, it acts in the present as constraints on our own phenomenological experience. This author's own *In that place, the air was very different* accumulates an auditory memory of those places it has been installed. Sound pools are diffused into overlapping zones, a chorographic patterning that stimulates listening in movement. Consider also the approach taken by Dallas Simpson. His environmental performances express a "continual state of communion with the physical realm" (Simpson 2016). Binaural recordings of these performances are not designed as aesthetic objects, but are rather invitations to the listener, encouragements to engage in their own "spatial choreography".

Such engagements with place create zones of "contemporaneous plurality" (Massey 2005). 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. Everywhere are circuits of mutual interaction and influence. The tripartite model of place described in this paper can provide a rich explanatory framework for such diverse praxis. It can also act as a generative model for future sonic creations.

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Sounding the Forgotten City – Soundurbance in João Pessoa, Brazil

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ABSTRACT: This study proposes to deepen the understanding of the contemporary cities soundscape by exploring their *present territories*, composed by urban voids, margins, transition zones or portions forgotten by traditional sound and urban studies. Held in the city of João Pessoa, Brazil, it investigates how inhabitants create and recreate their lives from their sound territories, while demonstrating the possibility of confronting dominant soundscapes through sound interventions in these marginal zones. In order to achieve that, the soundurbance methodology was formulated based on the soundwalk methodology and the transurbance procedure, thus forming a hybrid concept. This study shows to be particularly important for Latin American cities, where from the disorderly growth in territories outside of the capitalist order – whose domination logics have corresponding sound logics - also echo the sounds of social differences, excluded inhabitants, nature and silence.

KEYWORDS: contemporary urbanism, urban soundscape, present territories, sound cartography, sound intervention.

1. Introduction

Hidden in the shadows of the contemporary city, repressed by the lights of static and orderly spaces, moving territories are found, fugitive to attempts of organization and control. Not flaunted in tourist guides or postcards, the so called *present territories* are voids found among fragments of order. They are margins, transition zones or portions forgotten by traditional urban planning which are in constant transformation (Careri, 2013). This work proposes to explore the soundscape of these zones, insofar as they correspond to the dialectical complexity of the urban space production – according to the conception given by Henri Lefebvre (1991) – and at each attempt of sewing or repair are spontaneously reconfigured.

Developed from an experiment formulated by researchers of *Cidade+Contemporaneidade* group – from Federal University of Pelotas – for the International Seminar Urbicentros 5[1], held in November 2016 in the city of João Pessoa, Brazil, this study is particularly important for Latin American cities, where from the disorderly growth in territories intrinsic to the contradictions of the current mode of production – whose domination logics have corresponding sound logics – also echo the sounds of social differences, excluded inhabitants, nature and silence.

Articulating notions of *social space* and *everyday life* attributed to appropriation and experience (Lefebvre, 1991), passing through the theory of *spectacle* elaborated by Guy Debord (1997) in the context of the Situationist International, it investigates how the inhabitants create and recreate their sound territories in the space-time of this distinct urban organism, while demonstrating the possibility of confronting dominant sonorities through interventions in these "urban amnesias"(Careri, 2013, p. 152), which, being at the margin of the traditional city structure, hold opportunities for subversion and freedom. Apart from the western preference for the sense of vision, it removes the corporality from passive contemplation, placing the body as a practical-sensorial totality at the center of the investigation, as through its materiality the spatial practice is reconfigured in everyday life.

This study aims, therefore, to deepen the understanding of the contemporary city soundscape relating it to its structural complexity, exploring through the present territories other nuances and subtleties possibly forgotten by traditional sound and urban studies. From the notion of *rhizome* proposed by Deleuze and Guattari (2000), it assemblages concepts and consolidated procedures – *transurbance* and *soundwalks*, discussed below – performing a hybrid approach, the *soundurbance*, which intervenes and creates soundscapes in interstitial urban areas, while seeking to identify under what aspects the structure and dynamics of this complex spatial conformation are connected or fragmented. As a researcher, to go

1. The seminar dealt with multidisciplinary aspects of the foundation processes of the contemporary city, establishing articulations between the field of architecture and urbanism with areas such as anthropology, law, sociology, geography and arts.

through it involves challenging the human activities submission (from production of space to knowledge) to the current mode of production and its reproductions, or still, to face the victory of economy over urban life translated by spectacle (Debord, 1997), exploring other possibilities for understanding the processes of the contemporary city and its soundscape.

2. Context: homogeneity results fragmentation

Urban space, understood as a social product in the conception of Henri Lefebvre (1991) – because it has a global character as an effect of the action of society on nature, on the senses and sensations, on energy, space and time – corresponds to simultaneity of abstract and concrete relations, composing, above all, the spatialization of the current mode of production (from its relations of production), not directly and transparently, but marked by juxtaposed ideologies and illusions, therefore, in a dialectical constitution. In other words, on one hand, the production of urban space subordinated to accumulation of capital and economic growth does not exclude its contradictions, nevertheless the attempts of homogenization and pacification. Otherwise, under the influence of rational modernism, homogeneity results false, paradoxical, since it is imposed through the fragmentation and hierarchy of spaces, culminating in the diffuse city[2]. On the other hand, the capitalist need to subjugate the inhabited space to its exchange value (Harvey, 2009), impregnated by fetishism and alienation does not suppress the phenomenological meaning of inhabiting, even if urban spatialization is mediated by the relations of production.

For the analysis performed here, two conclusions are crucial in this conception. First, as homogeneous-fragmented dialectic spatialization leftovers, intermediate territories, empty spaces, "abysses" result. These remnants and remains are constantly changing, defecting each new attempt of order. They cannot be therefore directly attributed to the mode of production, since they do not obey its rules, but indirectly, as they compose the urban space as a social product. Intensifying this complex conformation, in Latin American cities – taken by vast social inequality – the gaps can be filled by illegal appropriations, slums composed of poorly finished houses that are unaware of land ownership and traditional urban organization. To this phenomenon a double meaning is attributed: these "voids" (now filled) are on the margins of capitalist production, given their constant modifications and escape any attempt of ordination. However, they are an effective component of this contradictory order that endorses its perpetuation in poverty.

Second, the notion of space as a present practice, with attachments and connections in act, since production and product are inseparable. Space as a product results from repeated

2. The term diffuse city refers to the isolated suburban settlements that spread forming discontinuous fabrics through large territorial areas (Careri, 2013).

acts and gestures, but it also incorporates signs and symbols. It is comprised by encounter, simultaneity and contingency. In the same way, territories are understood as present precisely because they are full of possibilities for current action and appropriation; they are interstitial because they do not configure hermetic spaces (of housing, leisure, transportation), they are not fixed (therefore nomadic), but are always in a process of transformation, always temporary, in between. How do these forgotten territories sound? What can their soundscape say? It is precisely what is proposed to be investigated.

3. Methodology: a contingent approach

The definition of the methodological approach is a central part of this study, given the need to address specific issues (the soundscape and its unfolding) inserted in the context of contemporary phenomena which inevitably require an interdisciplinary approach. Thus, from the cartography method proposed by Gilles Deleuze and Felix Guattari (1992), a methodological seam was elaborated based on the notion of *rhizome* (Deleuze; Guattari, 2000), a concept that opposes to the model of science represented by a tree, whose branches (disciplines) can only communicate with the trunk but never with each other. Characterized by a system of passages composed only of shortcuts and deviations, the rhizome is the place of unforeseen encounters, whose navigation is developed through a contingency system, where events have reduced causality[3]. In this way, the rhizome approaches and manages multiplicities of events concerning the research, combining an extensive map, formed by routes and stops in geographical places, to an intensive map, relative to the forces that move the researcher among these territories.

3.1. Assemblages

In the present approach, the concepts approximated in order to understand the relations between soundscape and residual urban territories (or nomadic spaces) renounce the possible privileges and prerogatives of the specialization, thus forming assemblages raised by the researcher's judgment or furthermore, by desire, whose existence the cartography method does not reject. On the contrary, it is precisely in desire that lies the whole revolutionary potential for transformation (Deleuze, 1992).

As it follows, will be exposed, therefore, the theoretical-conceptual assemblages which culminate in the Soundurbance conception as a cartographic methodology and an empirical procedure formulated by the researchers within the scope of this study whose performance is identified both as a means of access to the observed sonorities, promoting the perceptive

3. According to the interview given by Joseph Vogl, German theorist and translator of the duo Deleuze & Guattari to Alexander Kluge: *Soll und Haben. Fernsehgespräche, S. 309 – 320.*

engagement of the human body with surrounding space, as an end in itself, insofar it articulates appropriation and intervention in the soundscape of the present territories.

Walking as a critical, aesthetic and artistic practice

Several authors argue about the pleasures of erratic walking, an urban critical experiment through the body, the daily traveling as an artistic act. Henry Thoreau (2012) in his essay Walking refers to the act of walking as an art: the art of seeking the inapprehensible encounter with the sacred, the giving up of oneself in aimless direction or simply abandonment. Wandering, voluntarily get lost so that in the track itself there is the opportunity of finding again your own self, with the local memory, or with the world. Careri (2013) attributes to walking a symbolic method in which the primitive man transformed the natural scenery, identifying in such action the most important relationship established by him with the territory. Having later experienced in religion and literature in the form of sacred tracks, of peregrination and of procession, only from the 20th century on, however, walking was dressed as a way to experience, understand and modify the urban scenery, reaching an aesthetic character, especially from the Dada, Surrealism, Letterist International and the Situationist International (SI) movements.

Regarding the SI, an acting movement in Europe since the end of the 1950s until the beginning of the 1970s, whose studies have shown very useful for the contemporary city approaches, the creation of situations (a concept inspired in the theory of moments by Henry Lefebvre) should attribute new meanings for the daily life. They would work as articulated games in space-time capable of inciting in the usual daily tasks the uncontrollable and the passionate. As they occurred in the space-time – opposing Lefebvre's moments, essentially temporary – the expansion of notions of appropriation and perception of space proposed by the *dérive* happened in the urban scope (Dias, 2007).

The situationist dérive means both a theoretical background and a practical procedure, and, according to Debord, it is inseparably linked to the effects of psychogeographical nature, that is, the impacts and influences that geographic environment, whether planned or not, has on human behavior. As a theoretical contribution, the dérive is described by Debord as a spatial and conceptual investigation of the city, involved in a "playful and constructive" conduct, which, through techniques of practical procedures of erratic walking, analyzes the affective nature of the relationships between individuals and the urban context, causing the return of the playful character to the daily experience in the cities (Dias, 2007). From the empirical point of view, the dérive presents itself as "a technique of rapid passage through varied ambiances" to be practiced from a set of rules previously settled (Debord, 1958. In: Jacques, 2003, p. 87). As a game, it relates rationality and playing, having an opening to luck and randomness as part of the plan of the explorations.

From Transurbance to Soundwalks

Conducting a follow-up of the dérive theory under the influence of the urban investigation carried out by the SI, Francesco Careri creates the group Stalker in the 1990s, whose exploratory territory of action and experimentation extrapolates the city administrative limits; the group wanders around the margins, on the borders where the outskirt becomes a "no-city". The goal is to cover the map, to transform the *anti-art* experience in aesthetic practice, drawing the architecture of steps, remaining sensitive to contemporary transformations while characteristics of a changing society, but, most of all, seek the nomadic city in the interior or on the edges of the sedentary city. "The nomadic city is the path itself, the most stable sign in the void, and the form of this city is the sinuous line drawn by the succession of points in motion" (Careri, 2013, p. 42). Thus, the term *transurbance*, based on the seasonal tracks of people and animals called "transhumance", with roots in the Neolithic period. In short, transurbance designates, therefore, the walking as an aesthetic (and critical) practice through voids and sections of order of the contemporary city.

The soundwalks, in its turn, are in fact similar to the situationist dérive or the Stalkers' wanderings, despite its specific orientation to the observance of sound and sceneries comprised by this element. The term soundwalk, first and foremost, designates an empirical methodological practice developed to identify components and characteristics of the existing sound scenery (Adams et al, 2008). According to Westerkamp (2006), soundwalking is a practice in which we become aware of our participation as listeners and producers of sounds in the creation of the soundscape.

For Schafer (2011), the report of personal impressions concerning sound should happen through the use of the sound itself. Thus, a soundwalk can also be an exploration of the sound scenery having a music score as a guide, that is, a map which calls the listener's attention to the sounds which will be heard along the walk. Or still, it can be a composition-intervention of the soundscape, when the walker produces sounds along the track with a determined intention. The important is to consider that acoustic information is noticed or produced.

The fact is that besides bringing people closer to their acoustic contexts, soundwalking has been used as a methodological tool to involve professionals who work with urban design, planning and development, and it can have its concepts adapted or expanded according to different research contexts, and can be carried out in group or individually, recorded or not (Adams et al, 2008).

Related to the practices studied, the soundwalking strategies, besides enabling a critical analysis of the urban soundscape, incite the game and the participation, associating itself to the subversion of the modern spectacle and consumption, promoting territorializations from the encounter of the sensitive body and the experienced urban space. In this context, they are cartographic procedures which follow experiences of walking as a critical, aesthetic and artistic practice.

3.2. Soundurbance

Having elucidated the original contexts, the soundurbance method is then understood. Built from a hybrid approach, soundurbance is, then, the practice of listening, exploring, intervening and composing the soundscape of interstitial urban territories, considering the analysis of the city sound territory from its voids, margins and fragments of order. On the other hand, it investigates structural peculiarities of the contemporary city conformation from its soundscape and what may arise from it. Besides this, soundurbance seeks for an end in itself as it offers the possibility of intervention in the confronted soundscape, that is, it presents itself as a form of appropriation that leaves temporary marks, nomadic tracks of creative acts which seek its fulfillment in the surpassing of the body passivity.

For this procedure to set a research methodology, other means and tools should be aggregated, not losing sight of the assemblages and detours which comprise the rhizome, as shown above. In the study at issue, besides the walking tracks, observation, sound and audiovisual recordings, sound interventions and field notes, were also had interviews with the participants (in a later moment, in an online questionnaire) and analysis of the collected material bringing the events closer to the theory and the reviewed concepts.

4. The City on Reverse: sounds of a nomadic journey

To pragmatically understand the local context, the city of João Pessoa, capital of the state of Paraíba, is located in the northeast region as the third oldest state capital in Brazil, founded in 1585. Its metropolitan area covers João Pessoa and 11 other municipalities; according to the population survey conducted in 2016 by the Brazilian Institute of Geography and Statistics (IBGE), comprising about 1,260,000 people. The city refers to an island: it is cut by twelve rivers – the main ones are Jaguaribe to the north, Sanhauá to the west and Gramame to the south – and bathed to the east by the Atlantic Ocean, along approximately 24 kilometers in length.

The experiment at issue took place in the context of the International Seminar Urbicentros 5, held in the second week of November 2016. From the agglutination of three workshops proposed for the event, about 30 participants were gathered and invited to walk, listen to and practice peripheral urban areas of João Pessoa. The union resulted in an immersive journey of almost 8 hours through the cracks and opportunities of the city, whether they were about political use of urban space or resistance actions against the sensory-perceptive passivity, with which we ordinarily confront the contemporary city, in an effective attempt of appropriation capable to subvert the alienation of everyday life.

Thus, around 9 o'clock in the morning on November 11, participants (from various regions of Brazil and the world) gathered around Hotel Globo, in the historical center of the Northeastern capital, overlooking the Sanhauá River. Most were architects, town planners

and artists, between 20 and 30 years old. Preliminarily, a stirring conversation about the goals and possibilities of the walk took place, where participants were called to turn their attention to the sound aspects of the walk. In addition, they were challenged to produce sonorities capable of subverting spectacular logics of space domination, demarcating sound territories on space-time surfaces of the trajectory. In this perspective, they would be able to develop a conscious relationship with their performance in the production of the urban soundscape. Among the walkers a local dance group composed by six artists/dancers[4] who were familiar with street dance interventions also participated. Once the journey has been divided between footpaths, train rides and some pauses, the soundurbance experiment will be related out of passages or scenes from the space-time course experienced, narrated in the first person in order to include the whole cluster.

4.1. Passage 01: civil disobedience[5]

After the descent to the Porto do Capim community, formed on the banks of the Sanhauá River (threatened a few years ago by the ghost of gentrification under the pretext of "revitalization"), the gang entered in a foray to one of the several abandoned buildings around the place. From inside the building one of the researchers blew notes on a harmonica, trying to awaken aural sense and activate auditory memories in the walkers. Then we immediately heard the whistling of the intended urban train announcing its passage through the oldest part of the city. At that point, some of the attendees were approaching the window to watch it pass – before the scheduled time – as footsteps were heard on the ancient staircase. Later, in the interviews, the melody of the harmonica and the whistle of the missed train were recalled among the striking sounds of the journey.

The group then went to the train station (Figure 01), following a wide avenue whose background sound came from engines and vehicle tires touching the asphalt. Besides them, voices of pedestrians and peddlers, horns, wind and some birds sounded the quotidian composition of urban centers. Waiting for the train that would take it to the Jacaré station, located in the municipality of Cabedelo, in the metropolitan area of João Pessoa, the group found an opportunity for a new and bigger intervention: a book reading was started by two members; their voices stood out to the background music played at the station, but both were interrupted by the voice of the peddlers who repeatedly said: "water, water, water" or by the noise of the bulky buses that leaned against the stop of the avenue ahead.

4. The Radar 1 Group, from João Pessoa.
5. In reference to the book from Henry David Thoreau.

Figure 1. Passage 01.

Soon the first dance intervention started, followed by the sound of claps, batuques in plaques and trash cans and some songs chanted, once the wait for the next train would last almost half an hour. Due to such move, ordinary inhabitants watched curiously, laughing, some of them indifferent though, the very instant that the station became a theater. Thus, bodily experience retakes lost spontaneity, becoming appropriation, since simultaneously banal and surprising everyday life brings with it the unknown and the uncertain (Velloso, 2016). It went on until a new hiss announced the moment to leave.

Entering the train was an event. Earlier, talking with some citizens awaiting transportation, we noticed the religious interest of the majority. As soon as the convoy moved, we excitedly chanted a well-known Brazilian popular song on religious motivation, which says: "Jesus Christ, I am here!"[6] Contrary to customary social obedience, we found in the sacred interest, motives to deflect, desecrate and resist. After the initial agitation, conversations in small groups were started, the occasional crackling of the wagons on the tracks sounded, while the ride passed smoothly (Figure 2).

6. *Jesus Cristo*, by Roberto Carlos, popular Brazilian music.

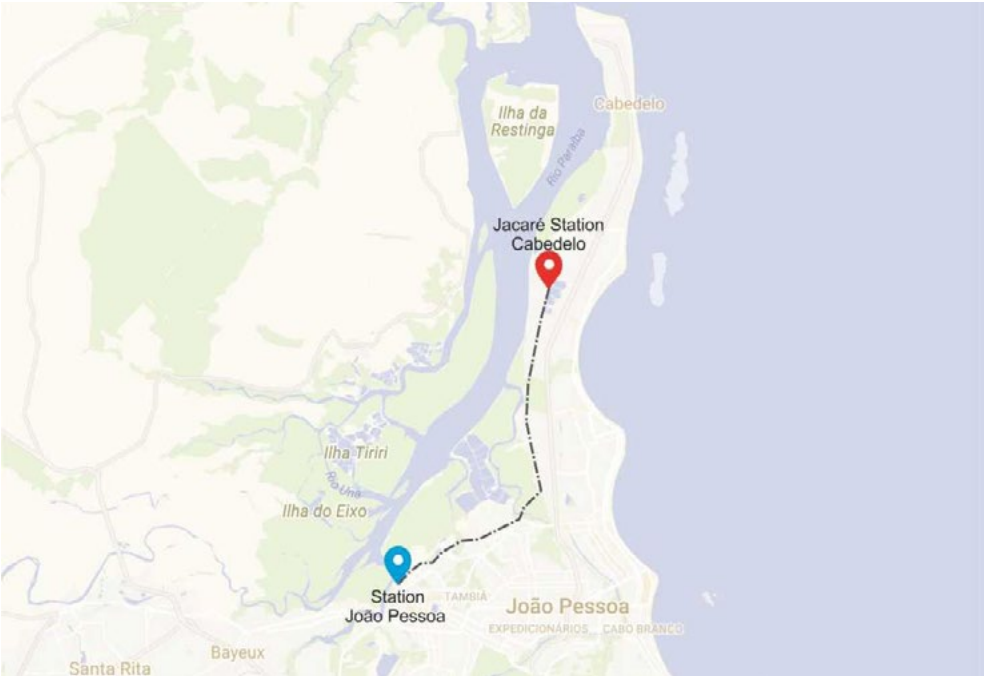

Figure 2. Railway from João Pessoa to Cabedelo.

4.2. Passage 02: da lama ao caos[7]

Getting off at Jacaré station in Cabedelo, a distinct scenery appeared before our eyes and ears. They were other sounds, other forms and other presence: silence as background. The first sound contact came from a huckster bank selling pirated CDs and DVDs, located on the descent of the station, reproducing popular music in the speaker. The dirt road continued ahead, desert, but then we went to the opposite direction, entering a stone alley with very small houses, which soon would flow into the fishermen's association of Jacaré Beach. Afterwards some residents cheered the group, laughing and surprised. From the house terraces or verges, people talked as they watched the passers-by movement, in a vigilant way, as if they were the street's eyes and ears. From inside the houses, children's voices, birds sing in cages, dogs bark, someone hears loud music, a father works with a saw before his little son as a car passes by... The street sounded like a small fishing village and had this common, community ambience.

Arriving at Jacaré Beach, a freshwater beach where the sand is mangrove (dark mud), boys swam in the river, playing. At the dock, some of us launched black bags in the wind intending to discover its direction, while listening to the boys and their aquatic acrobatics. On the shore, fishermen told stories among them. We went on, listening to the sound of the wind, walking through dirt streets, until a certain point where we found a lot of angry dogs

7. From mud to chaos, title of the Pernambucan band "*Chico Science e a Nação Zumbi*" first album, they combined rock influences with rhythms and themes from the Brazilian Northeast.

barking. With our feet making crunching sounds, we crossed a wasteland stepping through rubbish and burned vegetation. While some were dragging leaves, others imitated sounds of birds. As we reached a wall, we wrote protest phrases on the porous surface using pieces of plaster found on the floor.

Going around the wall, we crossed the railway when the noise of an engine rang out loud: it was a machine dredging water from the vast wetland that spread over a great void. We walked around, not in silence, but playing the harmonica again. We moved on towards a transition zone between the empty spaces and the formally built city, as a car was playing loud music. Some hummed, while we walked by unfinished apartment buildings, still on a dirt road. Ahead the street was silent, now paved with concrete; High buildings sounded lonely, from the people who lived there we heard only absence, from the children silence on an empty playground. The rising wind sound indicated a new presence: walking westward we approached the ocean (Figure 3).

Figure 3. Passage 02.

4.3. Passage 03: in a kingdom by the sea[8]

The sound of the sea and wind became sovereign, even if less than 200 meters away the asphalt and the city unfurled. From this encounter comes the idea of coexistence of worlds, by assemblages and heterogeneity. Under intense heat we bathed in the sea, we were children in the body, young in imagination and old in thought, hearing and feeling the breaking waves. The sea is one of those places where one can feel "closer", the body and the waves sound in the same transformation, unfinished transmutation, always in becoming. Walking on the water's edge, listening to the constant waves roar, one thinks about duration time, where

8. From the poem by Edgar Allan Poe, Anabbel Lee.

past, present and future intersect, not in a linear way as we usually suppose time passes by. We are made of moments which in a given time are intertwined in a virtual multiplicity. "The past invades the future in the present." (Bergson, 1999, p 176; Deleuze, 2008).

Already in the afternoon, we walked back towards the railway, once again crossing empty sections and pieces of the built city: organized vertical sets, always walled, barred, spread over large areas, composed of vacant lots, dirt roads and abandonment. Abandonment in two senses: as such as things we left behind, on a geographic map, in a renunciation action, or like those we do not care for in a neglectful attitude (Rocha, 2010). The forgotten city, the unlived urban time, the street, the scattered garbage, are both abandoned moments and remnants left behind. Shortly thereafter, the group sat under a tree-shade to rest for a few moments. It was then that one of the participants, a local, told stories about João Pessoa, the route, the waters that bathe the city and the encounter crossed by the flock: river water, mangrove mud and sea water. We hummed African origin religious songs to honor these three elements. Among these encounters, detachments and confrontations, the course passed, slipped in time and drew in space the marks of our intervention (Figure 4).

Figure 4. Passage 03 in yellow.

4.4. Passage 04: walking on the railway

Walking a long stretch over the intercity railway line was a poetic and charming experience. Few of us had experienced this kind of trajectory before. Over the rails, we left the city, smashed towards the woods, crossing through walls of the gated communities. Nothing was certain, what we could find, hear, think or feel. In fact, the course which seemed monotonous

was full of surprises. The first one was during the passage of the train: the unknown metal melody sung by the rails before the wagons approached was revealed. It was a mutant sound, like a motor transmuting into birdsong. How could we hear this beautiful chant if we had been still bounded to the city limits? The whistle, no matter how much it was expected, also caused uproar among the hikers who laughed and whistled back in a childish way. The passing of the heavy moving cars defied our shivering bodies.

When the jungle became very brake, without much space beyond the rails, we calculated a way to survive if the train passed, entering the vegetation banks. For a long time we walked over the stones and ties, sinking the feet at every noisy step. Ahead, in a wider area, another unknown sound approached, mysterious and frightening: it was the trot of three horses guided by riders who were training for a race by the marginal zone. In the end we talked friendly to them, when they exhibited the imposing animals in racing shots (Figure 5).

> What marked me most, no doubt was the trotting of the horses that appeared near the rails we were crossing. It was a surprise to hear them in the silent place, inciting some fear at the beginning. (Excerpt from the interviews).

Figure 5. Passage 04 – walking over the railway, in red.

Finally, we headed towards a poor neighborhood known for its violence events, which we would cross until reaching the Renascer station to take the train back to the historical center. In general, large Brazilian cities have neighborhoods or marginal zones around which a kind of imaginary of war or violence is formed, not necessarily remote from reality, but hyperbolic, not compatible with reality. Especially among middle-class residents, those who live in gated communities, who move around locked in cars and have fun in private parks, always afraid of the city, its encounters and the other citizens. Not indifferent to this

phenomenon, a mixture of apprehension and interest led us to that place. However, what we could perceive in reality was a quiet lifestyle, inhabitants walking in the street, as we heard children's shouts and excitement, the same sense of community perceived earlier in places where residents have more control over their own time, mainly because their lives are not completely submissive to the capitalist time – working time, resting, leisure, etc.

4.5. Passage 05: el palo presidente

Arriving back to the historic center, up the slope towards the Hotel Globo, we brought pieces of things found on the floor, marks and memories of revolutions (Figure 6), mainly internal ones, singing in unison the substitution of the country presidency for a wood trunk: *el palo presidente*![9]

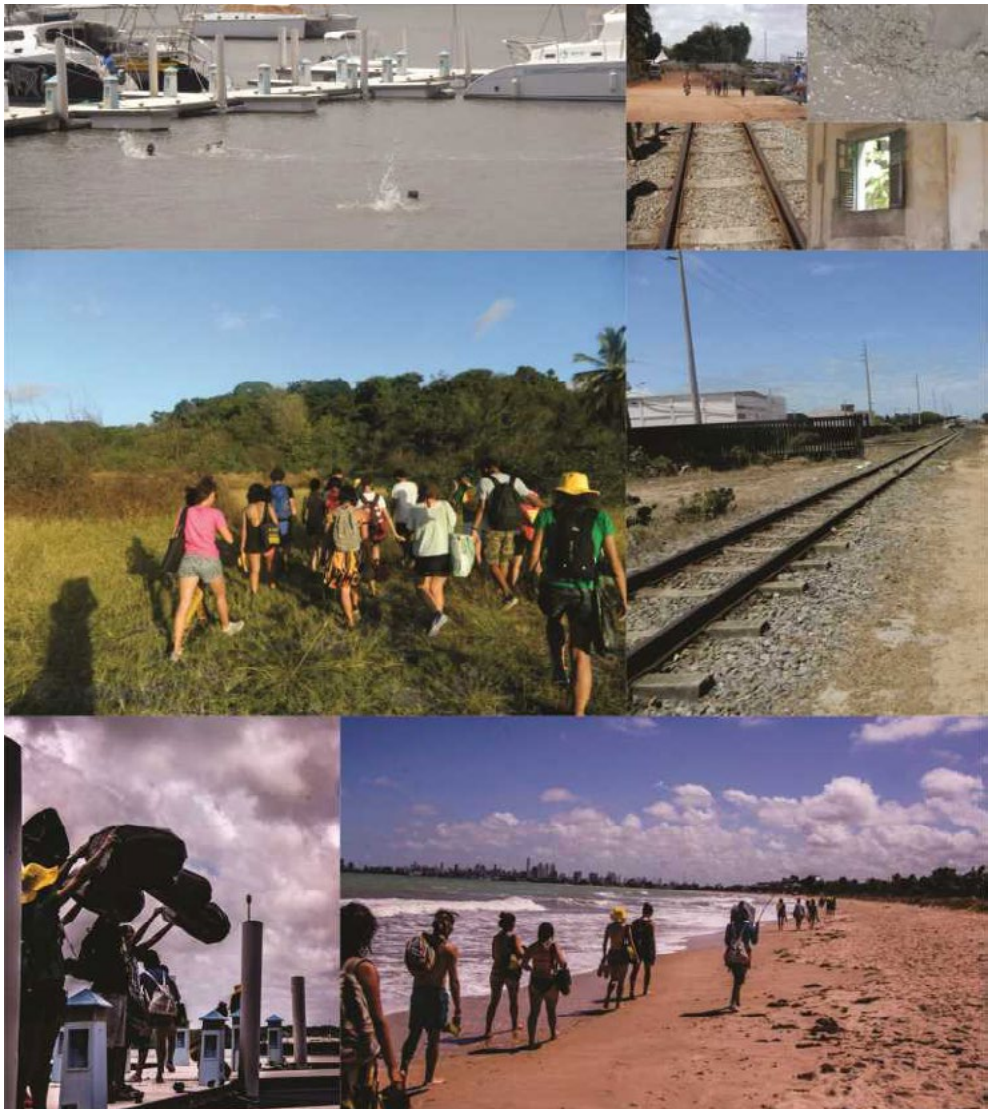

Figure 6. Collection of the soundburbance.

9. This scene refers to the historical political crisis which Brazil has been currently experiencing.

At the end, in the interviews, participants were asked about the implications of the experience, what they expected before, what they actually encountered, or how they felt marked or transformed by the events:

> Quiet and surprising, I have never really "programmed" myself to actually notice the noises and sounds in any walking or urban wandering.
>
> Unexpected. We usually take walks to see and touch things, eat and even smell. But listening to the sound of the city also seems to be part of the urban sensations...
>
> Another sound that struck me a lot was the bell of the street peddler that we crossed in a very silent street which brought me a certain nostalgia of my childhood, where it was common to have elders selling *quebra-queixo*[10] through the city and they announced their approach with the bell.
>
> At last, the chant "el palo presidente" was the conclusion of the course in a factual and also very symbolic way.

5. Spectacle, detours and sound correlations

The soundurbance experience in João Pessoa rescued countless variations and nuances of soundscapes heard in the interstitial zones. It involved walking, singing, dancing, claps, batuque, sea bathing, reflection and silence. Different types of urban territories were crossed: vacant lots, banks, boundaries, zones of violence, poverty, gated communities and natural areas. While in the main zones of the planned city the best known and quoted background sound comes from traffic or shops, in the poorer areas, ordinary citizens listen to music in the middle of the afternoon, sit at the verge of their houses to see and hear other inhabitants pass by, children run and play freely. Passing by residential communities of wealthier classes, silence indicated the working hours, when the inhabitants are in the central zones and the children somewhere else but the streets. Crossing voids, we hear silence and our own sounds.

Similar to the urban tissue, the urban sonority is a dialectical composition, as it corresponds to the sonic expression of fragmented, heterogeneous (despite of the attempts of homogenization) and contingent social phenomena which compose the contemporary spaces, especially in the Latin American cities. For this reason, in the adverse flow of dominant forces of the urban sound environment, there are escapes which manifest other nuances of

10. A type of candy made with peanuts.

the city, less homogeneous, fleeting to less attentive ears; they are *minor*[11] sounds which do not reproduce laid down codes, as they originate from a *minor* becoming.

The currentness of the theory of spectacle developed by Guy Debord contributes for the analysis of contemporary sound phenomena that this study intends to carry out, specially concerning the logics (of domination) present in the urban soundscape. As the impoverishment and the fragmentation of the daily life in elements increasingly more separate are reconstituted through the accumulation of spectacles, "the spectacle consists of the recomposition, in the *image* plane, of the separated aspects. Everything missing in life is found in the set of independent representations that the spectacle is" (Jappe, 2008). As the maximum abstraction phase, the spectacle manipulates, above all, the sense of sight, which is also the one of separation. The representations rise from the collective social practice but behave as independent beings and communicate as a monologue (Debord, 1997; Jappe, 2008).

Therefore, how can one understand the spectacle from a sonic point of view? It is in urban centralities that the artifices and supports of the present mode of production are structured and concentrated – among them the intense traffic, the rush hour, advertisement, entertainment and finally the consumption – which constitute the spectacle both as a project as well as a result of the dominant social model. In this context, the evident sonorities come from the vehicles engines, horns, advertising jingles, advertisements in speakers, construction machinery according to the real estate speculation and citizens in a hurry, involved in the routine of the market economy. That is, it is the one-sidedness of communication where the sound scenery has a considerable role. The possible escapes to such scenario remain silent as we hear loud and clear "the justification of the existing society as the only one repeatedly spoken by the instruments of the spectacle" (Debord, 1997). According to Debord (1997), the principle of non-intervention is exactly what connects spectacle to alienation.

If the technological changes drastically affect the urban soundscape and the increase of sound levels follows and consolidates the economy growth and progress (Schafer, 2011), the acoustic environment is the field where the system influence is notably disturbing. Thus, the sounds produced by the spectacular daily life – specially the transport system ones – are very often considered as noise, bad sounds and must be reduced. For such noises the idea of progress walks in an opposite direction, given the negative approach that traditional methods of sound study attribute to them.

Through the soundurbance practice it was possible to question preconceived notions of space and its sounds, besides apprehending ways of retaking the spontaneity in the lived experience . However, new questions emerge to the surface: how to rescue citizens who indifferently watched the group? Did not the episode consist of another way of separation,

11. Analogy to Deleuze and Guattari's notion of "minor literature" in *Kafka: Toward a Minor Literature*, related to the voice of the marginalized people that reappropriate the majority language for their own rights, emphasizing the collective forces above the individual dominance (Deleuze; Guattari, 2014).

of spectacle, for them? In so far as everyday life becomes an object of social organization, passivity corresponds to a harmful accomodation (Velloso, 2016). The critical point in the questioning is to challenge the isolation of individuals, the *blasé* attitude mentioned by Simmel (1973).

> (...) the configuration of such a state of affairs does not stem exclusively from an evil inherent in the nature of specialists, but from an additional portion of responsibility that must be conferred to the inhabitant himself. Now, who is the user, seen from the top of the specialists podium? "A very repugnant character, who dirties what is sold new and fresh, who it spoils, who fortunately carries out a function: of making the substitution of the thing inevitable, of bringing obsolescence to content", "what little much excuses him" (Lefebvre, 1991, p. 11–12. In: Velloso, 2016).

Thus, practicing soundscape through soudurbances is an effective appropriation tactic insofar as it creates concrete experiences from which sensible manifestations emerge. The creative act is a way of subverting separation and in this sense the urban soundscape offers countless possibilities of appropriation, intervention and perceptive engagement. In addition, it may allow the deepening study on contingent processes of subjectivation involved in the relationship between body and landscape, bringing new perspectives to urban sound studies.

> But an environment is made up of qualities, substances, powers and events: for example the street and its materials, such as the paving stones, its noises, like the cry of the merchants, its animals, like the tied horses, theirs dramas (...). The path is confused not only with the subjectivity of those who navigate the environment, but with the subjectivity of the environment itself, since it is reflected in those who travel through it (Deleuze, 2011, p. 83).

6. Findings

João Pessoa soundscape study reinforced some antagonistic relations between center and outskirts besides revealing new contradictions: the orderly peripheric fragments, middle class zones, remain almost in silence during the day in complete opposition to the intensity of the resonant chaos found in the centers, showing extreme relations among its soundscapes. On the other hand, in the disordered forgotten zones, community sounds were found, of the urban life and freedom that one wishes to live in the city, the same freedom that the Brazilian middle class falsely tries to reproduce at the gated communities, clearly without success. If urban life could be reduced to sound, possibly the most interesting places would

be those located at the edges of hegemonic production logics, both in the central zones as well as in its peripheric correspondencies.

Finally, based on the interviews and reflections, two sound scenery aspects confronted during the soundurbance in João Pessoa stood out: the train sounds, under several nuances found in the course, and the sea sounds. These two different resonant environments caused intense impact on the walkers' bodies. It is exactly this dialectic relation with nature that differentiates human beings from other creatures. While in the depths of the sea sound we can find an expansion of the inner self, we are also fascinated by the machine sound full of symbolic meanings which send to past experiences (at present rail transportation is not spread in Brazil), to geographical crossings and to the wish of intervening and dominating the same nature within which we belong, spreading our productions over it.

Therefore it can be so complex to argue about the path urban soundscapes must take. Perhaps the sound we want to hear in the city, this very concentration of human production and its ambiguities, are not simply sounds of nature by one hand or sounds of capitalist production on the other. Presumably, the soundscape that transforms and territorializes ourselves in the existential continuum, which moves us intensively and extensively over space territories is that one produced not only by fetish abstractions that take on a life of their own (money, State, commodity), but those that symbolize and materialize fully human achievements, not separate, not independent but made tangible from the dialectical relation between man and nature. It is before these sounds that man recognizes himself in a complete, concrete way. On the other hand, it is exactly under this contradictory, dialectic but tangible relation, that man creates and recreates their space production.

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Soundwalk-walk – Listening Backwards, Moving Forwards

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ABSTRACT: The term *soundwalk* was first used by members of the World Soundscape Project under the leadership of R. Murray Schafer in Vancouver in the 1970s. Hildegard Westerkamp defined soundwalking in her 1974 essay "Soundwalking", as "...any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are." For the first humans the act of walking will have arisen from the need to find ways of survival. Once these needs were met, walking became in part a symbolic form of relationship with the world, possibly the first aesthetic act of humanity. We can extend this theory to the act of listening, in a possible parallel history. *Soundwalk-**walk*** is a practice-based art research project, holding an emphasis on *walk* guided and shared aural experience of a soundscape along a path, with a concentration on movement, the external and the internal, and the relationship between our bodies listening and moving through time, space, and place.

KEYWORDS: soundwalk, sound studies, soundscape ecology, critical aurality, deep listening, sound ethnography, radical listening, movement studies, bodily listening, kinesthesia, proprioception.

1. Introduction

Why do we call it *Soundwalk-**walk***? What makes a soundwalk-walk different from a soundwalk? Or a walk, for that matter? How do we define this, and why do we define this? Having already described a soundwalk, we know that a soundwalk and a walk hold path in common, in the sense that more usually we set out on a path with a means to an end in mind. A soundwalk-walk wishes to hold focus on the moment between the point A and B, and linger there with a study and play on the relationship between the movement of walking with the activity of listening, and consider what knowledge and applications can be gained from this, particularly within a culture and cultural history in which the visual is predominant within a segregated sensory hierarchy in mediating our perception of the world around us. Walking and listening–two acts often took for granted, automatically, not often considered together.

1.1. Walking towards our bodily ears

From the primordial and crude encounter of a moving body in a moving world, walking arose as necessity, but also as an aesthetic capacity to be explored. In the pages of Baudelaire we find the ephemeral figure of the flâneur, an ambivalent figure that, between curiosity and leisure, explores by foot the urban space. But only from the twentieth century has the walk been used as an art form, in an attempt to overcome traditional forms of representation and blur borders between life and art.

The collective forms of action of the Dada excursions, of Surrealist ambulation, and of the Situationist drift, originated from the literary sphere movers were part, operating in an active extension of writing–turning page into territory and pen into the body of the walker. The Dadaists understood that the entertainment system of the tourism would have transformed the city into a simulation of itself, and in response they propose the exaltation of the banal and lack of meaning. The Surrealists understood that there was something hidden in the emptiness proposed by the Dadaists, and within the unconscious city itself. The drift of the Situationists made possible the orientation of the living organism of the city, directing towards places that seemed to incorporate a kind of elsewhere and otherwise, capable of challenging a *Society of the Spectacle*.[1] Here, new forms of behavior appear as modes of occupying space, aiming for autonomy and freedom, in a construction of a kind of liquid city that uses erratic ways of walking as a strategy to deceive dominant control mechanisms in place. (Careri 2002).

In the sixties, when using daily movements and refusing technique in the construction of their work, the so-called Postmodern dance begins to affirm an emancipatory and

1. *The Society of the Spectacle*: a 1967 work of philosophy and Marxist critical theory by Guy Debord, in which he develops and presents the concept of the Spectacle, where social life has been replaced by representation. Debord (1977) [1967] *The Society of the Spectacle*, translation by Fredy Perlman and Jon Supak (Black & Red, 1970; rev. ed. 1977)

democratizing dance agenda. (Banes 2011) Choreographers such as Steve Paxton and Yvonne Rainer started movement research on the apparent simplicity of walking by decomposing its movement, analyzing it carefully, and experimenting with its infinite possibilities. The deceptively simple act of walking slowly, of walking backwards, for example.

We were interested in exploring walking through the decomposition of movement, and as a meditative/imaginative practice in its connection to proprioception: the unconscious perception of movement and spatial orientation arising from stimuli within the body's proprioceptors.[2] In humans, these stimuli are detected by stretch receptors in muscles and joints, as well as by sensory neurons in the semicircular canals of the inner ear. Here we can apply a playful expression we're calling, "bodily ears", and consider how hearing can involve the whole of the body, and further consider the affect of movement upon that hearing.

There is a focus in this work on exploring the relationship of proprioception and kinesthesia, which refers to the perception of the position and movement of the body by means of how those sensory organs in the muscles and joints affect memory and narrative making. This becomes challenging, as kinesthesia "...remains largely unexamined and any discussion of bodily movement in and of itself as a sensory modality and therefore as potential resource for meaning-making or semeosis has been largely absent" (Farnell 2012. 121). But in practice, the apparently mundane action of walking can be situated to gain meaning due to social and physical context. Action signs like walking are part of a deictic reference, containing an indexicality and performativity. (Farnell 2012) Combining focal attention on walking with listening during the walk provides not only embodied information, but can create a sense of space and place, providing a platform for exploring memory.

1.2. Listening towards a divination

We begin to hear around four months into gestation, our first soundscape a wombscape.[3] Jonathan Sterne writes a theory that everything that is known about hearing in its natural state "...is a result of interactions between ears and sound technologies", which could include at different times various recording and playback mediums. (Sterne 2003: 69) This places the ear in part of a chain of hearing equipment, and hearing equipment tied to "ways of hearing" and "institutional contexts that defined hearing, as well as what was heard", tied to time and history. "The only way a hearing researcher has access to hearing as pure faculty is through the subject's highly cultured act of listening". (Sterne 2003: 72) We could extend this to include the body, and if, as he further theorizes, this can show us how listening and

2. Specific nerve receptors for this form of perception, similar to the specific receptors for pressure, light, temperature, sound, and other sensory experiences. Sherrington CS (1907). "On the proprioceptive system, especially in its reflex aspect".

3. Colbert, M. "Future Memory: Womb Sound As Shared Experience Crossing Time and Space". https://soundstudiesblog.com/2015/01/12/past-future-womb-sound-as-shared-experience-crossing-time-and-space/

learning to listen is in part a cultured act, this can further us into the consideration of the wombscape being our first act of learning to listen, through a bodily medium.

A drop of water falls into a puddle and creates a wave. A wave is a disturbance that travels through time and space. It affects everything it touches, it creates other waves, continues colliding and transferring energy to molecules that do the same in turn to other molecules. It can be water, it can be light, it can be sound. It can be many things that collide into our bodily molecules, and our system translates. The water could be cold, the light could be bright, the sound could be loud. This is often passive information. But should we actively feel how cooling the water is on a very hot day, should we actively consider how strong that sun is, and should we actively enjoy how the crash of an ocean wave makes our heart race... our world becomes richer and more complex. We need to sense the world, and we can enjoy sensing the world. Remembering that we aren't limited to just knowing our place in it, but can feel our place in it, allows for a transference and embodiment of information that goes further, goes deeper, creates care and extension of thought beyond our perception of present. Creates empathy, expands, and vibrates the interior and exterior *milieu* as described by Deleuze and Guattarimiddles in motion, the description applicable to even the physics of a sound wave...something relational, not merely a thing in itself. Sound becomes sound when we hear it. A vibration that effects, and a vibration that joins. (Deleuze&Guattari 1980: 345)

Hearing has a special relationship to emotion, instinct, and memory, both individual and collective. Tapping into that ancient area of our brain, listening provides immediate information telling us where we are, if it is safe, and how we should feel about that. "Based on hearing, listening (from an anthropological point of view) is the very sense of space and of time..," Roland Barthes wrote in his 1985 essay, *Listening*. Barthes further notes, "[N]oises have been the immediate raw materials of a divination, (cledonomancy): to listen is, in an institutional manner, to try to find out what is happening". (Barthes 1985: 247)

Listening is an active aural act, and an activity increasingly less practiced. We are becoming un-tuned to the bombardment of information of our surroundings, to the information through our devices. We are increasingly passive in how this information enters us; as hearing is an embodied act, we embody whatever this information may be. Sound enters us "pure", we perceive all sound in our frequency range, there is no earlid to close sound out. Listening requires a choice to concentrate, and activation in parts of our brain that often overlap the areas we use when speaking. We listen, we process, we can consider, we can express our consideration and expression of what we listen to, and what we listen for; can transfer information and create new information within the relationship to our "audience". We have a relationship to biologically important sounds that hold information-bearing elements (IBE)[4] within them, and it is theorized that responses to complex sounds and

4. Suga, Nobuo. 1992. "Philosophy and Stimulus Design for Neuroethology of Complex-Sound Processing". *Philosophical Transactions of the Royal Society B: Biological Sciences*. Royal Society Publishing. pp423–428.

soundscapes (and for example, cinematic sound design) could be explained on the basis of these IBEs. Most IBEs are generic acoustic patterns and sound elements, deceptively simple, and often even shared across-species, for example signaling danger, or communicating with one's dog. Sound, in all of its complexity between emission, receipt, and auditory percept, can cross many borders.

Anthropologist and ethnomusicologist Steven Feld has researched and theorized about the relationship between sound, sense, and place for decades; and the symbolism of sound as distinct from voice and music. In his book *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*, written about his sensory ethnographic studies and time spent living with the Kaluli of Bosavi, Papua New Guinea, Feld writes how the Kaluli "rationalize nature's sound as its own, then 'turns it over' to project it in the form of what is "natural" and what is "human nature". This is the link between a perception of a sensate, lived-in world and the invention of an expressive sensibility." The Kaluli feel themselves aesthetically "in it" and "of it" when it comes to nature, they are a part of an expressive flow and "world-sense". (Sterne 2003: 268) The perception of our soundscapes can also be about design and composition, and Feld also writes on the Kaluli "lift-up-and-over-sounding", the acceptance of the complexity of the soundscape and the information and sensations that brings us–"the soundscape evokes 'insides' *sa*, 'underneath' *hego*, and 'reflections' *mama*. These notions involve perceptions, changes of focus and frame, motions of interpretive access to meanings packed into layers of sensation..." (Sterne 2003. 266) The experience of listening to the external, translated in the internal.

In David Novak and Matt Sakakeeny's invaluable book *keywords in sound*, Feld defined the term '"acoustemology", conjoining "acoustic" and "epistemology" to describe sound as a way of knowing and being in the world. His work calls for a sensuous relationship and investigation with place, a call integral to the research and theories within this project. (Novak&Sakakeeny 2015)

1.3. Soundwalk-walk at Invisible Places, 2017

> What comes together through sound is emergent and passing time — a sense of duration, the field of memory, a fullness of space that lies beyond touch and out of sight, hidden from vision (...) Through that strange anomaly of the senses, the way we perceive the world and the ways in which we represent those perceptions, we strain to hear what can never be there. (Toop 2010)

On this volcanic island, we could feel the dust from a thousand different times, coming together in one breath–entering the body; the mouth, the nose, the eyes, the ears. Particles mix with particles, blending and compressing time and space, giving us the option within our bodies to form an embodied place. Our feet firmly planted in ever forming soil, we could well imagine peeling back the layers, of era upon era, event upon event, scrolling through time as we walk.

1.4. Case-studies and reflections

There were two opportunities to test the *soundwalk-**walk*** prior, but separately, to Invisible Places 2017, where we were able to guide in person and together. We had two opportunities after as well:

A. In Porto, led by Colbert, the soundwalk-walk was performed during a class in a performance course called Expanded Sound Practices for Performance, at the Fine Arts School, in the University of Porto. It was a rainy day, and so the soundwalk had to be performed inside. We choose an acoustically active open stairway, with a large window running floor to ceiling to one side. The interior and highly reverberant nature of the location, along with the students coming from a performative background, led to a kind of micro-ecology of human sounds feeding off of each other, and feed-backing together. A cough became a chorus, and much more of the internal was vocalized and expanded upon. Listening to the recording, made by two of the students who were simultaneously participating–one with binaural microphones, the other with the on-board microphone of a H4 Zoom recorder–it was fascinating to follow this collective and imagined sonic narrative travel somehow from a primordial soundscape, then changing and shaping through time to the dawn of man, an industrial age, and even ending in some sort of imagined sound of the future.
You can listen here: https://soundcloud.com/maile-colbert/expanded-sound-practices-for-performance-recording-of-soundwalk-walk-fbaup

B. In the Caribbean, led by Monteiro, the soundwalk-walk took place at a small plaza in the center of the capital in the middle of a weekday. This provided a rich fabric of sound, from cars passing by, to the frantic activities of local businesses, to a mysterious and continuous monotonous sound made by a man laying down in the perimeter of the plaza, which for some participants evocated a ritual. The practice of slow walking, backwards and forwards, caught the attention of those passing by. Some remained–intrigued–while others assumed it was a street performance, and some tourists took photos. While guiding the experience, an awareness arose of the performative and disruptive force of bodies moving in an extremely slowly and focused manner, as it disturbed the overall rhythm of the city, while utilizing daily movements everyone is familiar with.

C. Our individual experiences led to some changes when we were finally able to guide the soundwalk together at Invisible Places 2017. There were ideal conditions, in a botanical garden of a University on a volcanic island, the immediate landscape and architecture calling up many eras at once. The biodiversity of the island gave a vibrant soundscape, and the weather conditions allowed the soundwalk to be outside. These aspects, in consideration with most participants not coming from a performative background, led us to the decision that this time we would instruct the vocalizations to be internal and imagined.

Some reflections on the experience from participants:

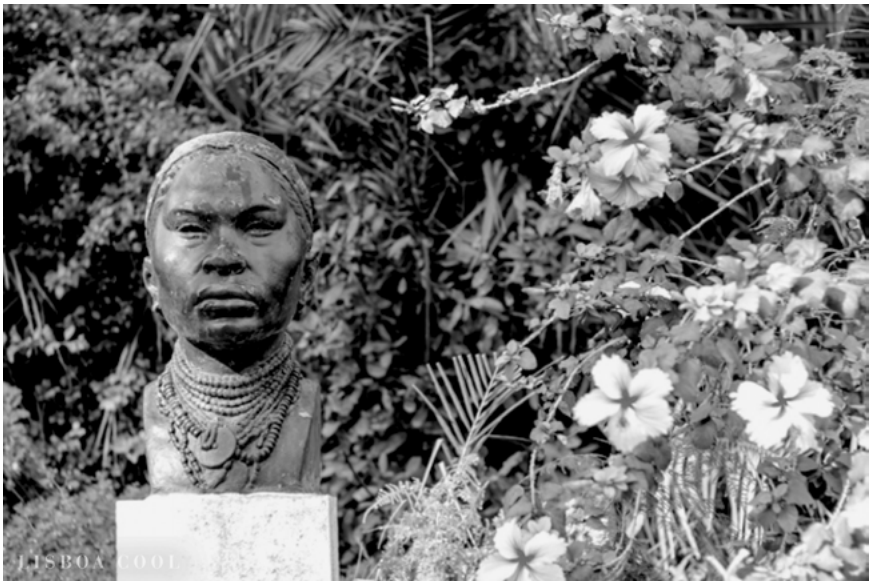
> I remember talking to a fly that lingered right in front of me as I tried to match its tones, and the sound of the seeds falling to the ground sounding like explosions as going forward the external from internal became so loud and intense in a good way, communicating with all things.
>
> The walking exercise where we had to move as slow as possible made me very aware of my own body and movements (...) especially its limitations. Since I had to concentrate to the walking itself so much, and simultaneously was asked to listen, I at first mainly heard the sounds of the walking process made by me (and that of the participant nearby): my feet on the gravel, the very light breeze in my ears, etc.
>
> Walking became a sort of touching the floor and the air around me. As a matter of fact, I recall that the slow walking movement also intensified my sense of smell as well. In a way also a form of touch.

D. Colleex, a network of the European Association of Social Anthropologists (EASA), held a workshop, the Ethnographic Experimentation Fieldwork Devices and Companions workshop, at the Jardim Botânico Tropical, also known as the Colonial Garden, in Lisbon, July 2017. Upon contextual research into this location, we were struck by the lack of–or reframing of–information regarding the garden's problematic past. This included the garden's official website, where it is stated, "From its beginnings, the Colonial Garden was also understood as a center of study and experimentation".[5] We wanted to highlight, even embody, this history using Soundwalk-walk as a sensual art and ethnography practice. At the point in the walk when we begin to guide back through time, we also gave historic information:
The Portuguese World Exhibition (Exposição do Mundo Português) was hosted in Lisbon between June 23rd and December 2nd, in 1940. This massive exhibition was staged to promote and boost Portugal's sense of superiority in a global playing field. The colonial section, divided into seven sectors, offered visitors the chance to discover 'in two hours' the whole of the Portuguese empire 'from Africa to the Pacific' and was 'an ethnographic document of three continents: Africa, Asia and Oceania'. It was installed in the then named Jardim Colonial (currently the Belem Tropical Botanical Garden), with a series of artificial sub-environments designed

5. https://www.ulisboa.pt/patrimonio/jardim-botanico-tropical

to give visitors the sensation that they were actually in the heat of the tropics. The third sector comprised the 'Villages and Dwellings of the Indigenous Peoples – a Document of Usages and Customs' where 138 native peoples 'lived'. The settlements it contained were: villages of the Indígenas of Guinea (Bijago, Fula and Mandinka); Angolan villages (including the house of the king of Kongo); the villages of the Muchope and Makonde peoples of Mozambique; replicas of 'typical' Cape Verdean and Macanese dwellings; a village of Timorese Indígenas on top of a cave; a 'house of the Natives' of São Tomé e Príncipe; typical Indian dwellings; and the Village of the Muleques, where the 'Indigenous' children could play.[6]

The inclusion of human beings engaged either in recreations of daily activities or representations or formal performances created the illusion that the activities on show were real, not representations, and this in turn created an illusion of authenticity. However, exhibitions were 'theatrical events' also similar to the practice of colonial politics based on a strategy of ordering everything with the aim of revealing a pre-existing plan and giving a meaning to such practice. (Ferraz de Matos 2013: 204)



From the text for this walk: What of the sensations of those brought to this environment…familiar flora touched, moved, sounded by unfamiliar air. That sonic environment, the known woven into the very unknown. The soundscape, too heavy, too full, with the staged and curated activities of the day to day of many lives and

6. http://lisbon-portugal-guide.com/lisbon-portugal-history/1940-Portuguese-World-Exhibition.html

many places and many times, forced and collapsed into a disorienting costume they tell us is home.

1.5. A message from the authors and the anti-conclusion

This work is ongoing, in research and performance. The quietly radical acts of attaching attention to walking while listening, and listening while walking, continues to reveal further connections and research, and provoke further questions and challenge. This is young work, a part one. What feels clear thus far is a call for a more sensory inclusive research and the information that can be gained from that, across disciplines. For now, we would like to offer our score with the welcome to perform it, and the hope for further reflections.

1.6. Soundwalk-walk, the score

*Soundwalk-**walk*** is a soundwalk with a concentration on walking, movement, and the relationship between our bodies listening and our bodies moving through time, space, and place, guided by artists and researchers Ana Monteiro and Maile Colbert. A guided, scored, and choreographed walk that includes the focus of deep to radical listening, intertwined with the focus of movement meditation and kinesthetic exploration. Two of composer Pauline Oliveros' scores from *Sonic Meditations*[7] were woven with a movement meditation, as well as the concept and question of sounding place, and sounding place in the past.

I. (Slow) Walking Meditation – tuning the body

Begin to walk as slow as possible. Take the time to deconstruct and decompose the movement. Observe the contact of the soles of your feet with the ground, while your head is lightly balanced on the top of

7. Oliveros, Pauline. *Sonic Meditations*. Smith Publications. 1974 ; and *Anthology of Text Scores by Pauline Oliveros*. Deep Listening Publications, 2013. Gratitude to Ione and the The Pauline Oliveros Trust for permission to publish.
The scores are marked with **.

you´re neck. Feel the opposition of the weight of your body sliding through your feet into the core of the earth. An imaginary transparent string pulls from the top of your head, up to the clouds. You may notice you are already forming a path. Keep on that path 10 to 15 steps, and when you´ve reached the end, turn around and trace back the way you came.

Ask yourself these questions while walking:

1. How am I walking?

2. What is happening in/to my body as I walk?

Now...

> raise your foot off the ground and observe the foot still in contact

> observe the change of weight in the body as the feet move forward.

> observe the transition of the weight from the heels to the toes

> experiment with different speeds of walking and observe what changes

Repeat the process while walking backwards slowly.

Focus your attention inwards towards sensations in your body, and how they relate to your walking, such as breath moving inwards then outwards. Give special attention to the sounds that the body makes when walking–clothing friction, shoes touching the ground, heart beating, blood moving, breath, organs, bones. Notice how deeply you can go inside and listen, as if there were ears in keep points all over your body. Notice how those bodily ears listen, and how that is connected with the bodily movement.

II. Walking Meditation with “Native” –tuning the ears to the body, listening through the bodily ears (introduction of kinaethetic listening) **

Walk so silently that the bottoms of your feet become ears.

III. “Environmental Dialogue” – tuning the ears **

Each person finds a place to be, either near to or distant from the others, either indoors – or out-of-doors. Begin the meditation by observing your own breathing. As you become aware of sounds from the environment, gradually begin to reinforce the pitch of the sound source. Reinforce either vocally, mentally or with an instrument. If you lose touch with the source, wait quietly for another. Reinforce means to strengthen or sustain. If the pitch of the sound source is out of your range, then reinforce it mentally.

IV. Walking Meditation with "Environmental Dialogue" **

V. Walking Meditation with variation of "Environmental Dialogue" – "Environmental Dialogue Back in Time" **

As the soundwalkers continue to follow and listen to their path, initially silent again, they begin to walk their path backwards, and as they do so, imagine traveling back in time...what would the soundscape around them sound like in different times of the past. Once they reach the time of the past of their choosing, they should stop and once again perform "Environmental Dialogue", this time with the soundscape of the past in their mind, but vocalizing openly. After a while, they can move forward again, "updating" the soundscape, as well as the sound they are reinforcing. This should be continued until everyone is vocalizing the present again. Variations can happen.

** Follows scores and variations on scores from Pauline Oliveros, *Sonic Meditations*.

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The Lizard & The Cloch – Time and Place in 19th Century Foghorn Installations

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ABSTRACT: This paper will present two previously unknown cases of noise complaints in the UK in the late 19th Century, detailing reactions to new foghorns at The Lizard in Cornwall in the 1870s, and at the Cloch lighthouse at the mouth of the Clyde in 1897. I will address what these two case studies can tell us about the way the sound of the foghorn was received into the coastal environment, how feelings about this sound in the coastal soundscape change over time, and how foghorns affected a sense of place for the individuals living there.

KEYWORDS: foghorns, place, time, sound phobia, sound romance, 19th century.

1. Introduction

This paper will detail two noise complaints from The Lizard in Cornwall and the Cloch on the Firth of Clyde, regarding the installation of new foghorns at the end of the 19th Century. The former is sourced from the archives of the Board of Trade, an held in the brutalist bulwark of the National Archives in Kew outside London. The second is sourced from the Clyde Lighthouses Trust, a small lighthouse body that was responsible for a small area of the Firth of Clyde from Greenock to Little Cumbrae, and whose archive is only partially indexed at the Mitchell Library in Glasgow.

In existing literature the voices documented from this period are often restricted to internal communications of the lighthouse authorities, but in locations where foghorns were installed they brought about a dramatic shift in the coastal soundscape. Those experiencing the change have hitherto been largely invisible in the historical record.

Diaphone foghorn technology emerged in the UK around the 1860s, with major testing sessions in 1873 on the South Foreland in Kent prompting the installation of foghorns across the UK. Existing literature on the foghorn is scarce, with one text on the historical timeline and engineering history of the foghorn and little else, despite sound recording practices and projects such as the World Soundscape Project often featuring foghorns.

The two case studies I have presented here are rare finds in the archives. The reasons for this I believe are multiple. Firstly, the Trinity House archive is very fragmented due to their building being almost destroyed during the Blitz. Secondly, this material is often of low priority: information related to lighthouse keepers and genealogy tends to be prioritised in these archives. There may also have only been a few instances of complaints: these two disputes were serious and ongoing, and many foghorns were located far enough away from towns or local residents for the sound to be softened by distance.

These two case studies have been chosen for the sonic material they contain, in the form of detailed sensory testimony regarding the hearing of foghorns at the moment of installation. There are many discussions to be had regarding these case studies, which are not addressed here: the nature of noise in liminal geographic zones; how perceptions of foghorns are affected by their connectedness to weather; the nature of warning sounds as representative of safety, and how we can talk about sounds as connected to industry that is in decline. This paper details the case studies, and picks up two threads: time and place.

2. Case Studies

2.1. Case Study 1: The Lizard & Thomas Hart

In 1868 water-colourist Thomas Hart built a house called Polbrean at Polpeor on the Lizard Point in Cornwall, the most southerly point in the UK. By 1871 he had moved there with his

family (which eventually extended to 12 children). In 1878, Hart got wind of Trinity House's plans to erect a fog signal in front of the lighthouse. Hart's house, which is now a youth hostel, is just a few hundred metres from where the foghorn was to be erected. He wrote to the lighthouse board, Trinity House, in December of that year:

> Sir,
> Having been informed that application has been made by your board for a plot of ground at Polpeor – Lizard for the erection of a fog signal – I try to state that this piece of land is only about two or three hundred yards from my residence – such a building will not only greatly interfere with the comfort of my family but will materially deprecate the value of my property. (MT 10/259/2)

Hart had moved to the area from Falmouth for peace. The house is isolated, a 25-minute walk from the village on Lizard, and very much in the shadow of the foghorn. A follow up letter from his lawyers stated that:

> Mr Hart built his house on the secluded site it occupies in order to be secluded and undisturbed by noise or nuisance; but it is manifest that the proposed Fog Signal station will be as great a nuisance as it is almost possible to conceive. (Ibid.)

The foghorn was a siren, described by a local reporter as "very weird and melancholy… with prolonged reverberating echoes through the surrounding precipices and caves". (Renton, 2001, p51)

Having received little in the way of a satisfactory response, Hart later wrote again to Trinity House, sounding considerably more irate:

> We find the fog horn here when blown a fearful disturbance, by night it completely prevents sleep in our house, and we have had a great deal of its noise lately both by night and day. It has ruined my property commercially, and curtailed my time as an artist. (MT 10/259/2)

He asked that the lighthouse body visit the site, to experience the foghorn for themselves, and fully comprehend the disturbance it was causing. However, following consultation with the Board of Trade, Trinity House decided not to compromise, effectively brushing off Hart in order to avoid setting a precedent for future cases.

2.2. Case Study 2: The Cloch & the people of Dunoon

The Cloch lighthouse is on a sharp bend in the Clyde, where the channel narrows and the land juts out into a point, opposite the town of Dunoon. In the 19th and into the 20th Century steam packets would race round the bend and collide, sometimes sinking in minutes.

In early 1897 a new foghorn was installed in front of the whitewashed lighthouse. A steam powered diaphone, it replaced a whistle sounded by a boiler. It was not well received. By the 9 November that year, the Cowal District Committee of the County Council of Argyll had petitioned the Clyde Lighthouses Trust about the new foghorn.

The petition complained that:

> The sound emitted by the fog horn recently placed on the Cloch Lighthouse is a serious nuisance to the inhabitants of the district lying within its range, it being so loud and penetrating that to the inhabitants of Dunoon (which is about two miles distant from the Lighthouse) it seems to be coming from a source a few yards outside their dwelling houses, and of such volume that in some parts of the Burgh where the configuration of the neighbourhood gives rise to an echo, it is so magnified by echoes and reverberation as to be almost overpowering. (T-CN 41.40)

The Cloch's character sounded more frequently than many other horns, sounding four blasts – high low, high low – of two seconds each in quick succession, every half a minute, but it was the timbre and quality of the sound that caused the most disturbance. Complaints started from its installation, with letters and poems written into local newspapers. One W.B.P., who had had the misfortune of moving near the Cloch, described it in a letter as though "as gigantic bull and his gigantic mate, which had stolen noiselessly up to my chamber window, suddenly opened their mouths and emitted their characteristic notes – the male a hoarse roar, and two seconds afterwards the female a shrill skreigh".

The horn is described as a bull by W.B.P, a "howling fiend" by another, but also, according to one letter written in support of the horn, it had "at least as much melody in it as a Wagnerian opera". A letter from the directors of Dunoon convalescent homes complains that: "The tones emitted resemble very much the cries of one in sore distress, and are enough to upset the nerves of even those in robust health".

By November, letters were being exchanged between the Clyde Lighthouses Trust and the Northern Lighthouse Board, to the effect that the signal could be changed. Northern Lighthouse Board Engineers David Alan and Charles Alexander Stevenson wrote: "You will understand that we do not propose to diminish the *power* of the blasts, but to lower the *pitch* of both notes."

What is happening here is twofold: Not just the volume is being considered, but the idea of how pleasant or unpleasant the sound was, with a preference for the lower note. The Cloch was thought to be 'shrill', and so it was proposed that the note be lowered. The soundscape was being considered, if by proxy.

Crucially for this discussion, David Alan Stevenson wrote in a letter on 25 November that year:

> Originally this signal was produced by whistles blown by steam from a large boiler. Complaints were made of this signal which however ceased after the inhabitants of the district became familiar with the sound. (1897, NLC11/1/22)

Taking this as its prompt, the following section will discuss what these two case studies can tell us about the way we think about time, place and people in the coastal soundscape.

3. Time

3.1. Sound phobia into sound romance

Acoustic ecology can give us a lens to consider the case of the Cloch from outside the bundle of documents, taking cues from the sentiment in Stevenson's letter above, that complaints ceased when people got used to the sound.

The Cloch is most interesting when considered in comparison to current attitudes towards foghorn sounds. The Cloch was a nuisance, and the petition claims that people were moving out of Dunoon as a result. And yet the foghorn appears as a sonic motif in films, literature, and music: John Carpenter's *The Fog*, Ingram Marshall's *Fog Tropes*. Responses to it are often nostalgic and emotional. Alvin Curran, in the sleeve notes to his large scale radio project, *Maritime Rites*, called it "the source of one of the most enduring minimal musics around us" (Curran, 2004)

How can a sound that was once causing people to up sticks and leave town be something associated with warm nostalgia a century later?

Barry Truax's *Acoustic Communication* gives us a theory that can explain this phenomenon. He describes it as a 'sound phobia' turning into a 'sound romance':

> The romance that builds up around the "disappearing" sound from the past is the counterpart to the phobia that usually surrounds a new sound, particularly when it replaces an older, more familiar one... the romance associated with a past sound arises from a nostalgia for a time and circumstance that no longer exists. The sound seems romantic because it has the power both to evoke the past context and to idealise it. (Truax, 1984, p19)

A 2013 performance titled the *Foghorn Requiem*, on the cliffs at Souter Point in South Shields, displayed exactly the romance and nostalgia of a lost sound as Truax describes it. The performance gathered a large brass band and a flotilla of ships, for a massive open-air performance. The ships gathered at sea were tuned to like a brass section: the brass played a phrase, and the ships would answer in echo. The foghorn was sounded at key points, with the final note of the performance a rare sounding of the foghorn, where the air tanks were allowed to drain. As the pressure dropped in the compressed air tanks, the foghorn grunted, coughed, spluttered, down to a low, slow final breath.

In the case of The Cloch and the Lizard, the new foghorn prompts a 'phobia'; an attitude that Stevenson acknowledges will begin to change when he remarks that the residents became accustomed to the previous foghorn. In the case of the *Foghorn Requiem*, the piece was significant to those from the region, representative of the decline of shipbuilding industry in that area, with many of those in the audience having worked in shipbuilding yards or with parents who did. Hearing the sound of the foghorn there evoked the past, as Truax describes, idealising an era of production in Britain, now at the end of a long and deep decline. The composer, Orlando Gough, described it to me in an interview as "a celebration and a mourning for a whole era of industry and work" (Allan, 2013, p18)

And so the Cloch and the Souter Point foghorn represent the bookends of an era of shipbuilding in Britain. The Cloch at the mouth of The Clyde was installed in reaction to the increase in steam ships, and Souter Point in the North East of England is now sounded for tourists, the sound's change in purpose marking a move from production to service, the sound epitomising Truax's 'sound phobia' evolved into a 'sound romance'.

But what can this case tell us about the way we think about sound and the way it has changed on the coastlines, and how that affects our sense of place? The lighthouse bodies' displayed different attitudes to the complaints

4. Place

The two case studies discussed demand that we zoom out again, from considerations regarding time, to consider how the foghorn – and sounds in the soundscape more generally – have been considered in theories of place and place-making.

I use the term 'place' after Doreen Massey, who in "A Global Sense Of Place" (1994) wrote that place was "not a specificity which results from some long, internalized history… Wider social relations in which places are set are themselves geographically differentiated." (Massey, 1994)

In tandem, I keep in mind Donna Haraway's notion of the "intimacy of inheritance" (Terravona, 2017) when considering these archive materials, applied here to the intimacy of the sensory details contained within the case studies described, allowing new stories to

be told about the sound of the foghorn in the UK, to retain nuance and difference in experiences of sound, and avoid setting out an overly simplistic story of a new industrial sound disrupting and displacing a community. As shown by the *Foghorn Requiem*, the relationship to the sound of the foghorn is more complex than this.

Sound in the environment has a clear link to sentiment about belonging and home in these two studies, but as we saw in the previous section, this sentiment about a new sound in the soundscape is something that changes, performing an about-turn in the space of a few decades. What the case of the Cloch and the Lizard do tell us is that sound is a crucial part of discussions regarding the idea of place. However, much of the literature has little emphasis on the power of sound in place-relations.

Yi-Fu Tuan's 'topohilia' – a term developed in the 1970s – coupled sentiment with place, and is defined as containing "all of the human being's affective ties with the material environment." (Tuan, 1974, p93) Sound is a part of this, but Tuan's writing emphasises the visual, referring to the 'images' we take from the environment, and its materiality. (Tuan, 1974, p113)

John Levack Drever, in a report on a project on sound and the environment to the inhabitants of Dartmoor expands on Tuan's topophilia, emphasising the sonic through an extension of the term to 'topophonophilia', which he describes as "the relationship between place, the sensation of sound, and sentiment" (Drever, 2007, p100). Applied to the banks of the Clyde and The Lizard at the end of the 19th Century, Drever's extension to include the sonic is crucial. Truax notes this link between place and sound too, referring to the work of the Vancouver Soundscape Project, which found that the acoustic community studied "was defined geographically in at least some people's minds by its sounds." (Truax, 2001, p84)

Drever writes that his Dartmoor project was "a clear indicator of the deep connection that people have with the sounds they live within and help contribute towards making", and this connection is echoed in the inverse, in the descriptions we have from those in Dunoon and Thomas Hart. For some of the people in Dunoon, the sound severed feelings of connectedness enough for them to leave the district. Thomas Hart appears to have given up his appeal to Trinity House and never left Polbrean, and we might speculate that Stevenson's nod to people becoming accustomed to sound is what happened in the shadow of the Lizard.

5. Conclusion

What the two case studies demand is that, as Drever suggests, we build a more prominent place for sound in our conceptions and understandings of place, ensuring that this also builds in considerations for the way we become accustomed and adjusted to sounds, through Truax's theory of sound phobias turning into sound romances.

The case of The Lizard and the Cloch pose as counter examples to the tendency to take snapshots of soundscapes, demanding that we consider both the complexity of our relationships to places and how our feelings about sounds change over time.

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SONICBernheim – A Site-Specific Lecture and Performance Series for Everyone

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ABSTRACT: SONICBernheim is a lecture and performance series that explores relationships between sound, music, and nature. Since 2014, there have been six programs presented at Bernheim Arboretum and Research Forest, a park located just outside the city of Louisville, Kentucky. Each program features a lecture by a guest scholar accompanied by site-specific performances from local and regional artists. Performers and lecturers are encouraged to expand their traditional techniques to address questions raised by the Bernheim landscape and soundscape.

As attendees focus their attention on the soundscape, an opportunity arises to consider the implications of noise pollution, the aesthetic qualities of all forms of sound, and the place of sound in the arts.

In this paper, co-curators Aaron Rosenblum and Sara Callaway reflect on and address the challenges and successes of bringing adventurous sound art programming to an audience far removed from the larger cities commonly associated with experimental art programming.

KEYWORDS: Sound art in nature, Public lecture, Urban/rural borders, Site-specific performance, Curation.

1. Introduction

The first SONICBernheim event took place on November 6th, 2014. Despite intermittent rain and temperatures that hovered around 40 F / 4 C an intrepid audience converged at the edge of a small lake. Experimental musicians and fans of adventurous art mingled with more traditional patrons of Bernheim Arboretum and Research Forest. The latter group was largely composed of families and individuals interested in the outdoors, usually at Bernheim to hike or learn about nature. A short workshop, seven performances, a sound installation, and one light sculpture challenged and entertained the audience.

Since that first evening, SONICBernheim has evolved into a lecture and performance series exploring the relationships between sound, music, and nature. We have presented six programs, all but the first featuring a lecture by a national/international guest scholar accompanied by two to three site-specific performances. The performers are selected from local and regional experimental, jazz, electronic, and contemporary classical communities. In consultation with the curators, each performer chooses a distinct location in which to work. Performers and lecturers are encouraged to expand their traditional techniques and address questions raised by the Bernheim landscape and soundscape.

As the events help attendees focus their attention on the soundscape, an opportunity arises to consider the implications of noise pollution, the aesthetic qualities of all forms of sound, and the place of sound in the arts. As we enter our fourth year curating the series, we are taking the time to consider our process, the impact of the series, and our approach to future programming.

2. Place

2.1. Urban and Rural Kentucky

SONICBernheim is hardly the first series of outdoor sound art performances in the United States, or elsewhere. However, for a small US city, far from the coasts and from cities like New York and Los Angeles that are more associated with progressive arts programming, the series is unique. The greater Louisville metropolitan area is home to 1.5 million people. Of these, 760,000 live inside the merged city-county of Louisville and Jefferson County. Bernheim Arboretum and Research Forest is located 25 miles from downtown Louisville in neighboring Bullitt County, which is home to only 79,000 people. While Bullitt County's residents are counted in the total metropolitan population, they represent the steep dropoff from the urban density of Louisville to the rural nature of the surrounding areas (US Census Bureau 2017).

Bernheim is privately owned by the I.W. Bernheim Foundation, but open to members and the general public. It sits on 14,000 acres (5650 hectares) of land and is considered an

ecological gem in the greater Louisville area, full of wildlife and beautiful vistas. It is home to a significant collection of outdoor sculpture and visual art situated among the arboretum's collections of plant and tree specimens. Trails, wildlife, and programming draw a large, diverse audience to the forest, including the 6,000 individuals and families who hold Bernheim memberships. Bernheim has also been a pioneer of environmental stewardship in the area, building the first LEED Platinum-certified structure in Kentucky.

Bringing public art to this rural setting has been part of the Bernheim mission since its founding in 1929. Since 1980, Bernheim has hosted artists-in-residence each year, primarily in the visual arts (Bernheim 2017). However, while live musical performances are part of many outdoor family events at Bernheim, music that reacts more directly to the soundscape and environment has not been a primary focus.

Figure 1. The Big Prairie at Bernheim Arboretum and Research Forest. (Photo courtesy of Bernheim)

2.2. *LISTEN!* and SONICBernheim

SONICBernheim was the result of an outdoor installation project halted by inclement weather. In the summer of 2014 we composed *LISTEN!*, a deck of poster-sized cards bearing listening prompts, for CONNECT at Bernheim, an annual outdoor music and art event. The event was just getting underway, with many attendees already on-site, when an unusual weather pattern put a series of severe thunderstorms on course for Bernheim. For the safety of artists and attendees, the event was cancelled. On our way out, we ran into the organizer of the event, Claude Stephens, Bernheim's Facilitator of Outreach and Regenerative Design. He was busy dealing with the sudden cancellation of one of the his largest events of the year, but he took a moment to speak with us. He said, seemingly off-hand, "why don't you all do your own sonic evening here?"

Figure 2. *Listen!* card installed at the CONNECT at Bernheim event.

That "sonic evening" became SONICBernheim. We have worked closely with Claude Stephens since 2014 to develop the series. Our goal from the start was to go beyond simply having an outdoor concert or bringing Louisville's experimental musicians to Bernheim to do what they already did indoors and in town. *LISTEN!* had been our response to CONNECT's already sonically-crowded environment – we wanted to encourage listening rather than creating sounds of our own. SONICBernheim was our opportunity to invite contemplation not only through observation but also through the creation of works made with the explicit purpose of dialogue with the soundscape and landscape of Bernheim.

Figure 3. Matt Weir's *Earth Measure* being used as a sounding board for flute and voice as Chamber Cartel performs Salvatore Sciarrino's *La Perfezione di Uno Spirito Sotille* at SONICBernheim, June 20, 2016. (Photo by Michael Broyles)

In order to provide access to restrooms, water, and handicapped-accessible venues SONICBernheim events are limited to the 600 acre (245 hectare) arboretum area. We are

further limited by the available sources of power, since many of our musicians and lecturers require amplification. The arboretum, though home to a beautiful and extremely varied horticultural landscape, is located in close proximity to a busy state road, an interstate highway, a large bourbon distillery, and other sources of anthropogenic sound. We can not provide an environment free of human sound, nor do we wish to. Instead, we encourage inquiry about both the natural and man-made sonic environment: how complete is the respite from urban life if the noises of transportation and industry follow us to the sites of our recreation? Are those man-made sounds necessarily interruptions? How complete is the consideration of art in nature if the sonic arts are not included?

Figure 4. The 600 acre (245 hectare) arboretum portion of Bernheim's 14,000 acre (5,650 hectare) grounds. (Map courtesy of Bernheim)

2.3. Working Artists in Kentucky

We do not wish to present a stereotypical image of Kentucky as a rural cultural backwater. There is a thriving arts community in Louisville, with a major art fair, a prominent orchestra, mainstream theater, and arts-focused public education at the primary through post-secondary levels. There are also underground and experimental music, art, and literary scenes. Nonetheless, it is fair to say that the city and region lack the kind of rich sonic and experimental arts cultures that exist in larger US and European cities. A small portion of the population may have experienced a sound art installation or have a passing knowledge of John Cage. Meanwhile, a great majority may have never considered the possibilities of sonic art nor been given the opportunity to encounter sound art, sonic sculpture, experimental music, or contemporary classical pieces focused on the soundscape.

Partially as a result of prevailing economic and social forces, there are relatively few professional artists working full-time in the Louisville region, especially in audiovisual and multimedia art. This is true of us, as well. We curate SONICBernheim and create our own music and sound works outside of our primary full-time employment. The lack of support for working artists in the region results in a challenge in creating the time and opportunities that our series performers need to design and plan their works for SONICBernheim.

3. Curation

3.1. Performer Selection

Until 2016, all artists performing at SONICBernheim came from within the Louisville metropolitan area, and were invited by the co-curators. In 2016, we implemented two changes to the selection process: the addition of one regionally-based performer or ensemble to each event, and an application process in which interested artists submit short proposals. Along with proposing a piece for performance or installation, applicants were asked to describe the role of natural sound and the environment in their practice (if any). With little promotion of the application process, we received 17 well thought out proposals for a total of 6 performance spots. It is our opinion that performers became more engaged through the application process and were considering the landscape and soundscape from the early development of their pieces. Expecting responses primarily from Louisville, we were surprised to see applications from the nearby city of Lexington, Kentucky, as well as an application from a pair of artists in the United Kingdom.

The performers at SONICBernheim work in many genres: jazz, contemporary classical, post-rock, experimental pop, sound art, free improvisation, butoh, and more. Though the performers come from different genres, many have collaborated with each other in the past. A unique and positive result of Louisville's active music culture is cross-pollination between genres and music scenes. In our experience, larger cities have enough people working in any one genre to form a community around it, while in Louisville the numbers are small enough that if the fans and musicians of free jazz did not also support the fans and musicians of experimental rock, there would be too few people for either to collaborate with. As such, many collaborations grow up across genres that are better defined in other locales. This phenomenon partially explains our collaboration with each other as curators.

3.2. Lectures Amongst Performances

As SONICBernheim moved from its first unofficial event into an ongoing series promoted by Bernheim we were asked to meet a new requirement. A funding source existed to support lectures on environment and sustainability, and we could access those funds if a lecture was a part of each event. This challenge gave birth to the performance-and-lecture

format that has remained steady through five SONICBernheim events in 2015 and 2016, and will continue in 2017.

Adding a lecture drastically changed our series, the first iteration of which in 2014 consisted of many short sound works spread around the landscape. However, as soon as the requirement was assigned it seemed clear that it would push the series in a direction we both wished to take it. Since much of the audience we hoped to reach may not have previously considered the connections between sound, music, and nature the lectures gave us a way to not only present art but also to share knowledge. Lectures add context and give the attendees a basic framework for understanding the events unfolding around them. For repeat attendees the lectures not only expand understanding of the soundscape but also the variety of perspectives available for the consideration of the subject.

Our lecturers are from a variety of disciplines, offering views on sound, music, and nature from areas as varied as acoustic ecology and classical composition. Unlike performers, lecturers are chosen directly by us rather than through a proposal system and we try to curate a balance of fields and topics. We each have our own criteria for who might make an ideal lecturer, based on our overlapping but distinct interests. Eventually, we come to a mutually agreed upon list of invitees for the year. Of course, the targets of our invitations are not always interested or available. Luckily, there are always more lecturers we would like to invite than there are events in the series.

Though we expected positive outcomes from including lectures, we didn't consider the impact the events would have on the lecturers themselves. After our first few invitations and logistical discussions we realized that many of the lecturers, while excited about speaking, were also feeling a little out of their comfort zones. A few told us they had never spoken outside – not just outdoors but outside of academia. Placing the lecturer outdoors situates the researcher within the subject of their research. Bringing them outside of academia allows both audience and lecturer to approach their research in new ways.

We believe SONICBernheim helps break down barriers between the audience and the lecturer, offering an instant illustration of the themes being discussed. For example a lecture on the forest resources used to build classical instruments given while surrounded by trees (Aaron Allen at SONICBernheim in 2015) or a lecture on field-recording-based and nature-activated sound art installations accompanied by an insect chorus and interrupted by the discharge of a hunting rifle (Stephen Vitiello at SONICBernheim in 2016).

> And, it wasn't just an art or music crowd, but also families and individuals who may otherwise never experience anything like what you are sharing. (Vitiello 2016)

4. Performances/Lectures

4.1. Selected Performances

Performers at SONICBernheim have made use of the soundscape and landscape in a number of ways. We are familiar with their music as it is played in traditional venues, but their performances at SONICBernheim are made whole by the place in which they are performed. They are unique to that evening and moment in time. While we work with each performer to select their performance area and work out logistics, we give them the freedom to create within their space. Their performance at the event is also the first time we see and hear the performance in it's entirety. Here we describe the strategies of three performers to highlight the different approaches used throughout the series.

Artist and musician Jim Marlowe's "Barbara Hershey" performed at SONICBernheim in November of 2015 used distance, landforms, and architecture to explore the propagation of sound. Marlowe was set up inside of an old, disused grain silo at a distance of several hundred meters from the intended audience listening area. He used an electric guitar, sampling pedal, and large amplifier. The land between Marlowe and the listening area obscured the silo from vision, with a high slope, two ponds, several stands of trees, and an open prairie all intersecting between performer and audience. The performance consisted of a short, sharp tone captured on the sampling pedal, repeated over and over again, broadcast at high volume. The sample, repeated, became percussive and driving.

During the performance, Marlowe altered the position of the amplifier within the silo, thus altering the timbre of the sound as it travelled across the landscape. Listeners, in turn, explored the moonlit landscape in order to hear how the intense, frequency-limited sound was altered by changes in elevation, changes in location relative to the flora and open water, and in relation to existing structures. One brave child followed the sound all the way to its source and occupied the doorway of the silo, observing Marlowe's manipulations of the amplifier.

Figure 5. A listener, age 8, observing Jim Marlowe performing "Barbara Hershey" at SONICBernheim, November 25, 2015. (Photo by John Nation)

McKinley Moore, a native of rural Eastern Kentucky, who now lives in Louisville, made prominent use of the existing soundscape in his performance at SONICBernheim in October, 2016. A week before the performance, Moore travelled to Bernheim with us and an additional recordist, Shutaro Noguchi, to record at and around the selected site of his performance on the shore of Lake Nevin. The recordings, made in late September near and after dusk, featured insect activity, songbirds, and Canada geese arriving on the lake to spend the evening. For his performance, these recordings were manipulated live and combined with synthesizers and other sound sources.

The soundscape on the shore of Lake Nevin at the time of the performance was nearly identical to the soundscape during the recordings – geese were once again arriving, birds singing, and insects buzzing. At first listen, Moore's recordings were sometimes indistinguishable from the surrounding soundscape, especially as his performance took place after dark, further obscuring sound sources natural and man-made.

Figure 6. McKinley Moore performs at SONICBernheim, October 16, 2016 (Photo by John Nation)

Dane Waters, a musician and composer working in genres ranging from free-form improvisation to opera, performed a set of songs at the edge of a small pond at SONICBernheim in July, 2015. She performed on keyboard and vocals, both signals travelling through a series of effects processors and then through a single amplifier. Waters and her amplifier were sited on a small wooden platform built over one end of the pond. Her performance began just after dusk, and the pond, filled with reeds and other pond flora, came alive during her performance with the sounds of bullfrogs and insects. he woods surrounding the pond, too, were alive with the sounds of insects, birds, and amphibians. Waters performed at a volume that allowed the natural sounds to be an aleatoric element of the music. The bullfrogs, in particular, seemed to react to the performance. At the end of each song in the set, as soon as Waters's amplifier was silent, a single, loud croak would emerge from the pond.

Figure 7. Dane Waters performing at SONICBernheim, July 31, 2015 (Photo by John Nation)

> … so the pond was the heart of the piece. The frogs croaked and dove intermittently during the set, and I think the water reflected the sound while the thick grouping of trees surrounding, absorbed it, especially when the wind would pick up… I was able to see a bit of the pond, but I couldn't see a single soul. It was as if I was playing to the forest…And the fact that I really couldn't see only heightened my listening. (Waters 2016)

4.2. Selected Lectures

While varying in their fields of study, all of our visiting lecturers have been affiliated with universities. By offering both professors and the public the opportunity to speak and learn outside of a classroom, we hope that both sides can think differently about the role of academics in music, art, and everyday life.

Since 2015 SONICBerheim has hosted the following lectures:

- "A Forest of Violins: Stradivari, Music, & Sustainability" Aaron Allen, Director of the Environmental & Sustainability Studies Program and Associate Professor of Musicology at the University of North Carolina at Greensboro
- "Edge of the Stage, Edge of the Wild" Allen Anderson, Composer and Professor of Composition and Music Theory at the University of North Carolina at Chapel Hill
- "The Singing Soundscape" Kathy Kennedy, Sound Artist and Faculty Member at Concordia University, Montréal, Canada
- "Sound Works and Installation" Stephen Vitiello, Electronic Musician, Sound Artist and Professor of Kinetic Imaging, Virginia Commonwealth University
- "Listening Beyond the Acoustic Horizon" Denise Von Glahn, Curtis Mayes Orpheus Professor of Musicology, Florida State University

Each lecturer has shaped the event at which they spoke. Sharing their research and introducing new ideas to the audience encouraged people to think about place and sound differently but also created a deeper connection to the performances. It has, however, been difficult to know how to schedule the talk among the performances. Do we keep the talk at the beginning or is it better to have it as a mid-point? Should the lecture create context for the following performances or should it stand on its own? Would a lecture break the magic of the performances if it was placed mid-event? The following are two examples of the integration of lectures into our programming.

Our timeline often revolves around the sunset. We prefer to schedule the lecture while it is still light out so the speaker and audience are easily visible, and recommend against the use of video projection as a visual aid. However, since 2015, three speakers have required video projectors, and therefore needed to speak after dark. The first time video was used we observed mixed results on the pacing of the evening.

On a mild September evening in 2015, with a lunar eclipse on it's way, Aaron Allen, professor of ecomusicology at the University of North Carolina at Greensboro, spoke after two performances, and before the concluding performance of the evening's program. The audience – the largest we had had – spread out on picnic blankets on the grass in the approaching darkness, listening to a lecturer who was soon to be invisible as he described his bright PowerPoint presentation. At that point in the evening, some people weren't ready to engage with an academic talk about sustainability practices and the materials used to make violins. However, even though the timing of his talk wasn't ideal many attendees followed up with us on how much they enjoyed the lecture, and Allen reported positive and engaged responses:

> I was amazed by the questions and comments I received from children and retirees, professional musicians and amateur music lovers, and scientists and artists. I can't pretend that they were all there to engage with me; but it's precisely that fact – that there is a strong, interested, and diverse community for SONICBernheim – that makes it such a powerful program and experience for all. (Allen 2016)

Figure 8. Aaron Allen gets ready to speak at SONICBerheim, September 27, 2015 (Photo by John Nation)

Perhaps one of our most successful lecturers in breaking out of normal academic routine and adapting to the SONICBernheim environment was Denise Von Glahn, professor of musicology at Florida State University. Von Glahn spoke in daylight, directly after the first performance of the evening, on a warm, bright June evening. She has been our only lecturer not to use any recorded media in her presentation. Instead, she immediately made the soundscape her accompaniment, opening her talk with:

> Three questions, 30 seconds, and a story. What do you hear? What does what you hear tell you about where you are? What about what you hear might you want to preserve? 30 seconds… (Von Glahn 2016)

The audience was left with the busy sounds of a warm Kentucky evening.

Von Glahn not only engaged the audience with thoughtful listening prompts, but also tied in her own personal story, reminiscing on her childhood and her connection to sounds at an early age. She described her research, bringing up a composer featured in her book, *Music and The Skillful Listener: American Women Compose the Natural World*. She spoke about composer Libby Larsen's piece, *Up Where the Air Gets Thin* for cello and double bass – not only how the piece was inspired by Mount Everest and how sound travels at high altitude, but also how the effects of climate change affect such places, the soundscape, and communication. At the end of her lecture two local musicians performed *Up Where the Air Gets Thin* after working with Von Glahn earlier that afternoon under the shade of a nearby stand of trees. This concluded her talk with an example of harmony between art and theory, local and national, and audience and place.

Figure 9. Denise Von Glahn (far right) working with local musicians Jon Silpayamanant, cello and Angela Thomas, double bass on Libby Larsen's *Up Where the Air Gets Thin*, June 20, 2016 (Photo by Michael Broyles)

> Inside the woods, hiking on the trails, traversing the prairies, circumnavigating the lake, listening to the sounds of the Bernheim Arboretum and Research Forest as they mixed with the distant hum of the highway and the musics of instrumentalists and wildlife is an experience permanently etched in my memory. I conjure the sounds and smells of this woodland sanctuary and am reminded of my personal responsibility to our larger, shared ecological enterprise. (Von Glahn 2016)

5. Audience Response

> The event brought together a unique community of experimental music listeners, art-night frequenters, small children, and picnickers, sharing an experience in a rare environment where all might meet and watch and listen and talk. This seems strikingly valuable, especially as fall 2016 receded into new realities of winter 2017. (Feeney 2017)[1]

Since the first event in 2014, we have learned along with our audience that, first and foremost, our series is not for everyone. Three years later we still have attendees who take the series to be outdoor concerts of a less adventurous nature. Nonetheless, at each three-hour event the majority of attendees stay for all of the performances, and the audience appears to be comprised people of many backgrounds. We are often surprised that the people who stumble upon the event by accident are sometimes the ones who stay the longest and

1. Percussionist Tim Feeney performed at SONICBernheim in October of 2016.

are the most engaged listeners. We take great pride in bringing the music, art, and ideas sometimes reserved for an audience of fellow-thinking arts consumers in the city to a more diverse audience.

> It was truly a magical night as we had no idea what we were about to see, hear, and feel. After a lovely day of hiking we were watching the sun set when we noticed a group gathering by the lake. Mysterious tickets in hand we followed along blindly from show to show. Hours later on our drive home my [11 year old daughter] said, "I feel wonderful, can we go back to the forest right now?" (Moslemi 2016)

Of course, not all of the responses to the series have been positive. There is a silent response that is hard to qualify – leaving the event before it is over. Some who leave may simply not be able to attend for the entire time. Others have seemed disappointed or uninterested in the types of performances and lectures we have presented, but we have little concrete data from those who come to the events and choose to leave early.

We have had at least one communication from an attendee with specific complaints. The complaints did not concern the content of the performances, but instead the environment – often dark, with travel by foot or wheelchair between performance sites. As with other aspects of the series, we try to balance context and comfort with adventure and exploration. Needless to say, we are dedicated to the safety of our attendees, and will always take their feedback into consideration as we plan future events,balancing safety and adventure without giving up the uniqueness of the program.

6. Conclusion

> [The events] make the case for sonic awareness and appreciation as indivisible from social and environmental responsibility. (Anderson 2016)

As curators, we continue to explore how music and sound change the way we hear and perceive our environment. We will continue to push our audience to open their ears and listen more thoughtfully. Our goal is not necessarily to have our audience grow in size, but rather for the attendees to grow as listeners, listeners that hold a deeper understanding of our shared responsibility to the world around us.

By mixing local musicians with national and international performers and speakers, we encourage a cross-pollination to positively affect our local music scene. SONICBernheim urges musicians and sound artists to consider place and environment in their work, and we hope over time this also becomes an integral part of the cultural fabric of our community.

Listening is a practice of critical importance to our artistic community and to our society at large. It connects us to our surroundings and engages us in the here and now. If we can learn to listen we can become more empathetic towards our environment, its inhabitants, and each other.

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The Soundproof Box – Using Phonography to Investigate the Workplace of the Cinema Projectionist

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ABSTRACT: In order to investigate, analyse and document the soundscape of the analogue cinema projection box, before it passes into history, a series of audio recordings was made within functioning projection boxes, a selection of which will be released as an 'album' on the Gruenrekorder label in 2017. The recordings, made in UK boxes that maintain both 35mm film projection and D-Cinema digital projection, also capture the shifting sonic texture of this environment as it changes from primarily analogue to primarily digital operation. Just as cinema-goers seldom get to see inside this hidden, 'invisible', space at the back of the auditorium, these sound recordings also reveal it to be a sound-proofed box, a noisy environment in which the interface between operator and machine takes audible form, in which noise of one sort indicates smooth operation, while another sort indicates faults that need to be addressed.

KEYWORDS: Projection, field recording, soundscape, projectionist, analogue and digital cinema.

1. Introduction

This paper will describe an attempt to adapt and integrate sensory ethnographic procedures within a film historical research project. It formed part of my work on The Projection Project which is a research project funded by the UK Arts and Humanities Research Council. Running from 2014 until 2018, it investigates cinematic projection, the figure of the projectionist, and the uses of digital projection outside of the cinema.

During the second year of the project, I made a series of audio recordings within working analogue projection boxes in the UK, which document the sonic environment of the film projectionist's workplace. A selection of these recordings will be released as an 'album' on the Gruenrekorder record label in 2017.

The recordings capture the shifting sonic texture of this environment as it changes from analogue to digital operation. While the primary purpose was to approximately preserve a soundscape that is at risk of disappearing without trace, the secondary purpose was to examine the vital role of sound in the work of the projectionist. This paper will explore the viability and usefulness of this practical methodology, and, through an analysis of both the recordings themselves and the experience of making the recordings, extract some observations regarding the character, history and culture of the projection box as a lived environment and workplace. It will consider the legibility of noise and propose the relationship between projectionist and machine as one that is significantly aural as well as visual and tactile.

2. The sound-proof box

The small room at the back of the cinema contains both the hidden labour of the projectionist, and the hidden apparatus of film projection. Beyond making these vital supports of the cinema experience invisible, the enclosure of the projectionist and their equipment within the projection box also ensures that they remain *inaudible*. Early guidance to motion picture theatre managers and operators encouraged them to consider sound as a key factor when deciding upon the location and design of the projection box:

> The projection room must be as nearly as possible soundproof, to the end that the noise of the projectors, the rewinder, and the motor generator set or transformer, as well as the conversation sometimes necessary between the projectionist and his assistant be not audible in the auditorium (Richardson 1922, p. 301).

It is well-known that one of the main concerns for cinema-planners in the first half of the twentieth century was to make the projection box fire-proof, as the film stock was highly flammable. However, this very practical concern was combined with a number of aesthetic concerns to do with light and sound leakage. Wooden projection boxes were discouraged for obvious reasons, but metal construction boxes were found to 'act as sounding boards, increasing the noise of the operation of the projecting machine' (Meloy 1916, p. 59). For this reason, asbestos boxes, as advertised in Figure 1, were popular.

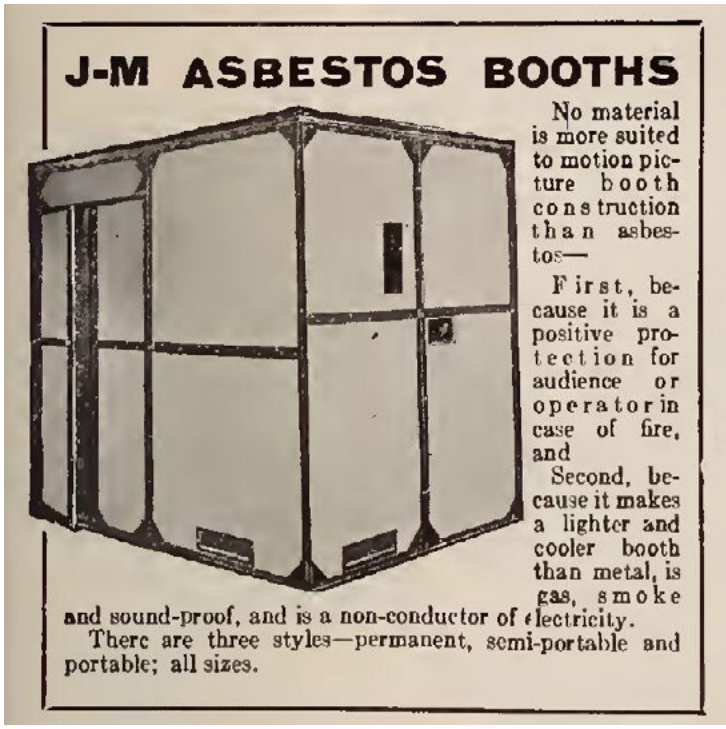

Figure 1. Advertisement for Johns-Manville projection booths (Meloy 1916: 129).

The text of the advertisement in Figure 1 boasts that the Johns-Manville booth is 'gas, smoke and sound-proof', lumping sound in with other undesirable leakages. The unspoken implication, however, is that these undesirable emanations should be contained within the box, along with the projectionist. Gas and smoke could be ventilated away to some degree, but the noise of projection was something that the projectionist had to learn to live with.

Several of the sound recordings that I have made attest to a fact already known to many, which is that sound-proofing masks the fact that, in truth, the projection box is a very noisy environment, and that analogue film projection was, and is, a noisy business.

What can we say, then, about the noise contained within the projection box? How might one find a way to pierce that thick fog in order to analyse it, to find out what sounds the projectionist heard, and what they meant? How might one go about investigating the sonic environment of the projectionist, and what words might be used to describe and analyse it?

3. The soundscape

R. Murray Schafer's influential theorisation of the concept of the 'soundscape' provides an important foundation for the current work. He delineates a method for deconstructing and anatomizing a soundscape, identifying three key classes of sounds that are usually present: keynotes, signals, and soundmarks (Schafer 1994, p.9). The keynote constitutes the background of a soundscape; the often unnoticed, but ever-present, fabric of sounds against which we consciously hear the other two classes of sound. The signal is the sonic cue that we listen for, the necessary warning that something we are conceptually prepared for is happening. The soundmark 'is derived from landmark and refers to a community sound which is unique or possesses qualities which make it specially regarded or noticed by the people in that community' (Schafer 1994, p.9). The keynote is especially important for this study because it plays the greatest role in determining the character of a soundscape. While it may not always be consciously recognised by inhabitants, the keynote forms the dense atmosphere of a soundscape, the environment within which a subject and a culture emerges and endures. Importantly, Schafer suggests that the soundscape shapes the people who live within it. Its ubiquity is matched by its pervasiveness, and certain background sounds 'may have imprinted themselves so deeply on the people hearing them that life without them would be sensed as a distinct impoverishment' (Schafer 1994, p.10). Ultimately, Schafer is suggesting that keynote sounds play a vital role in making and marking a culture, and that the subtraction of certain component sounds can have a damaging effect, and even be felt as a loss by members of that culture.

4. The sonic culture of the projection box

In an interview with Richard Wallace (of The Projection Project), projectionist Brad Atwill attested that the replacement of 35mm projection by digital had altered his workplace in a way that was immediately obvious:

> I opened the door into projection and it being silent was so unnerving and that was when it really hit home [...] you'd hear that whirring and the ticking and you knew that things were running. [...] It was a weird feeling and it was all because the business end of the projector wasn't clicking away and sounding beautiful (Wallace 2017).

Atwill's comments indicate both a functional and aesthetic role for the sounds of analogue projection. The 'whirring and ticking' indicates correct and ongoing operation, but beyond this the emotional impact of the multiple absences inflicted by the changeover to

digital is metonymically summed up in the disappearance of the 'beautiful' sound of the running projector. Wallace goes on to cite an attempt by projectionists at the Odeon Cinema in Glasgow Quay to maintain the soundscape of the analogue box beyond its redundancy. Though the cinema had changed over to digital projection, some of the 35mm projectors were still present, and projectionist Mike Marshall tells a story of making up a short loop of film for the purpose of running it through a projector, to artificially produce the familiar sound of analogue projection, a 'dummy' sound serving only the aesthetic function of facilitating the persistence of a certain familiar soundscape, even while the actual work itself changed radically (Wallace 2017). There is something quite particular about the way that the dummy film loop is being used in the Glasgow Odeon: the benefit to projectionists was of a purely environmental and behavioural kind, because the sound they sought had nothing to do with the job they were now being paid to perform. One wonders how much the function is one of reclamation and replenishment of the soundscape of their workplace.

The sound of analogue projection, then, can bear a great deal of emotional significance for workers. This emotional connection is arguably amplified in the case of skilled workers whose enhanced relationship with their instruments relies in large part on auditory feedback and the ability to 'read' the varying sounds of the machine, which I will come to in a moment. To refer to Schafer's categories of sound: the background din of projectors (combined with ancillary electric machines) provides the keynote of the soundscape, while the complex variety of sounds produced by the projector during operation offer signals for the projectionist to interpret. The iconic sound of film running through the projector is a soundmark, a unique and meaningful auditory marker, which may be reproduced (even if artificially) in order to remember and replenish a culture for which it plays a defining role.

5. The Phonographic Methodology

The driving principles of my phonographic methodology were:

1. The use of a set of microphones as sensors within an embodied apparatus of investigation, leading to the production of a sonic document, which constitutes a subjective exploration of a soundscape.
2. That document is intended to convey a limited sound-image of the sensory experience of what it is like to inhabit a specific sonic environment. In this way it serves a preservative function, as a self-consciously subjective and approximate document of a unique, and potentially historically relevant sonic environment.
3. The intentional uncoupling of sound from image in order to re-align the attention of the listener. The recording asks for a critical attentiveness to sound in the absence of a visual reference point, in order to facilitate alternative ways of thinking about the sources of the sounds.

6. Technical considerations

The majority of the projection box recordings were made using a four-track field recorder and four cardioid condensor microphones. The recordings were made digitally, capturing sound at 24 bit/96 hz in the ubiquitous .wav format, and then ingested into a PC based Digital Audio Workstation, which allowed me to sync and mix between the 4 tracks. This mixing stage permitted a particular mode of analysis – allowing me to navigate the sonic space of the recorded projection box by 'riding the faders' of the mixer. The four tracks recorded the projection box from different points within the space, offering four distinct sonic 'perspectives'. Played together at equal volume the tracks compose a dense overall sonic 'image', but altering the volume of individual tracks allows the listener to separate and focus in on the individual 'parts'.

I went into the box with the intention of making two very different kinds of recordings. The first kind would attempt to capture the sounds of the individual machines and practices in intimate detail. For these recordings I positioned the four microphones at four points around the machines while they were being operated. The microphones were within two inches of the machines themselves, between three and six feet from the ground, and arrayed around each machine in a roughly four-cornered formation. The close proximity of the microphones, and the relatively low recording sensitivity that was required, facilitated a narrowing of the 'focus' of each track, so that they picked up noticeably distinct parts of the overall sound of the machine and the associated operation. Using this setup I recorded the lacing up and running of a print of *Rear Window* (1954) on two separate 35mm projectors, and the 'making-up' of the print on a Cinemeccanica rewind bench. For the purposes of easy identification and discussion I have chosen to call this category the 'detail' recording.

The second kind of recording that I set out to make would attempt to accurately document the 'whole room' of the projection box, to capture a sense of the sonic environment, or soundscape, of the projectionist's workplace in detail. For these recordings I used two cardioid condenser microphones positioned in the centre of the room, arranged in a wide stereo pattern. I have chosen to call this category the 'soundscape' recording.

However, it became clear that there was also value in recording the sonic environment without concern for the 'purity' of the recording. Allowing unexpected and interruptive elements to remain within the recordings produced a potentially richer text for later analysis. And so a key methodological outcome from this first recording experiment was the identification of a third kind of recording that seemed necessary and desirable – the 'documentary' recording. The documentary recording of starting a projection of *The Thing* (1982), for instance, captures: the background din of the air conditioning, projector ventilation system, and fans contained within the amplifiers, sound mixer and digital projector that was also running; the two projectionists talking before the start of the film, discussing whether it

was time to go or not; the clicks and whirrs as the 35mm projector is started by Tom, the first projectionist; and the initial strains of *The Thing*'s ominous synth soundtrack coming through the monitor speakers in the box. Several of the recordings I mention here, such as this one, can be listened to on the album release *Sounds of the Projection Box* (Gruenrekorder, 2017).

7. Some observations

My initial attempts to make the 'detail' recordings were surprisingly revelatory not of individual details of the practices, but of just how much excess sound needed to be gotten rid of before we could isolate the central sound. In order to record the practice of 'making up' a film at the rewind bench I set up four microphones around the two distinct ends of the machine, where the two film reels rotate. However, after listening back to the first recording I made in this way, I noticed how the central sound that I was interested in was surrounded (to use a spatial metaphor) and somewhat obscured (to use a visual metaphor) by other sounds. We turned off the digital projector at the other end of the box, which seemed a somewhat embarrassing oversight to have begun with. We turned off the air conditioning, which produced a low, dense thrum, a bed of sound that seemed to me to cloud and soften the sharper sounds of the rewind bench. But this didn't quite do it – there were still other sounds getting in the way of a clear auditory 'image' of the rewind bench in action. We turned off the rack amplifiers to eliminate the noisy fans that were housed in each one, but still there was an irritating whine, sounding something like a fan, but with the addition of a high-pitched electrical whine. The source was indeed yet another fan, this time hidden in the slightly unexpected location of a small audio mixer. Finally, a relatively isolated recording of Tom working at the rewind bench could be made. This gradual peeling away of the layers of sound in the space revealed the distinct sonic strata that together comprised the overall soundscape. I had thought that I would encounter an unusually quiet projection box, at a time when no screenings were scheduled and not many people were in the building apart from myself and one projectionist, but it quickly became obvious that there were many more pervasive layers of sound constituting the soundscape of the projection box, even during its down-time.

It also highlighted the artificiality of the 'detail' recordings that I was attempting to make. It is highly unlikely that a projectionist would bother to eliminate all of those continuous background sounds while at work, so what, then, was I really trying to achieve by fabricating this unnatural recording condition? I would argue that the detail recording of Tom making up a print of Rear Window, as artificial as it might be, provides us with something that might be more difficult to identify in a 'soundscape' or 'documentary' recording. Set against the clean background of relative silence, the minute sounds of the process stand out

with greater clarity, their sonic shape and texture more sharply defined. We hear the film flutter as it passes through Tom's hands and onto the take-up reel. We hear the rhythm of his actions as he joins two reels together, carefully placing both ends in the splicer, pulling and tearing a length of cellotape, sticking and clamping. The metallic thud of the splicer seems unusually loud in this quiet context. All the while we hear the intermittent sound of Tom quietly whistling.

The 'documentary' recordings, on the other hand, offer an excess of detail, complicated by the fact that many of the sounds seem to blend together in a way that makes the background difficult to pick apart. Nevertheless, interesting details shine through. Another recording of Tom making up a film at the rewind bench, this time *The Thing*, and this time in the unadulterated noisy environment of the projection box, features a quiet, but furious, clicking sound deep in the background. This is the sound of Jerry, the second projectionist, frantically clicking on a mouse button as he plays *Minesweeper* (1990) on the projection box PC. The PC was installed during the digital changeover to facilitate the easier acquisition of digital license keys that accompany the DCI prints that arrive on hard drives to be played on the D-Cinema projector. It is telling that time once taken up by the multiple tasks of analogue film projection is now filled with Minesweeper, an early PC game that for many years came pre-installed on every Windows computer, and offers the same kind of time-killing potential as solitaire (which Jerry also regularly plays on this PC).

A final example from a detail recording of lacing up and rolling Rear Window on a 35mm projector: the recording begins with the rustle and flutter of the film, as Tom's hands nimbly thread it around the sprockets and gears, interspersed with the loud clanks of various locking mechanisms and the electrical creak of Tom momentarily running the motor to move the film along its path. Once laced, he turns the motor on fully and the film audibly begins to flow through the machine, rhythmically rustling and clacking with the familiar staccato beat (the widely recognisable soundmark of 'film projection'). The beat is so fast that it almost blends into a constant tone, as the rapid and consistent percussive sounds mark the mechanical progress of the film around sprockets and through the constantly moving shuttle. It becomes a compendium of parallel whirrs, discernible at different frequencies: a rich, thick sound at the centre of the frequency spectrum (the sound of multiple gears turning smoothly); a rougher, rasping high frequency rhythm (the film itself moving around its path); and a low frequency hum, in the bass range (the motor running). However, less than a minute into the projection, the rhythm is broken, led by the high frequency percussive sounds slowing down and going out of phase with the rest of the composition. For a few moments it sounds as if the high frequency rhythm is dragging behind the other frequencies, as if falling over itself. When making the recording, I watched as Tom responded with a series of deft hand movements, gently guiding the film back into line, finally holding it in place, with the barest of physical contact, to ensure it was now back on track. This

moment of skilled manual error correction avoided the necessity to halt the projection, and depended upon Tom's intuitive knowledge of how to fix the problem, but also upon his rapid recognition of the problem, which was initially indicated by the sound. He happened to be at the projector at the time, and so could quickly trace the visual source of the error, but it is also the case that sound patterns such as this offer a signal that can be interpreted from anywhere in the box. It is in the nature of the projectionist's job that they do not continuously monitor the projector visually. However, simply by listening, and knowing what the different sounds mean, the projectionist may turn his or her back on the projector, move around within the box, pursue other tasks such as rewinding or making up another film, while simultaneously monitoring the ongoing projection aurally. The legibility of the sound signals, and the capacity of the skilled projectionist to read those signals, is vital to this aspect of the job.

8. Conclusion

The projection box, then, is a noisy sonic environment, in which the sounds of the apparatus of projection are contained within, precisely so that they are not heard without. The projectionist must inhabit this space, and live with the noise. However, we have seen that the sounds of projection can be advantageous, and meaningful, to the projectionist in at least two ways. The richly varied sounds of projection can provide useful information regarding the function of the projector and the state of the film. These sounds are most useful if the projectionist is able to successfully interpret them. Additionally, the sounds of projection form the soundscape of a workplace. The 'noise' of analogue projection can come to bear an affective weight, attested to by the sentimental bond that some projectionists still hold with the sound of film running through a projector. Indeed, it might be suggested that it operates as a shared cultural marker, what R. Murray Schafer characterises as the 'keynote' of a culture, which becomes most apparent through its absence.

I propose that the accompanying album of sound recordings operates as a parallel research output, as the culmination of a process of investigation, documentation, analysis, and interpretation. The album presents a carefully curated selection of the recordings, and through its editing and ordering of the phonographic document it effects a further interpretation of what was already a subjective exploration of a very particular soundscape. Nevertheless, I would assert that it also functions as a sonic document that captures and preserves an auditory trace of a certain place and time, a certain medium and its concomitant set of technological supports and work practices, and a certain discipline and culture; that of the projectionist.

In the absence of explicit commentary or visual reference point, the recordings leave space for further interpretation, for the critical-analytical work of the listener. The album

represents the soundscape of the projection box to the listener, permitting approximate access to a space that was, and is, normally off-limits to the ordinary cinemagoer. Additionally, it preserves a trace or remnant of the analogue soundscape of 35mm cinema projection, an increasingly rare phenomenon.

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Sonic Place – A Sonic Augmented Reality Soundscape Experience

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ABSTRACT: This paper describes the conceptualization, technical and artistic development and the first results of the Sonic Place project.

Sonic Place is an ongoing project centered in the relationship between the cultural heritage, sonic identity and sonic memories of specific places. Presenting both artistic and scientific objectives, the project tries to promote sonic ecology awareness and explores new technological possibilities for listening and discovering soundscape compositions.

The project proposes a sonic augmented reality experience of current and past soundscapes that can be experienced by the use of a custom made mobile application.

The project was presented at the 18th Biennial of Cerveira in Vila Nova de Cerveira, Portugal, 2015 and on the 6th Semibreve Festival in Braga, Portugal, 2016. In total, more than 100 on site recordings were made, 20 musical compositions were developed and 224 users experienced the application.

KEYWORDS: sonic augmented reality, public media art, soundwalk , sound map.

1. Introduction

A place is an abstraction for the geographical and human ingredients that together establish an identity (Casey, 1997). Elements such as language, architecture, landscape and urbanism, are immediately associated with the cultural heritage of a specific place; i.e. the legacy and identity of a specific place.

Even though the visual and anthropological factors are more prominently associated with a cultural identity, the soundscape is also crucial in the construction of *place*.

The way that each individual interacts with the surroundings, and continuously perceives and affects its sonic expressions, either explicitly or implicitly, creates the ground for sonic memories to arise. These memories, which represent symbolic "soundmarks" (Schafer, 2012) of quotidian tasks or significant experiences of the past, are constantly triggered and related to what is perceived in the present.

In the work "Matter and Memory" (Bergson, Paul, & Palmer, 2004) the philosopher Henry Bergson develops a context in which memories are virtual entities and demonstrates that memories delineate the perception of past events through the awareness of the present. This relationship between past and present serves as an inspiring metaphor for the Sonic Place Project, where past and present events, respectively represented by pre-composed soundtracks from sonic memories and the real-time surrounding sonic environment, are imbricated by means of technology.

The way we explore and interact with a territory is determinant to the study of our quotidian soundscape. Therein, even unpretentious actions such as *walking* can assume meaningful conceptual aspects. *Walking* as an aesthetical practice traces back to Jean Jaques Russoe in the 18th century and Charles Darwing in the 19th century (Vermeire & Geert, 2014). Likewise, works such as "The lovers Great Wall of China" by Marina Abramovic and "Passeio branco de Vermeire" by Simona Vermeire (Vermeire & Geert, 2014), are examples of the use of *walking* as an artistic practice. In the sonic ecology context, the *soundwalk*, as introduced by Murray Schafer, represents an empirical recognition of the ambient sounds and the soundscape components (Adams , et al., 2008). Or as defined by Hildegard Westerkamp: moving with the purpose of listening to the environment (Adams, et al., 2008).

Current available technology enables "soundwalkers" to collect huge amounts of data, from high quality audio recordings to GPS coordinates. The systematization of this data allows for a comprehensive interpretation of a territory's sonic ecology that can be capitalized in activities such as urban planning and noise mapping. Projects such as the *Montreal Sound Map*, (Stein & Stein, 2008) which aims to preserve the sonic heritage of the city of Montreal by providing an interface for uploading geo-referenced audio to a website and *Stereopublic: crowdsourcing the quiet* (Sweeney, 2013), that uses mobile technology to identify

and present silent urban spaces, are good examples of soundscape projects that uses systematized data for creative and scientific purposes.

In an artistic perspective, it is possible to identify two major technological advances that enhance the potential for sonic artistic works in the context of sonic environment awareness through soundwalks and sound maps: mobile technology that offer the possibility of recording and reproducing high quality audio on the same portable device, and positioning systems. Regarding the latter, Simona Lodi refers to geo-referencing and the ubiquity of mobile devices that offer this possibility, as a tool with important relevance in the advances of public sound art. In her words: "...every single place on the Earth has coordinates that can be tracked technologically; every single space can be surveilled..." (Lodi, 2014)

The use of this kind of technology can be seen in important artistic works such as *Trace* by Teri Rueb (Rueb, 1999) and *Sound Mapping* by Iain Mott, Marc Raszewski , Jim Sosnin (Mott, Raszewski , & Sosnin, 1998).

Another important technological advance (that is particularly relevant for the Sonic Place project) that offers great potential for artistic works is *Augmented Reality* (AR) AR offers the possibility of overlaying, augmenting or substituting real world elements with virtual elements in real-time (Geroimenko, 2014). In an artistic context, this technology arises in the "AR Art Manifesto" as a subversive tool for activism, thus it can occupy both private and public spaces at the same time and also evade censorship (Torres, 2016). AR art usually relies on image recognition and geo-referencing techniques for transmitting a manifesto. This kind of technology can be seen in works such as *Outside Inside* by Tamiko Thiel and *Batling Pavilions* by Sander Veenhif (Lodi, 2014).

2. Sonic Place

With the main objective of promoting the preservation and awareness to the quotidian sonic ecology, the project proposes an "augmented soundwalk", where artistic representations of sonic memories of specific places are overlapped by the real-time soundscape of the present.

The project is presented to the audience (in this case the term *audience* is interchangeable with the term *user*) in the form of a mobile application that can be freely downloaded and used in Android devices.

The application exhibits a sonic augmented reality experience that offers the users the possibility of exploring their surrounding sonic ecology and at the same time navigate through a mixture of several soundscape compositions that represent artistic interpretations of sonic memories of that specific place.

This sonic augmented reality experience connects the audience with a soundscape composition while keeping a strong association to the very much intended sonic awareness of all the surrounding sounds.

Each soundscape composition is produced from direct or indirect references to local sonic memories of a specific place and location within the urban territory and it's surroundings. These sonic memories are obtained, identified and characterized by a threefold process: on site sound recordings, interviews with residents, research of historical multimedia archives.

In the following sections, we explain in detail the processes, case studies and results of the project.

2.1. Identification of sonic memories

In order to identify and collect multimedia data relative to the iconic and quotidian sonic memories of the cities where the Sonic Place project has been presented, the first step was to research the local historical multimedia archives such as the municipal libraries, tourism bureaus, city hall, among others, and collect multimedia content such as videos of famous speeches, concerts, interviews, etc. Additionally, for each city we promoted a social media campaign calling for the local residents to share multimedia content and (hi)stories about their city.

To update and relate the identified historical sonic memories with the current and contemporary sonic ecology of each city, local residents were interviewed and surveyed, using the scientific inquiries strategies developed by (Zhang & Kangô, 2007), where the respondents answered questions relative to their preferences in what regards sounds of their urban soundscape. Additionally, we asked for the respondent to authorize the audio recording of their interview, and also of them speaking out their family names.

Finally, in each city, a series of geo referenced field recordings of the identified sonically interesting locations within the urban space and also surrounding landmarks were made.

Figure 1. On site sound recording in Vila Nova de Cerveira.

2.2. Soundscape composition process

In order to create a collection of soundscape compositions inspired and related to the sonic memories of the places where the Sonic Place project was presented, we asked composers of different musical and artistic backgrounds to use the material gathered in the processes previously described section 2.1, as the basis for their composition.

From that, each composer chose a specific location, one that the composer could establish an interesting connection, and developed the composition using any sound design strategy. The only proposed constraint was that the compositions must relate explicitly or conceptually with the chosen location. Thus, the resulting compositions presents a strong contribute to the project, that is at the same time conceptual (relative to the sonic memories) and also artistic (artistic expression of individual composers).

2.3. Mobile Application

The "augmented soundwalk" experience was presented to the audience in the form of an application that could run in any Android device. The application was designed to be user friendly and intuitive, presenting a simple design and direct features.

The application had a single interface displaying a customized Google Maps where each composition was placed on their exact location and displayed as a marker. The user location was also displayed as a marker and constantly updated.

When experiencing the application at the locality where the compositions were developed for, the user can listen to all compositions at the same time, however, each with a different intensity (sound volume) that is proportional to his/her distance to the geographical location of each composition. Furthermore, each composition has a pre-defined actuating range, meaning that if the user was too far from a composition location, it's volume would zero or too small to be heard.

This user position based dynamic volume control, implies that by taking distinct navigation paths through the urban and surroundings territory, the user would listen to a different mix of the compositions, and thus, creating a new and unique overall composition. This strategy presents a very close relationship and is inspired by the artistic metaphor proposed by Murray Schafer, where each individual affect, voluntarily or not, an ongoing global musical composition (Schafer, 2012).

If using the application with headphones, the user would also experience the sonic augmented reality layer, which consisted of the amplified sound of the device's microphone.

The application also presented a feature that enable users to explore the soundscape compositions from anywhere in the world. By clicking on the compositions markers, it is possible to solo, mute, or play all compositions, bypassing the geo referenced dynamic volume control.

Finally, the application offers the possibility of recording samples of 10 seconds of the audio using the device's microphone, which is automatically uploaded to a web server and made available for playback and download on an interactive map. The uploaded samples are anonymous, time-stamped and geo-referenced.

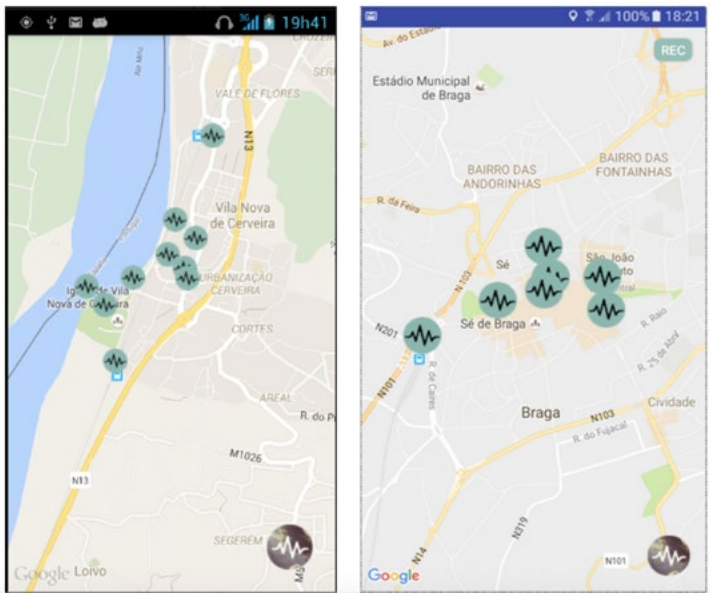

Figure 2. Screenshots from the graphic interface of the sonic place augmented *soundwalk* application.

2.4. Technical development

From a technical perspective, the Sonic Place Project consists of two distinct applications: the mobile application and the website with the interactive map. The mobile application was developed for the Android Operating System[1] and implemented using the Android Studio and SDK[2] the interactive map website was implemented using usual web programming tools such as HTML5 and JavaScript.

The Android app consists of 4 main subroutines: GPS coordinates acquisition and representation on a Google Maps interface, reproduction of the pre-recorded soundscape compositions, simultaneous capture and reproduction of the mobile microphone audio, audio file recording and automatic upload to a web server.

The Android App interface displays a Google Maps customized view of the user's current location. The map contains markers for user position and also customized markers for each of the soundscape compositions, correctly positioned in their respective localities. Using the Google Maps API[3] the GPS coordinates of the user is updated every second and then used to calculate the volume of all soundscape compositions. The volume of each composition

1. www.android.com
2. https://developer.android.com/studio/index.html
3. https://developers.google.com/maps/

is calculated to be inversely proportional to the user's distance to the locality of the composition. Hence, the farther to the composition, the softer that sound is, and inversely, the closer the user gets to a composition, the louder it sounds.

The reproduction of the soundscape compositions is implemented using the Android SDK native audio reproduction functionalities. In order to achieve simultaneous multitrack playback, the audio files had to undergo compression and conversion to 16Bit 44.1kHz Ogg Vorbis format[4] Additionally, each audio file is referenced in a configurations jSon file, where it's location coordinates and actuating range can be setup. The actuating range dictates the maximum distance in which the audio file playback volumes decays to zero.

The simultaneous capture and playback of the microphone audio is implemented using a standard ring buffer strategy obeying the following logical flow: a short amount of audio is recorded to a buffer, the buffer is reproduced (sent to the audio headphones output), the buffer is overwritten by the next audio samples coming from the microphone. The choice of a buffer size of 2048 samples was made by taking into consideration the balance between latency and audio quality. Due to the fact that the app is intended to run in several different mobile phones, of different models, manufacturers and Android OS versions, we had to compromise with a small latency (about 50ms), thus smaller buffer sizes turned out to generate clicking and distortion in some experimented devices.

The audio file recording and automatic upload functionality was also implemented using the Android SDK default audio manipulation tools, and the upload to the internet server is achieved using the FTP protocol.

2.5. Public presentations and results

The project was presented at the 18th Biennial of Cerveira in Vila Nova de Cerveira, Portugal, 2015 and on the 6th Semibreve Festival in Braga, Portugal, 2016.

For Vila Nova de Cerveira, 11 soundscape compositions were developed using the data gathered from 29 interviews, videos of concerts performed in the 80's and 90's and more than 10 gigabytes of field recordings.

The application developed for Vila Nova de Cerveira has been downloaded 185 and is still active in at least 5 devices. Additionally, the compositions are also available at the www.soundcloud.com platform and have been downloaded 187 times.

For the public exhibition at the Semibreve Festival in Braga – 2016, 9 compositions were developed by 5 distinct composers, using the data collected from 16 interviews and more than 8 gigabytes of field recordings. This version of the application has been downloaded 39 times and is still active in at least 10 devices.

The interactive map accessible at www.sonicplaceproject.net has received contributes from 11 countries and aggregates more than 200 audio recordings.

4. http://www.vorbis.com/

3. Conclusion and future work

The use of contemporary technologies and augmented reality for developing and delivering an artistic project in the context of soundscape composition and sonic ecology demonstrated to be successful in what regards the conceptual objectives and also artistic versatility. Meaning that the original objectives were able to be achieved.

On the other hand, the use of technology demonstrated to be difficult to be delivered to a general audience, thus it required a lot of promotion effort to bring people to participate and experience the application.

The implementation of the automatic audio recording feature, enables the developed "artistic" application to function also as a monitoring tool and data collector. The recorded audio files can be latter used as source not only for new musical compositions but also for scientific monitoring of the ecological soundscape and ultimately as an ongoing dynamic archive of the local sonic memory.

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3D Sound and VR Audio – Interfacing Specific Sound Dramaturgies and New Perceptional Paradigms

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ABSTRACT: The desire for a precise three-dimensional positioning of sound in the 360° sphere can be traced back to the antiquity. Although numerous 20th century composers tried to implement their 3D audio 'visions', the full technological possibility to accomplish sonic plasticity has come up only recently by 3D sound systems, as in this case the Spatial SoundWave System (SSW) by Fraunhofer Institut Ilmenau/Germany. However, technical perfection does not equal the artistically convincing, as 3D audio is a distinct aesthetic concept. By referring to the rich cultural history of 3D sound creation, this paper points out major reflections and criteria which lead to aesthetic necessity and plausibility for 3D audio productions. The approach given by the term *soundscape* is crucial. Trendy terms like *immersion*, *tangibility*, *illusion*, and *virtuality* are questioned in reference to overused aesthetics, naiv realism and the lack of providing critical distance. It is suggested that a huge artistic potential for specific 3D audio production lies in dramaturgical approaches like fragmentization, deconstruction, as well as in the careful conceptualization of auditory materials and their representational potential.

KEYWORDS: 3D sound, VR audio, Virtual Reality, Augmented Reality, llusion, immersion, tangibility, fragmentation, deconstruction, soundscape composition, spatial sound.

1. On the realization of 3D audio 'visions'

The 80 speakers in Bayle's *Acousmonium*,[1] the over 300 speakers in the Philips Pavilion at the Brussels World Fair,[2] Stockhausen's and Nono's aural-spatial settings, as well as numerous sound installations that freely distribute a large number of speakers throughout a space (such as those of Kubisch, Leitner, or Fontana) all represent examples of the desire for a precisely placed sonic plasticity in the contemporary audio arts – for the purpose of organizing sound along the x, y and z axes within a 360° sphere. This artistic desideratum is to be understood as something different from multi-channel or surround arrangements in which sounds are represented along a series of speakers and injected into a space.

The systems described, however, are also associated with a complicated production technology that is difficult to operate. Since 2012 we at the Soundscape & Environmental Media Lab (SEM-Lab) at the Hochschule Darmstadt University of Applied Arts have been working with the Spatial SoundWave System (SSW) to produce 3D audio in the context of an artistic research project. The SSW was developed by the Fraunhofer Institute at Ilmenau and is not only excellent in its operations – which can be learned in a straight-forward manner – but it also fulfills the artistic desire to achieve three-dimensional positioning in both a technically and aesthetically complex way, without being limited to a single privileged listening position commonly known as a 'sweet spot'. Our aim is to contrapose the technocratic-functionally oriented application euphoria of 3D audio with artistic alternatives, in which the application of 3D sound is based on aesthetic necessity and plausibility. Selected aspects of our work are outlined in the following:

2. The soundscape approach

In our artistic work, we approach 3D audio not as a new-fangled technical novelty, but rather as a distinct aesthetic concept. The term 'soundscape'[3] makes this comprehensible in terms of designing with sound and as a general concept.

'Soundscape' indicates a plastic, three-dimensional placement of sounds within a 360° sphere. Various kinds of sounds are found at highly specific places within a landscape, where they assume a certain position, dimension, and plasticity. The collaboration of all sound

1. Developed by composer Francois Bayle in 1974 at the GRM in Paris, also executed using fewer or more speakers.
2. Such as in the way Edgare Varèses "Poème Electronique" was performed in the Philips pavilion, in collaboration with Le Corbusier and his assistant Iannis Xenakis.
3. cf. Sabine Breitsameter, Hörgestalt und Denkfigur – Zur Geschichte und Perspektive von R. Murray Schafers Die Ordnung der Klänge. An introductory essay in: R. Murray Schafer, Die Ordnung der Klänge. Eine Kulturgeschichte des Hörens (published and translated by Sabine Breitsameter), Mainz – Berlin 2010. pp. 7–28. The term 'soundscape', comprised of 'sound' and 'landscape' was first documented in 1966 by Richard Buckminster Fuller. R. Murray Schafer continued to use it beginning in 1968, beginning from the premise that hearing is at its basis a perception of the environment. The presence of sounds in daily life, art and media presents itself concretely as an acoustic topography.

shapes and positions – whether loud or faint, near or far, desired or undesired – leads to a comprehensive experience of a landscape of sounds, indeed to a specific soundscape.[4] The term 'soundscape' thus inherently connotes an aesthetic approach to working with three-dimensional audio systems.

3. The 3D audio apparatus: a new tool

A broader public has been exposed to 3D audio at the planetarium in Jena, where the SSW 2011 was installed with 64 speakers, especially for applications involving the accompanying of Fulldome films.[5] This is the context in which the SEM-Lab began to produce 3D audio productions in 2012.[6] With the expectation of eliciting certain filmic qualities, 3D audio here initially served to support dramatic functions. For example, a sonic element positioned in the space becomes audible in order to direct the gaze to where important dramatic elements are presented. This increases the perception of the entire wraparound space while at the same time identifying the full spectrum of the visible environment with the audible environment. This last part cannot, however, be fully realized, as the images in the 360° film must be projected onto the outer surface of the room and are not visible to the observer as holograms.

With 3D audio, however, the SSW makes it possible to provide a plastic positioning within the room, producing an acoustic hologram. This makes the audio experience particularly impressive, such that it begs to be liberated from its purely servile function. The space then ceases to be a given thing in need of being 'filled' with sound. Instead, the space becomes a three-dimensional entity defined by a topography of sound – an agile landscape capable of being experienced from multiple perspectives. Specific existing soundscapes can be reproduced, as well as compositions of imaginary plastic sound worlds.

The technical highlights and strengths of the SSW include the fact that it is not channel-based, meaning the sounds do not need to emanate from speakers, but rather virtual speakers are created through which acoustic sources may occur at any position in a room. The technical basis for this phenomenon is a kind of condensed wave field synthesis.

4. The question of aesthetic plausibility

Our criticism is that a large portion of 3D audio productions up until now have realized their three-dimensionality in an often unmotivated way. In many cases this has involved stereo

4. The term 'soundscape' (Klanglandschaft) is in no way limited to the acoustic representation of an existing landscape, but rather includes any auditive phenomenon, whether consciously designed or found.
5. This refers to a film format in which moving images are projected onto the 360° surface of a dome.
6. An entire series of 3D audio productions created at Darmstadt UAS' Soundscape and Environmental Media Lab together with Fulldome films (in part in co-production with HFG Offenbach) was awarded with prizes, including the autonomous sound art piece "I, Water" (2012) by Philipp Boß, Felix Deufel, Yannick Hofmann, Klaus Schüller, Natascha Rehberg.

productions from pop bands or stereo ear plays that have been converted to 3D. The listener finds himself situated amongst the instruments or people who are speaking – unquestionably producing a 'wow' effect. But what becomes clear in this experience is that the use of 3D audio is not fully realized by 'pimping' a conventional frontal presentation format. This requires a much more specific artistic motivation. What are the genuine dramaturgical ideas, concepts, or other desired expressions that are fulfilled by 3D audio? Within the framework of our artistic research work, we have found it useful to first ascertain historico-cultural considerations.

4.1. Immersion and the private universe (*Eigenweltlichkeit*)

Immersion is a catchword that describes the experience of being hermetically surrounded by coherent medial sensory impressions. It always implies a concept of a private universe (*Eigenwelt*), which proves to have a long tradition. In 1849 the composer Richard Wagner described the experience in which audience, artwork, environment, and the actors involved melt into each other to form the basis of his concept of the *Gesamtkunstwerk* (artistic synthesis). The polychorality of the Venetian School in the early 15th century builds on the experiential concept of immersion, as well as that of the stone age Hypogeum of Malta, a subterranean burial and worship site. Within this structure, a male voice, such as that of a priest, is amplified and curiously reflected so that the people present are enveloped by it.[7] It is not difficult to imagine how this would unfold an intense, cult-like effect, such that it would become nearly impossible to distance oneself from the happenings there, either socially or psychologically.

4.2. Tangibility and illusion

With 3D audio, sound scenarios and compositions can be fashioned into an almost material-tangible presence and experience. Materiality of all kinds becomes 'real'. Even a gust of wind can be felt on the ear. The sounds seem to be real, material, touchable – tangible.

This is also a long-cherished artistic desideratum, exemplified by the legendary coin in the antique amphitheater of Epidauros, whose impact on the floor was supposed to be dependably heard and located even in the last row – a sound experience identical to the real one, unlimited by a privileged 'sweet spot'. An unreflected naturalism can, however, intensify the illusionary nature of an immersive reality to the point of naiveté.

7. In this way, the voice liberates itself from the body of its creator and emerges at a completely different place in the dark of the underground room.

4.3. Virtuality and Augmented Reality

The concept of virtuality[8] is inherent in the auditive. The ear possesses the capacity to perceive where the eye cannot – beyond the field of vision and the visual faculty, for example behind a person or in the dark. In this way, hearing achieves a presence independent of physical presence.

An example of this can be observed in the sound experience in a whispering gallery.[9] Here, words spoken quietly in one spot can be perceived at a spot dozens of meters away – so authentically as if the speaker were standing directly next to the listener. Such spaces can be found at St. Paul's Cathedral in London and the Gol Gumbaz Mausoleum in Bijapur, India. It should come as no surprise that such astonishing phenomena are occasionally assigned supernatural qualities.

The principle of the virtual loudspeaker was used as far back as the Neolithic Period, 5000 years ago, for example at the Hypogeum on Malta, an underground burial and worship site carved of stone. Numerous chambers, niches, and corners refract voices and sounds in a characteristic way. In the main oracle chamber, the voice of a male high priest is filtered and amplified in a special way, such that the lower frequencies dominate. It is thus liberated from its originator and becomes audible at a totally different position in the dark of the underground room. Offering an experience of something auditory as if it were 'real' in a place where no one and nothing is supposed to actually be served to unfold the cult's mystical effects.

In the age of the computer, the interlacing of progressively created perceptions with existing material is referred to as Augmented Reality. Historical examples show that the term was already applicable in the pre-electronic age. We thus address the question of how it is possible to conceive of composing and designing within the framework of Augmented or Virtual Reality beyond intentions involving a kind of hypnotism or religious motivation.

5. Artistic strategies in 3D audio work

Immersion, illusion, and virtuality: Can plausible aesthetic approaches to 3D sound exist beyond these characteristics? From a dozen or so multiple prize-winning compositions created at the SEM-Lab at Hochschule Darmstadt, we are able to surmise the following:

5.1. Immersion vs. the naiveté of illusionism

In the soundscape composition "Chalice Well" by the Canadian composer Barry Truax, the principle of immersion is fulfilled in the greatest possible sense of the word.[10] From within

8. The term 'virtual' literally connotes the possibility of existence or of having an effect.
9. ???
10. Truax originally composed the piece for 8-channel diffusion, but created a 3D audio version at the invitation of the SEM-Lab.

a water spring, the listener is surrounded by its flowing, gurgling, fizzing, pulsating, and whirling. This is not presented as a naturalistic reproduction of specific acoustic events, but rather as an original composition manifested in a careful electro-acoustic reshaping of the original sound material. Through digital processing, the sounds are abstracted to evoke surreal imaginings of physicality, materiality, surface feel, and movement. Because these sounds do not refer to conventional figurative concepts, they communicate a strongly physical presence while freed from the illustrative and illusionary. Here it can be shown that a careful material concept is required in order to escape the naiveté of illusionism.

The young audio artist Natascha Rehberg developed a comparable material concept for her piece "Rata-Schaan" (2015). It refers to motifs of Rudyard Kipling's "Jungle Book" and explores the primeval forest as an abstractly tangible sound environment. It also establishes a path to action and interaction within the 3D audio space, although this has not been specifically implemented thus far. Like in the real jungle, "Rata-Schaan" compels visitor's actions to influence the sound texture comprised of plants, insects, birds, and animals, which then influences the behavior of the visitor herself. Concepts are being worked on currently in the SEM-Lab that allow recipients to interact not only mentally but also operatively.

5.2. Fragmentization and deconstruction

A concept pursued by Anne Pischulski and Denise Röhrig in their voice play "Schienensuizid"/ "Railway Suicide" (2015)[11] is that the physical and mental states of being surrounded and involved do not necessarily generate affirmative embrace and assimilation. It captures the fragmentary, apparently meaningless and random perceptions of a person planning to kill himself. This 3D audio piece unfolds along a ragged soul landscape, using speech, voices and various sounds. This is also the strategy with the 3D composition "Vinkovci. Durch das Tor Kroatiens und wieder zurück"/"Vinkovci. Through the Gate of Croatia and Back" from Aleksandar Vejnovic. The listener is put in the position of being within a person's mind. Instead of trying to create a simulated acoustic likeness, the goal here is to use the sound world to present an interior fragmentizing mirror and deconstructing reflection of the external world. This is 3D audio used not as an instrument of the homogenously illusionary, rather also as an approach for the torn, contrary, contrasting, and confrontational.

An entire series of sound art pieces and compositions have been created by the SEM-Lab on this basis.

The compositional construction of an urban soundwalk with the complexity and contrariness of its material and spatial sounds, sound textures, and auditive horizons, can also be plausibly communicated by 3D audio without slipping into the purely realistic and

11. The production was originally produced as a 3D soundtrack for a Fulldome film in 2015, but possesses the autonomous qualities of a piece of sound art.

descriptive. The sculptural positioning of sounds in a space thus presents also a method of deconstruction: a concept diametrically juxtaposed to the generation of illusion.

6. Perspectives on listening in Virtual Reality environments

Our artistic research indicated very clearly that it is not enough to perfect 3D audio productions technically, specify them based on an apparatus, and motivate them dramaturgically. The new 3D audio apparatus presents entirely new challenges in considering the shifts occurring between listener and work, and in the artistic investigation of this situation.

3D audio directs the listener out of its frontal, purely receptive observer role within a concert hall and leads him into the role of an explorer who excavates its environment by carefully monitoring its sounds in all directions and spatial positions. With its tendency toward Augmented Reality and interactivity, it is not likely that 3D audio will remain an aesthetic phenomenon on the margins of culture. Rather, based on the success of computer-supported virtual experiences of reality and space, it is more likely to quickly find its way into the mainstream. Will composers be equipped to carve out aesthetic values and set artistic standards? The problematic of a clearly immersive approach lies in its tendency to embrace and assimilate its participants, integrate them as part of the setting, and therefore make it difficult for the individual to distance himself. However, where observer status and options for distancing are restricted, not only are our listening habits challenged, but also our intellectual tradition of the enlightened appropriation of our world.[12]

How should participatory listening be brought about with an orientation toward aesthetic and cognitive concerns, in order that the recipient does not lose himself within the affirmation of empathy, involvement and adaptation? In order to understand, inhabit, play and master the new 3D audio apparatus, one has at the very least to develop new methods of hearing and listening.

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12. cf. H. M. McLuhan's continually unfolding concept of the audio-tactile surrounding sensation produced by the electronic age in contrast to the frontal-visual perception of the age of Gutenberg, among others in his work "The Gutenberg Galaxy: The Making of Typographic Man". Toronto 1962, p. 11 et seqq).

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Cultivating Urban Sound as an Object of Design

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ABSTRACT: Emphasizing the necessity and urgency of a conscious urban sound design, this paper offers an insight into the notion of *cultivating urban sound as an object of design*. On the basis of theoretical considerations and exemplified by initial results of an extensive research on the subject, the text indicates that this cultivation process not only comprises further developing and transforming urban design practice itself with its methods, tools and measures but, to the same degree, the cultural and social reference framework. Furthermore, the article explicates the congruity, complexity and range of influence of the concept and points out the advantages as well as the prospects of cultivating urban sound as an object of design.

KEYWORDS: Urban sound, urban sound environment, urban sound design, urban sound planning, cultivation.

1. The sounding actuality of urban life

Sound is integral to our everyday urban life. It concerns us. Not only because it's sometimes annoying but mainly because it's meaningful and relevant to our physical, mental and cultural orientation. (cf. Truax 2001, pp.65) What we hear is inseparably tied to the particular circumstances and social conditions. To this effect sound is not a negligible aspect but rather a natural part, precondition, as well as attribute of urban life all at the same time.

While the urban sound environment affects our wellbeing and our social living together, beside noise abatement up to now it is not intentionally planned. Still it results just accidentally from the way we build, the way we organize and the way we inhabit our cities. Even today the sound of cities is only a by-product of our urban activities.

2. The need of cultivating urban sound as an object of design

In principle this situation should be a great chance for urban planners. At least in theory they've got the opportunity to develop design ideas and concepts for urban sound environments and to provide required measures and solutions. But how can planners be enabled to do this in a conscious manner? How could the auditory dimension be integrated in the daily practice of urban planning?

Actually, interest in urban sound and possibilities to design it has increased significantly in recent years. The growing number of publications and events on this subject may substantiate this observation. Oftentimes interested persons come up with the request for a simple toolbox or catalogue of measures to consider the auditory dimension. But it's not quite as easy as that. The practice of designing urban sound is not only dependent on adequate instruments. In fact a broader and much more complex action is needed: *urban sound as an object of design has to be cultivated.* Cultivating urban sound as an object of design means implementing a comprehensive process of negotiation and agreement to generate collective imaginations, opinions, paradigms, routines, rules, procedures and conventions with regard to urban sound. In other words not only does the urban design practice itself, with its methods, tools and measures have to be developed, but to the same degree the cultural and social reference framework must be further developed to open up the auditory dimension for planning.

3. The notion of cultivating urban sound as an object of design

To theoretically underpin the notion of cultivating urban sound as an object of design, it is helpful to examine the following two related positions from the field of sociology of art: The "art world" theory of Howard S. Becker and the "art field" concept of Pierre Bourdieu.

In his book "Art Worlds" Howard S. Becker outlines from different vantage points how art worlds "come into existence and persist". (2008, p.xxiv) He describes an art world as "the network of people whose cooperative activity, organized via their joint knowledge of conventional means of doing things, produces the kind of art works that art world is noted for." (ibid.) According to Becker artworks are not an outcome of the activity of a single person called artist alone. Instead, to appear as it finally does many activities of different specialists must be carried out. As an example, he cites the concert of a symphony orchestra. To make such a concert happen, long in advance

> [...] instruments must have been invented, manufactured, and maintained, a notation must have been devised and music composed using that notation, people must have learned to play the notated notes on the instruments, times and places for rehearsal must have been provided, ads for the concert must have been placed, publicity must have been arranged and tickets sold, and an audience capable of listening to and in some way understanding and responding to the performance must have been recruited. (ibid., p.2)

Becker emphasizes the cooperative nature of acting in the art world. He points out that for cooperative acting "conventions" are needed. He writes:

> People who cooperate to produce a work of art usually do not decide things afresh. Instead, they rely on earlier agreements now become customary, agreements that have become part of conventional way of doing things in that art. Artist conventions cover all the decisions that must be made with respect to works produced, even though a particular convention may be revised for a given work. (ibid., p.29)

Similar to Becker, his French colleague Pierre Bourdieu describes the collective in "The Rules of Art" as an enabling but at the same time limiting framework for artistic practice. He calls it the "space of possibles":

> [...] the heritage accumulated by collective work presents itself to each agent as a space of possibles, that is, as an ensemble of probable *constraints* which are the condition and the counterpart of a set of *possible uses*. (1996, p.235)

The space of possibles arises from the current state of a specific art field. "Field" is one of the fundamental terms in Bourdieu's theory. The author Helena Webster recaps in her publication "Bourdieu for architects" the art field concept as follows:

> Bourdieu suggested that the notion of field could be used to represent the 'autonomous', bounded, nature of a group of artists, buyers and intermediaries, who shared a constructed set of knowledge, beliefs and values, and who existed in a hierarchical, capital dependent, juxtaposition with other social groups (fields) in social space. (2011, p.43)

Bourdieu agrees with Becker that any artistic practice stands in a relationship of mutual interdependence to its respective art field or art world. Without this reference framework the artistic practice couldn't exist.

Although both researchers refer to artistic production, their theories have claims to universal validity. For this reason their conclusions can be easily adopted for urban sound design, and it can be assumed that this practice must also be linked to a reference framework which is not only a factor of influence but rather constitutive for it.

With regard to intentions to integrate the auditory dimension in urban design and planning, the theories described are highly relevant. According to them, an integration can only succeed if, besides the practice of urban design itself, with its methods, tools and measures, also the constitutive reference framework is going to be developed further and transformed appropriately to the sound-related requirements. Precisely this simultaneous and reciprocal process of development and transformation of both practice and reference framework is meant by *cultivating urban sound as an object of design*.

4. The complexity of cultivating urban sound as an object of design

As highlighted before, cultivating urban sound as an object of design involves much more than only inventing adequate instruments. My current research focuses on the identification of those elements, which are essential for the cultivation process. Below I'm going to outline some initial results of my work, generated from expert interviews, participatory observations and literature research. Due to the short length of such a paper there is no chance of providing an exhaustive overview or discussing individual points in detail. Therefore, I will limit the account to select examples and brief descriptions.

First I would like to indicate that the presence of the subject matter in general public discourse is lacking. Indeed in recent years urban sound became an occasional topic in the public media. But this is by far too little for initiating a broad debate on urban sound design and to push the cultivation process. Even now the awareness that urban sound could be deliberately planned nearly doesn't exist. Therefore a general sensitization for the topic is essential. (cf. e.g. Elliot 2013 or Flügge 2014, p.662) Without it neither a higher demand for urban sound planning nor a sense of its urgency will arise.

A precondition for a successful discourse on urban sound design and a working communication between different stakeholders is a common basis of speech. (cf. Becker 2008, p.254) The ability to verbalize and express your own thoughts and ideas on sound matters is essential for collective acting. Although an approved terminology in the field of acoustics exists (cf. e.g. Morfey 2001), and despite a few efforts at creating a special vocabulary to name further phenomena (cf. e.g. Schafer 1994, p.271–275; Truax 1999 or Augoyard and Torgue 2006), such a common basis of speech is, with the exception of few widely-used terms, still lacking. What we have so far is either inadequate, limited to professionals or hardly widespread. Thus establishing a common basis of speech is an inherent part of cultivating urban sound as an object of design.

Beyond that, within the cultivation process it is necessary to broaden the horizon of imagination and knowledge about what urban sound design could be. A wide horizon of imagination and knowledge is crucial to respond adequately to heterogeneous design tasks. Up to now this horizon has remained limited. To broaden it, on the one hand the factual knowledge about urban sound environments and the possibilities to design them has to be increased. For instance, further exploring which aspects of the environment can be influenced directly or indirectly, as well as how, and which aspects are not controllable but must be considered as given and determining. Even though the factual knowledge partially exists already (cf. e.g. Kang 2013 or Hellström 2003), it is either too rudimentary or not yet made accessible for urban planning. On the other hand besides factual knowledge, the know-how about designing urban sound environments also has to be expanded. Since know-how is practical experience it will only evolve from the ongoing cultivation process. But practical experiments as well as gaming simulations, for instance in the framework of lessons, can be helpful for developing this know-how to some extent already at the very beginning of the cultivation process and to push this process along.

In addition, broadening the horizon of imagination and knowledge refers to another vital aspect of the cultivation process: generating concepts and ideals of how sound designed urban environments could and should be. This point concerns the development of guiding principles, models and archetypes, which only enable substantial examinations and actions with respect to sound and within the framework of urban planning. Established concepts and ideals provide the required orientation for planning – even if they will be updated permanently. Without them, planners would act in a kind of vacuum, in a space without any reference point. Certainly, concepts and ideals do not simply pop up out of nothing. Rather, they emerge from an ongoing process of dealing with the subject, through intensive exchanges of views, and not least on the basis of the awareness about general demands and own needs. In the end, by implementing concrete projects underlying concepts and ideals become manifest. Realized projects again can serve as successful, or failed, examples (cf. Hellström 2003, p.23) and, by widening the experience, modify the concepts and ideals. In

this way and in the long term, general principles and even architectural styles with respect to urban sound will arise.

Both of these developments – acquiring knowledge and generating ideals – need a starting point. Oftentimes an awareness of issues and subsequent theoretical considerations can lead to primal assumptions and theses, which are able to initiate the aforementioned developments. In this connection I would like to quote the building of a stable theoretical basis as a further example of an essential element of cultivating urban sound as an object of design. Such a theoretical basis comprises for instance assumptions and theses about what exactly the object of urban sound design is, about what designing in this context means, or about what aims will be pursued in the design process. In addition, the definition of terms also belongs to the field of activity in this context and much more. In fact, regarding several aspects of urban sound design, theoretical considerations already exist. However, as of now they still do not build a broad and stable basis but rather a loose collection. The scientific landscape in this respect is fragmented and a comprehensive theoretical framework still lacking. Past attempts to provide such a framework – one of the best known examples is Murray Schafer's "THE SOUNDSCAPE: Our Sonic Environment and the Tuning of the World" (1994) – indeed led to inspiring conclusions and especially Schafer's book was groundbreaking, but so far the theoretical approaches of all these attempts were in parts either still limited, inconsistent or rather speculative. (With regard to the soundscape approach cf. Kelman 2010 and Ingold 2007) Yet it should be noted that recently more and more efforts to build a sufficient theoretical basis and to act more scientifically have been made.

Another important issue of the cultivation process is dissemination. Knowledge, concepts and ideals as well as theories – all of them need dissemination to be discussed, pushed forward and, finally, to be operative. Therefore, extended mechanisms and methods of dissemination must be developed and used that are appropriate for the subject of urban sound design.

Cultivating urban sound as an object of design will gradually create and consolidate structures in many areas, for instance with regard to organizational matters. Organizational structures involve, inter alia, clarified responsibilities and competences relating to urban sound design. Legal structures are another example. They regulate for example authority issues. Beyond that, financial structures should be mentioned, (cf. Becker 2008, pp.107) which only enable the practice of urban sound design on a professional level, as well as distribution networks, which are relevant for the provision and allocation of resources. These structures, and several more, will be partial outcomes of the cultivation process and many of them will involve institutionalizations. In the end, such structures are crucial to permanently establish urban sound as an object of design.

The examples given above can only provide an impression of the complexity of cultivating urban sound as an object of design. Most of them can be assigned to the reference

framework, which is constitutive for the urban sound design practice. Obviously, the design practice itself, as a main part of the cultivation process, also has to be developed further. That implies, among other things, the creation and/or enhancement of procedures, methods, techniques, tools and measures – for instance of recording, analyzing, reviewing, presenting or simulating any sonic aspects. It should be noted that, even if many further developments are still needed, both in the reference framework and the design practice, progress is already partly taking place and some solutions have already been found. In fact one of the major challenges will be to relate the single threads to one other in a reasonable way and finally to merge them into a consistent cultivation process.

5. The value of cultivating urban sound as an object of design

Cultivating urban sound as an object of design is a continuing, complex and extensive process of forming, negotiating, agreeing, adapting, modifying, enhancing and refining. Even when urban sound one day becomes an established object of design, the cultivation process will continue. This is because elements like the focus of public awareness, speech, knowledge, ideals, the way of thinking, dissemination channels, organizational, legal or financial structures, procedures, methods, techniques, tools, measures etc. change over time due to new findings and conditions, as well as current perceptions and needs. Beyond that, the process of cultivation could not – and should not – be fully controlled. Particular circumstances, such as personal requirements and ambitions, ingrained habits, or power structures in society are key determinants which can hardly be influenced by a third party. For these reasons and others, the cultivation process is to some degree quite unpredictable.

Nonetheless, cultivating urban sound as an object of design can and should be a deliberate and directed action. It *can* be because, as above-mentioned examples show, many elements of the cultivation process are definable or at least transformable in a conscious manner. Further elements can be influenced indirectly by creating a milieu which supports certain developments. Beside that, it *should* be a deliberate and directed action because, in spite of any uncertainties, this will offer the opportunity to promote and accelerate the integration of the auditory dimension in urban design and planning, and to avoid erroneous trends.

Cultivating urban sound as an object of design, understood as the simultaneous and reciprocal process of developing and transforming both practice *and* reference framework described above, is not only worthwhile but even necessary to establish sound as regular part of urban design and planning. According to the theories of Becker and Bourdieu it can be concluded that the cultural and social reference framework is constitutive for any design practice. Therefore the creation of an operable urban sound design practice will only succeed if at the same time the reference framework is taken into account.

In addition to the achievement of enabling planners to design urban sound in a conscious and comprehensive manner, the cultivation process may lead to a further outcome: It is conceivable that, based on new and alternative approaches to cultivating urban sound as an object of design, entirely new paths will open up even for urban design and planning in general and with regard to other sensory perceptions.

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Interpretive Artificial Soundscapes Based on Natural Soundscape Structures and Elements

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ABSTRACT: In this paper the author describes his initial experiences in electroacoustic music composition and in soundscape composition, then describes how he was eventually able to use the structure of the soundscape in the creation of abstract music for a film.

KEYWORDS: soundscapes, artificial soundscapes, algorithmic composition, performance sound art, sonic structure, musique concrète, aleatoric elements, electroacoustic music.

1. Introduction

The kind of "research" I am presenting in this paper is one of personal compositional discovery, not a report on library findings or laboratory experiments. Although I took music courses in university, I was not a music major but rather a media-production student. As a result, I was open to many new forms and ideas, even in the very early 1960s, that I might not have embraced if I had studied music in a traditional fashion. This is a personal narrative of my discoveries spanning a period of over fifty years.

2. Exploring New Music

As a student, I had a strong background in science and technology and thus became fascinated with the kinds of sounds and music that used technology, both in the recording of sound and in its creation. At that time, composers such as Edgard Varèse, Karlheinz Stockhausen, and Pauline Oliveros were exploring electronic circuits as a means of sound production for experimental music. Most were using electronic equipment originally intended for nonmusical practice – devices such as function generators, vocoders, filters, and so forth.

But many composers were creating experimental music – disconnected from the widely accepted "classical" music taught in most conservatories – with electronics that were both expensive and scarce, having been designed for science and technology research. The first vinyl recording I bought that included electroacoustic music was *Extended Voices* [Behrman] which included works by Pauline Oliveros, John Cage, Morton Feldman, Robert Ashley, Alvin Lucier, and Toshi Ichyanagi. As a student in the Midwest United States, I had no inkling that I would come to know three of these composers much later in life.

Meanwhile, I became fascinated by what I was reading about the RCA Mark II synthesizer often used by Milton Babbitt at the Columbia-Princeton Electronic Music Center. It seemed the complete antithesis of sound created by pure acoustic means. *It was sound from electricity, and it was exciting.*

2.1. A Personal Introduction to Electroacoustic Music

While still in graduate school, I was employed as a classical-music television producer, frequently working with celebrated performers and conductors. Thus, for a time I set aside my interest in experimental music.

After graduate school, however, my first academic post was at a school with limited studio television facilities where I would be unable to continue producing classical-music programs. The thought crossed my mind, "If only one could do television without cameras." As a result, I became interested in electronically generated images and created some by modifying found gear. Then, in 1969, I received a grant to do some work at the Computer Image Corporation in Denver, Colorado.

But in creating electronic images I also needed sound. I met the electroacoustic composer Larry Austin, who was working with a small Buchla synthesizer. In concert, he performed on the Buchla in real time. He didn't use a keyboard but rather setup patches, then turned knobs to create very interesting sounds. This, too, excited me.

Unable to afford a Buchla, I purchased a small EMS synthesizer, which I used for music soundtracks and even as a signal generator for some of my visual images. This, now, was both image and sound from electricity—no reference to the "real world" here.

During that period, I was exposed to musique concrète. The composer Ann McMillan visited Omaha, Nebraska (where I was living), and stayed with me for a short period. Having learned her craft from Pierre Schaeffer, she carried her trusty Nagra and a good microphone. I helped arrange a session at a very good recording studio for some post production, but since the Nagra was also out of reach financially, I didn't pursue that line of composition. I did, however, listen to quite a bit of music by Pierre Schaeffer, Pierre Henri, Michel Philippot, and others associated with ORTF, and was impressed by the richness of that sound, which was less "technical" than many compositions produced with oscillators and filters.

2.2. Soundscape Epiphany

My realization of the creative potential of natural soundscapes occurred a number of years later, after I had mostly abandoned electronic music and had become enchanted, as did many in my generation, with the possibilities – mostly visual – of the tiny personal computer.

In 1980, I spoke at a computer conference in Anaheim, California. My wife and I drove from Anaheim to Los Angeles to meet with some people we knew in the entertainment industry. We stopped for lunch at Marina del Rey. It was a very windy day and there were hundreds of sailboats moored, each with an aluminum mast. As I stepped out of my car, I was greeted with the most amazing chorus of lines hitting the masts. I said to my wife, "This is what music should be." Instantly fascinated with the "music" of natural sounds, I completely changed my compositional form after that experience.

3. Sound Components

How to turn natural sounds into music? At that time, I was not familiar with the concept of soundscapes, especially in the documentary sense, but I knew I wanted to create some kind of music using the processes that had produced the very interesting sonic experience of Marina del Rey.

There are many ways to describe the components of music and sound. As a recordist, I am often concerned with frequency, amplitude, timbre, duration, ratio of direct to indirect sound, and so forth, but my new sonic aesthetic requires a different frame of reference.

For this paper, I want to focus on three different ways to describe a sound composition:

1. **The force behind the creation of sound** – for a flute player, blowing air across a special kind of tube; for the sound of a waterfall, the force of gravity causing the water to fall over a cliff.
2. **The content of a sound composition** – what the listener hears, whether it's the notes played by symphonic instruments or the wind and birds in a forest. For the present purpose I suggest two types of content: the *documentary* or *referential* component (*What* is the sound?) and the *emotional* aspect (What *feelings* are produced in the listener?)... though these sometimes overlap.
3. **The structure of a sound composition** – how the content elements are arranged and, tangentially, what causes this arrangement. The structure may be dictated by a composer who writes out every note to be played, or it might be created by processes, such as those of nature, and may have aleatoric (chance) components.

In a string-quartet performance, the content is the musical sound produced by the instruments; the structure is often one of the traditional forms of "classical" music, usually dictated by a composer; and the force is the bowing or plucking of strings.

In my Marina del Rey experience, the content of the soundscape was the metallic sounds of lines hitting metal masts; the structure was partially aleatoric but not complete "chance," as the sounds were limited to the pitches and timbres of the masts and lines; and the force was the wind blowing the lines against the masts. In terms of content, anyone could recognize the source of the sounds, but it was the emotional component that seemed most important to me in that context. I was thrilled to be surrounded by the percussive sounds in a way that went far beyond simple recognition of what was causing them.

3.1. Computer "Wind"

It was never my intention to create music that would sound like the Marina del Rey soundscape, but I wanted to explore similar methods of production in order to achieve the same emotional results. If I could set up a series of sound objects, then control them via a computer using partially aleatoric processes, I could create unpredictable, very changeable music. Initially I used the program M by Intelligent Music and later used other programs, including Music Mouse, written by Laurie Spiegel, and SuperCollider.

This technique, algorithmic composition, was especially well suited to theatre performances, art-gallery installations and film sound design, as it provided a kind of sonic environment rather than a "tune." I did much of my graduate work in the field of theatrical scene design, and my work with theatrical soundscapes could be considered a form of sonic scene design. But for me, this process, though less rigid than through-composed music, created only artificial soundscapes with no connection to real-world soundscapes.

3.2. Exploring Natural Soundscapes

For a time, I taught an electronic-music course in which the projects were based on musique concrète, as most students had access to portable recording gear and audio-editing workstations but not to synthesizers. Though musique concrète is based on recorded sounds, these are usually highly processed. One does not have a clear idea of the original source. There may not be a strong documentary component. Often, the sound objects for musique concrète are created in a studio, not in nature.

Becoming acquainted with the soundscape compositions of the Canadian sound ecologists, especially R. Murray Schafer, Hildegarde Westerkamp, and Claude Schryer, I found that while such compositions, like musique concrète, are often constructed in collage fashion, the intent is to preserve the natural sounds, adding a documentary component to the composition.

My initial interest in soundscapes was oriented toward finding new sounds for musique concrète, but when I discussed my approach with Hildegarde Westerkamp at a World Forum for Acoustic Ecology conference in Sweden, she said "Don't just be a composer; learn also to be an acoustic ecologist."

This changed my thinking some, I became fascinated with the "openness" of the sounds from nature. For many years, when I went out jogging for exercise, I would wear headphones that played music or audiobooks. As I gradually became attuned to natural sounds, I abandoned my headphones and music player, instead savoring the interesting sounds provided free by the environment.

When I taught recording techniques, I started asking students to produce soundscapes based on their local environments, playing examples from the Canadian sound ecologists. I had received from Claude Schryer *Lettre sonore II* [Schryer] – a CD consisting of soundscape clips he had collected. To teach students to use the audio-editing software, I asked them first to use some of his clips in a short mix composition, then to make another composition using clips they recorded in their own environments.

Students in another of my classes created a website featuring natural sounds of the Hudson Valley. These included trains, coyotes, birds of various kinds, an abandoned old mine partially filled with water which had a huge reverberation time, and others. I enjoyed becoming a sound collector and getting to know others with related interests, including Jim Metzner, who produces the daily syndicated radio program *Pulse of the Planet*, and musician-turned-nature-sound-collector Bernie Krause.

3.3. Taking Apart the Soundscape

In 2016 I was invited to participate in an art show in which four pairs of artists – a video artist and a sound artist in each pair – had to create fifteen minutes of video and audio based on a short poem about the Hudson River, "An Arrow Pointed Down", by Sarah Heady:

> The Hudson is an arrow pointing down (though it flows both ways). The City is a poured-concrete floor onto which all things land, and sometimes break. You can hold—with your hands raised above your head, with a system of pulleys, with a net, standing on a ladder—your life and all its parts in the air.
>
> But there is the fact of gravity.

The Hudson River, only two blocks from my home, influences local art of all kinds. I didn't want to merely record soundscapes from the river. In my view, the river's definitive soundscape was created and recorded years ago – on the CD *Sound Map of the Hudson River* [Lockwood], by Annea Lockwood, who once taught at nearby Vassar College. On the other hand, I didn't wish to simply create innocuous "background music" for the visuals. Also, as the poem suggests, the Hudson river flows both North and Sound depending on the tides. This lent the theme a degree of abstraction and ambiguity in sonic interpretation.

After consideration, I came to realize that the attraction of the river went beyond the documentary content (both sonically and visually) to generate certain emotions in the person experiencing the river. I decided to separate the two types of content – documentary and emotional – and produce music that had some of the emotional content and form of the space without the documentary content. To many soundscape artists, I admit, this might seem to contradict the purpose of the soundscape. Interestingly, the video/photographic artist I was paired with, Lori Adams, wanted to use a similar approach – to capture the feeling of light as it might play over water rather than use images that referenced the river in documentary fashion. This too was considered controversial by some; we were like John Cage in a group of Beethoven enthusiasts. Lori's visuals consisted of moving points of light, like specular highlights on moving water, followed by a pattern produced by those lights as she captured their traces with a digital still camera.

The river is, of course, fluid, and I wanted to structure sounds the way soundscapes of the river are structured, but with mainly emotional content that didn't necessarily convey the river's actual sounds. To design the sounds' fluidity, I relied mostly on analogue synthesizers to create various sound clips, which I then used to build a composition much as soundscape collectors create soundscape compositions. This was a departure from my digital algorithmic compositions, which were more or less real-time presentations created without regard to the sonic structure of a particular soundscape. After all, I had never tried to compose algorithmic music that mirrored the structure of the sounds in the Marina del Rey experience. In a sense, I borrowed the soundscape's method of production but not its structure.

My visual-art partner used light painting to create the abstract but very fluid images she wanted. Her method of working produced moving points of light, moving in more than one

direction, followed by a resulting static composition that the moving lights "painted" on the camera sensor. Accordingly, I had to make my sound composition quite episodic in order to synchronize the two. Yet both Lori and I were satisfied that we captured the feeling of the river without the trite "postcard" visual and sonic approach often used for this kind of art.

To the soundscape purist, our avant-garde technique might seem sacrilegious, but I became intrigued with creating sound compositions approaching the "essence" of the soundscape without the degree of documentary reference.

4. Coda

I would be remiss in this recounting of my experiences if I did not mention my encounter with Walter Branchi. His business card reads "gardener and composer". He feels that both roles are nurturing and is a noted rose-grower as well as composer and music teacher. He presents concerts in which electronic sounds he has created are played relatively quietly in an outdoor setting for the purpose of letting the natural soundscape merge with his more artificial electroacoustic ingredients.

I heard his concert in the garden of the Greenwich House School of Music in New York City. He discourages recording of these performances for CD release, believing that each performance should be "new" according to the soundscape in which it is presented. Some of his ideas are collected in a series of essays he has written over the years, *Canto Infinito: Thinking Music Environmentally* [Branchi].

The approaches that I have outlined above constitute the new direction of my sound-design work.

It has become a fusion of my experience with electroacoustic music and natural soundscapes, and it will be interesting to see where it leads. Stay tuned...

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Site-Specific Music Composition and the Soniferous Garden

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ABSTRACT: Imagine strolling through a garden that, in addition to the usual sights, scents and sounds, contains strange constructions: a steel canyon; a stepped pyramid; two giant concave dishes. Now imagine taking out a flute and playing with sounds that echo and amplify, whisper and reverberate back to you from these odd objects.

Music composed for a naturalistic garden designed with acoustical properties, as if it were an organic orchestra, would demonstrate site-specificity of the highest order. Such music would only be effective in that one place. How to accomplish this integration of landscape and sound is the object of this paper.

The uniqueness of this proposed project, an extension of composer R. Murray Schafer's "soniferous garden" concept, would have benefits to composers, landscape designers and the public. But what is more, perhaps we will begin to rediscover the magic and mystery our prehistoric ancestors experienced with sound in the landscape.

KEYWORDS: soniferous garden, soundscape, site-specific, music composition, acoustical park.

1. Introduction

From the moment music-making began, music has always necessarily taken place in a space. Just as certain kinds of spaces have been created for the performance of certain kinds of music (e.g. concert halls for symphonic music, opera houses for opera), some music has been and is being created especially for certain specific pre-existing and specially built spaces. No one is certain how far back "site-specific" music-making originates, but the term "site-specific," at least in theatrical use, has been around only since the 1980s. (Field 2008)

Originally the term meant "a performance specifically generated from or for one site."(Ibid) However, more recently the term has been expanding to include any performance not in a traditionally recognized performance space such as a concert hall or theater, and as Andy Field states in his article "'Site-Specific Theatre? Please Be More Specific," "[t]hat's missing the point…And as this understanding of site-specificity grows ever more bloated, its original meaning becomes fainter and more diluted." (Ibid.)

When the term "site-specific" is used in its most inclusive sense there is a very wide range of "site-specific" compositions, indeed. From the poly-ensemble work *In Ecclesiis* (pub. 1615) by Giovanni Gabrieli (1554?-1612) which uses the existing spatial opportunities of the architecture of St. Mark's Basilica in Venice, (Selfridge-Field 1975, 99) but which can be effectively performed in any concert hall, to Edgard Varèse's (1883–1965) *Poème électronique* (1958), specifically designed for the effect of 300 loudspeakers surrounding the audience with projected images in the dark, (Xenakis 2001, 107) and which sounds flat when heard in stereo in lighted music history classrooms, site-specific music associated with interior spaces may either use existing spaces for dramatic effect, or be so linked to a space that performance anywhere else adversely affects the result.

Site-specific music may also be linked loosely or vitally to an outdoor place. For example, *Water Music* (Op. 82) (1964), by Sir Malcolm Arnold (1921–2006), composed for the opening ceremony of the Stratford Canal and meant to be performed on a barge, does not appear to be tailor-made for outdoor performance, as Arnold uses woodwinds at low volume and even a muted trumpet. Such orchestration seems much better suited for indoor performance. (Arnold "Water Music" 2014) On the other hand, there is *Playing Outside* (2001) for chorus, orchestra, gamelan and improvisers by Robert Morris (b. 1943) written to be performed in Rochester, New York's Webster Park, a ¾ square-mile space containing a variety of geography including fields, woodland paths, picnic areas, streams, hills, stands of pine, little valleys and wetlands. "Because of the specificity of the composition," says Morris in his program notes, "the piece can only be played in the park, and all future performances will be mounted there." (Morris 2001) Morris composed the various parts exactly where they would be performed. Animals he encountered, named locations in the park

and natural elements at each site sometimes suggested titles: "Hidden Frogs," "Canon at Cattaraugus," and "Concerto by the Brook." (Morris 2001) The compositional importance of this kind of site-specificity was not lost on the press which, according to Morris, "were complimentary, one of them making the point that this work, if performed indoors, would probably not please; what would have been strange sounds and unusual musical processes seemed perfectly appropriate outdoors." (Morris 2010, 286)

The highest order of site-specificity therefore, is one in which the music, if removed from its intended location, would lose musical effectiveness to such an extent that the performance would be a failure. Consideration for acoustical effects would have to be integrated into a landscape design to a degree beyond anything currently in existence, for true, high-order, outdoor site-specific music. Composer R. Murray Schafer (b. 1933) hints at this in his book *The Soundscape* (1994). This paper will demonstrate how a true "soniferous garden" can be designed.

2. Design for an Acoustical Landscape

R. Murray Schafer begins his book *The Soundscape* (1994) by lamenting the changing sonic environment, or soundscape, as a result of increased modernization. The rising level of ambient noise all around us, he claims, has negative health repercussions. Schafer says, "Noise pollution is now a world problem. It would seem that the world soundscape has reached an apex of vulgarity in our time, and many experts have predicted universal deafness as the ultimate consequence unless the problem can be brought quickly under control." (Schafer 1994, 1)

The task of rescuing our more naturally compatible acoustic environment from the escalating threats of continuous human-produced noise falls upon the shoulders of the acoustic designer, a new interdisciplinary profession which seeks to find ways to preserve and improve the quality of our environmental sounds, not just to fight the bad ones. (Ibid., 271) One way to achieve this is the design of public gardens and parks free from encroaching noise, noxious fumes and amplified music. But where true gardens are "feast[s] for all the senses" and well-designed parks allow for multiple community activities, typically the locations are badly chosen and subject to increasing noise and air pollution which defeat the senses. (Ibid., 246) Schafer declares:

> With good reason then do we insist on the necessity today to throw the emphasis back to the acoustically designed park, or what we might more poetically call the soniferous garden. There is but one principle to guide us in this purpose: always to let nature speak for itself. Water, wind, birds, wood and stone, these are the natural materials which like the trees and shrubs must

> be organically molded and shaped to bring forth their most characteristic harmonies. (Schafer 1994, 247)

This paper's hypothetical outdoor space, called herein a "sound garden" or "acoustical park," is therefore an extension of Schafer's "soniferous garden" only with more examples of hardscape and sculptural elements with musical and acoustical properties for the purpose of encouraging site-specific outdoor acoustic music compositions. This "model environment," a result of acoustic design's "imaginative placement of sounds to create attractive and stimulating acoustic environments for the future," is in the same way, according to Schafer, "contiguous with contemporary musical composition." (Ibid., 271) While a complete design process in creating an outdoor public space may involve many important steps, this section will demonstrate acoustic design by limiting itself, for the purpose of this paper, to the more relevant steps of site selection, soundscape survey and master plan.

2.1. Site Selection

Ideally, the site for a sound garden/acoustical park should be located in an area where the ambient decibel level does not regularly exceed that of human speech (60–65 dB (A)) (Galen Carol Audio 2015) so that quiet natural and musical sounds can be appreciated in close proximity. Louder sounds can occur on-site and off-site occasionally or on a predictable schedule so that they can be incorporated into a musical composition, a process termed in this paper "acoustical alignment."

Whereas locating the sound garden/acoustical park too close to urban and industrial development can be sonically overwhelming to the project, locating it too far from easy visitor access and interesting off-site sounds can also weaken its appeal by disconnection to the community's citizens and its "soundmarks." (A "soundmark" is defined by Schafer as a natural or human-made sound that a community identifies as being unique to that community). (Schafer 1994, 10) Therefore, the ideal location for an outdoor space with designed acoustical properties intended for high level site-specific music composition should be in or near a quiet residential, mixed-use or university campus setting where periodically audible off-site sounds can be heard and used by composers as sound sources. This is the setting chosen as a model for this paper's hypothetical project.

2.2. Soundscape Survey

In order to identify the optimal location for a sound garden/acoustical park (ignoring for the sake of this demonstration the limitations of cost and land availability), the acoustic designer, who most likely would be a landscape architect by profession, should do an acoustical survey of the prospective sites' neighborhoods for analysis (in addition to all the other site surveys necessary for the usual landscape project implementation but which will

be assumed to have taken place in this hypothetical case). All things being equal, the site with the most interesting soundscape, comprised of on-site and off-site sound sources, should be chosen as the project site. A sound map or "sonograph" (Schafer 1994, 274) will aid the designer in the same way as a hydrological or topographical survey aids landscape architecture projects: feasibilities can be judged, comparisons between sites can be made and design ideas can be stimulated.

Sound maps/sonographs can be made in virtually any style, as long as they communicate all necessary information as accurately as required by the designer. Maps can show numerical data (Figure 1) and comparisons (Figure 2). They can be sketch-like (Figure 3) or use icons overlayed onto aerial maps. Of course, other styles and methods are also possible.

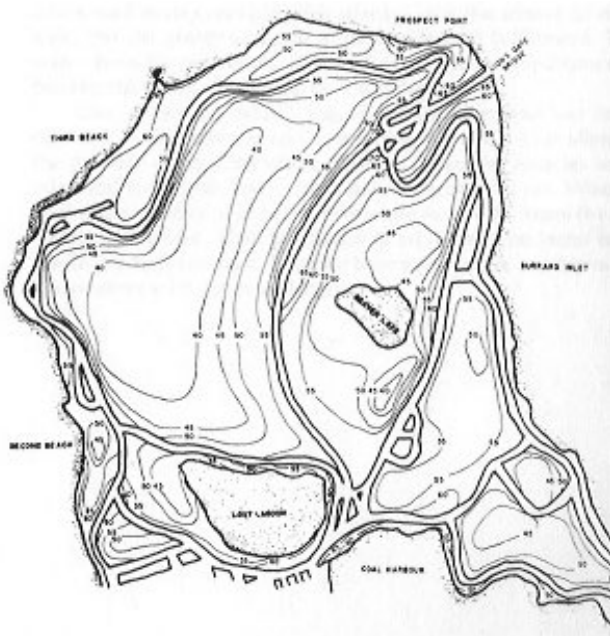

Figure 1. Sound map showing lines of similar decibel levels (isobels); Image: R. Murray Schafer.

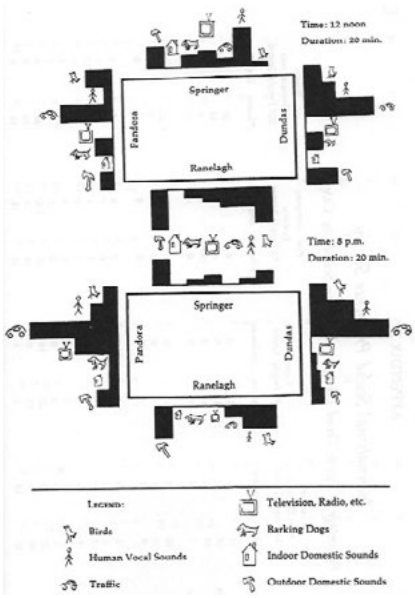

Figure 2. Sound map showing comparative sound activity and levels; Image: R. Murray Schafer.

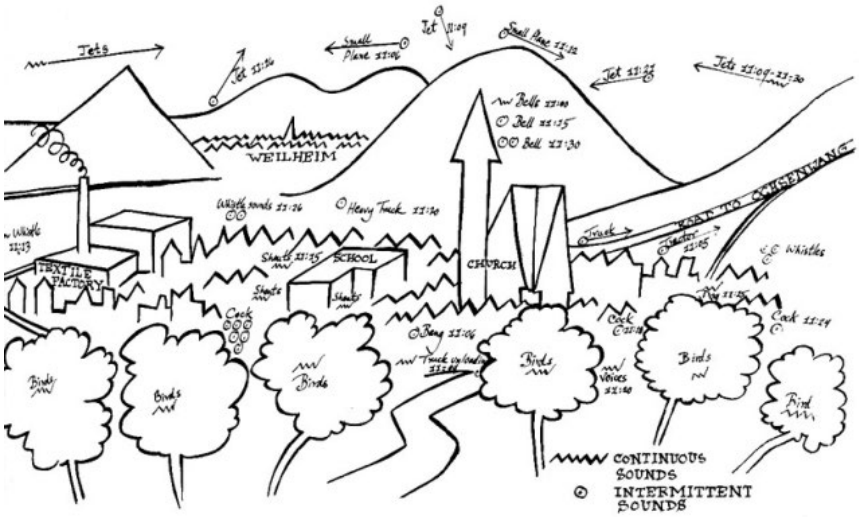

Figure 3. A line drawing sketch of a landscape with acoustic indications; Image: R. Murray Schafer.

A sound map for this thesis' chosen location shows that the site is rich in existing off-site musical sound sources (Figure 4). Were this an actual site, the designer might choose it as an ideal location to place the project based upon the advantages shown in the survey. (For the purposes of this paper, this imaginary and ideal location will be the test site). This sound map shows the existence of natural sound-makers such as acorn-dropping trees, predictable musical sounds (the carillon) and the more variable and less reliable industrial noises of trains and planes. Although there is traffic noise, it is low-level residential, not highway, below the decibel level of normal speech and can be moderated with sound barriers. There is nothing that would appear to be a sonic detriment to the site.

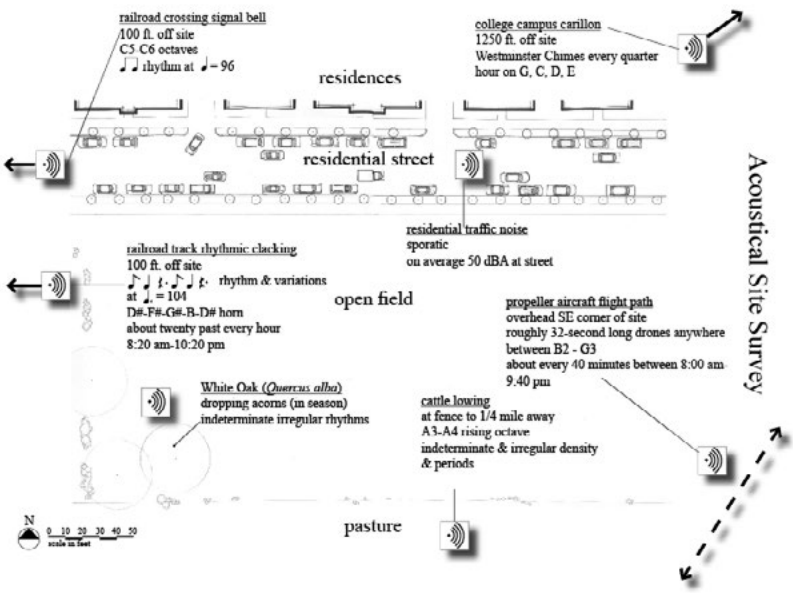

Figure 4. Acoustical site survey of hypothetical site.

2.3. Master Plan and Description of its Acoustical Properties

The landscape master plan shows in detail what a completed project will look like from a bird's-eye view, complete with physical topography, plantings and even color and shadows. In addition, this project's master plan contains elements, natural and constructed, with acoustical properties (Figures 5 and 6). A description of those elements, numbered in the master plan below, now follows.

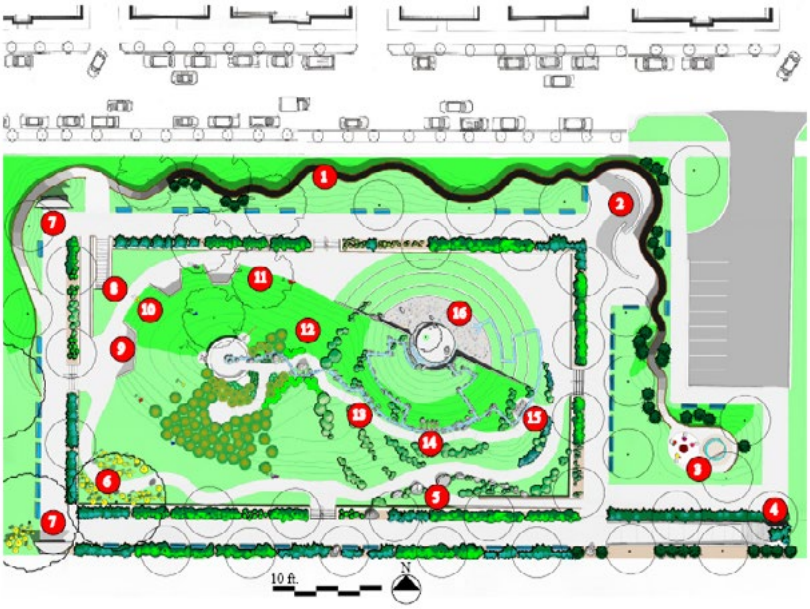

Figure 5. Final project master plan; Image: author.

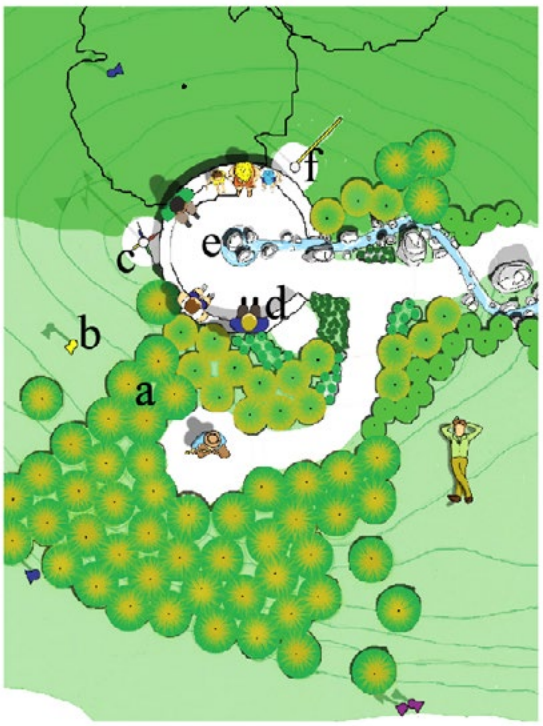

Figure 6. Detail of Wind Hill showing a). tall ornamental grasses, b). Tone Tube (speaking tube), c). musical wind chime sculpture, d). seat wall, e). spring/fountain and f). aeolian harp wind sculpture; Image: author.

1. **Echo Canyon.** This very long feature serves as noise barrier, (New York State Department of Transportation 1998, 3.1.F) site enclosure (to control pedestrian circulation) and acoustical sculpture. As a sound sculpture, the Echo Canyon would function much the same way as does Richard Serra's "Snake" (1997), which serves as a direct model (Figure 7). In *The Sound Book*, Trevor Cox describes his experience inside "Snake":

   Best of all was *Snake*, a work made of three long, tall, twisting metal sheets forming two narrow corridors about 30 meters (100 feet) long. The passageways were only about a meter wide, and resonances across the narrow width colored my voice. When I stood in just the right place, with a flat bit of ceiling high above the sculpture, the sound would ricochet back and forth between the ceiling and floor. Sound would also go along the narrow channel and be reflected from other sculptures at the end, before it returned as a diffuse echo. Stamping my feet on the floor was very satisfying because in just the right place I could impersonate a rifle shot. (Cox 2014, 259)

Figure 7. "Snake" by Richard Serra, Guggenheim Museum, Bilbao, Spain; Photo: myhome-improvement.org.

Like "Snake", the Echo Canyon has tall walls (13'2" for "Snake", 14' for the Canyon), is long (104' compared to 450'), is made of two-inch-thick steel panels which are three feet apart and wavers reducing straight sight lines. (The Solomon R. Guggenheim Foundation 2015) Unlike "Snake", however, the Echo Canyon is buried partially underground with only seven feet of its top half above grade. Access is by an entrance on either end with

descending stairs. For those visitors with claustrophobia or needing access by wheelchair, a shorter, wider, at-grade portion is provided at the far western end. Most significantly, however, is the fact that there is no ceiling to the Echo Canyon, unlike "Snake" in the Guggenheim Museum, Bilbao, Spain. How this may reduce the echo effects experienced by Cox may have to be left to physical experimentation. A top could always be added if necessary.

2. **Whisper Wall.** This is a realization of Trevor Cox's double curved whispering wall (Figure8). (Cox 2014, 175–176) Comprised of two tall, hard concrete arcs, the Whisper Wall allows a speaker or musician at the far interior end of an arc to speak, whisper or play soft music and, out of sight of the listener at the far interior end of the second arc, to be clearly heard only in that spot. It should be noted that this effect might work at several locations along the inner panel of the Echo Canyon as well.

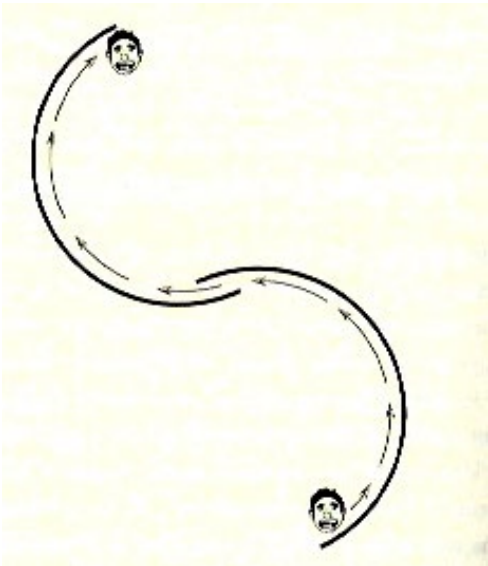

Figure 8. Double curved whisper wall by Trevor Cox; Image: Trevor Cox.

3. **Percussion Circle and Round-Go-Round.** The Percussion Circle is similar to the "Pompano Drum Circle" of Bill and Mary Buchen (both b. 1949) (Figure 9). It can be integrated into site-specific music composition performances or used "off-season" by the general public.

   The Round-Go-Round is a circular musical fence of loose vertical metal rods which vibrate when struck by a percussion mallet or stick and resonate within the horizontal hollow rails on either end of the rods. Each of the 23 rods is pitched to a note of the children's song "Row, Row, Row Your Boat." When someone runs around the outside of the fence rattling the rods with a stick or mallet, the song plays. Because the song is a "round," children can chase each other around the installation starting at different times to create the polyphony of a round or experiment with retrograde musical movement (by running in the opposite direction) or any number of canonic intervals by following the "wrong" spacing.

Figure 9. "Pompano Drum Circle" by Bill and Mary Buchen showing bata, tambor, djembe with seat and earthdrum, Pompano Beach, Florida; Photo: unidentified, sonicarchitecture.com.

4. **Mini-Mayan Pyramid.** A 15-foot-tall stepped wall of hard concrete, 10 feet of which is below grade and approached by a sloping passage. Although a far cry from the much bigger Mayan pyramids that produce the most famous chirp echoes, this 15-foot-high wall may produce a similar effect. (Declercq et al. 2004, 3328) According to Trevor Cox ordinary staircases may produce many different kinds of sonic effects. (Cox 2014, 140–141)
5. **Music Rocks.** Hollow, artificial boulders placed upon resonating chambers will produce pitches when hit with mallets or slapped with the hands. They may be tuned to any kind of scale. The seven rocks closest to the paved walkway may be tuned to a pentatonic C-D-E-G-A-C-E scale, for example. Again, this installation may be used for both specific musical compositions or by the general public whenever concerts are not happening.
6. **Cymbal Garden.** Many suspended cymbals of all sizes can be planted *en masse* under the canopy of the existing mature White Oak trees (*Quercus alba*) so that, in season, falling acorns are sure to hit them creating a random percussion performance.
7. **Sound Mirror-Sound Mirror.** Large acoustical mirrors made of concrete, similar to the ones at Denge, England (Figure 10) which were used to hear incoming aircraft before they could be seen, bookend the western promenade north and south. (YouTube "Sound Mirrors-BBC Documentary" 2015) In performance, one quiet musical sound at the right spot in front of one mirror should be clearly heard at the right spot in front of the other mirror for only one listener at a time resulting in a kind of acoustical induced perspective.

Figure 10. Denge acoustic mirror, Denge, Kent, England; Photo: unidentified, www.karl-davies-talktalk.net.

8. **Sound Cavern.** A large 50-foot-wide, 100-foot-long, 12-foot-high concrete room is buried five feet below grade under the Wind Hill. It is accessed by a subway entrance-like staircase at the northwest corner of the garden. The reverberating and resonating characteristics of large cisterns were used in 1989 by American composers and performers Pauline Oliveros (1932–2016), Stuart Dempster (b. 1936) and composer and vocalist Peter Ward (aka Panaiotis) to record an album of ambient music called *Deep Listening*. (von Glahn, 122) In this situation, however, listening/speaking tubes connecting the Cavern with the surface allow the general public to hear what is going on without having to enter the dark space below. Conversely, the public can also sing into the listening/speaking tubes and hear the effect the Cavern has on their voices as with the Buchen "Listening Dishes" (Figure 11) in Brooklyn, New York. (Sonicarchitecture 2015)

Figure 11. "Listening Dishes" by Bill and Mary Buchen, Brooklyn, New York; Photo: unidentified, sonicarchitecture.com.

9. **Droning Caves.** These are four, four-foot diameter concrete culverts with lengths of 6,9, 12 and 15 feet with one closed end buried into the Wind Hill. Working with the same principle of resonance as John Grayson's (b. 1943) "Big Boomer" installation (Figure 12), people can climb inside the culverts and hum, sing or play instruments which will resonate at frequencies determined by the lengths of each tube according to an acoustical formula. (Grayson 1976, 19–24)

Figure 12. Big Boomers by John Grayson; Photo: John Grayson.

10. **Tone Tubes.** Located around the west end of the Wind Hill are metal "speaking tubes" protruding from the ground and bearing wide trumpet-like bells. (Figure 13) Some of these are paired together with Tubes located out of sight on the other side of the Hill.

Figure 13. Speaking tube;Photo: unidentified, treehouseaccessories.com.

Music or speech sounded into one horn will be heard at the other end. (Wikipedia "Speaking Tube" 2015) Other Tubes are connected to the Sound Cavern below which allow listeners to hear the effects of reverberation on musicians in the Cavern or

which will allow visitors to hear the effects of the Cavern on their own voices (see above). Some of the listening stations feature two horns: one is placed low to the ground for children and wheelchair-bound visitors while the other is at adult height.

11. **Aspen Grove.** Several Quaking Aspen trees (*Populus tremuloides*) form a small grove north of the Wind Hill. This deciduous tree is famous for its rustling and trembling leaves.
12. **Wind Hill.** The Wind Hill is the main topographical feature of the acoustical park although it only rises to eight feet above grade. This is enough, however, to catch the prevailing southwest wind and stimulate wind-powered movement. On the summit there is room for up to three wind-powered sound sculptures. One sculpture is an aeolian harp not unlike American artist Doug Hollis' (b. 1948) "Aeolian Harp" (1976) which stands 27 feet tall and has seven strings attached to metal disc amplifiers (Figure 14).

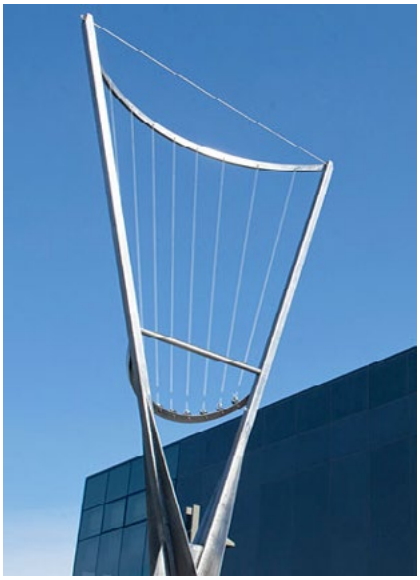

Figure 14. "Aeolian Harp" by Doug Hollis, San Francisco; Photo: unidentified, www.exploratorium.edu.

It is situated at San Francisco's Exploratorium between two buildings forming a kind of wind tunnel through which, in the mid-afternoon, the rising winds are funneled. Says Exploratorium curator Shawn Lani, "That's when it really sings." (Exploratorium 2015) (YouTube "Aeolian Harp" 2015)

The summit and south side of the Hill are covered in plants which are known for making sound in the wind: Love-in-a-mist (*Nigella damascene*), Blue False Indigo (*Baptisia australis*), New Zealand flax (*Phormium* 'Yellow Wave'), Quaking grass (*Briza maxima*) and Plume grass (*Saccharum ravennae*). (Figure 15) A flat, circular, open area provides musicians and visitors a place in the middle of tall Plume grass to enjoy the sounds of the wind in the grass.

Figure 15. Plume grass (*Saacharum ravennae*), Photo: unidentified. www.missouribotani-calgarden.org.

13. **Music Mill(s).** Placed along the stream running down from the "spring" on the summit of Wind Hill is one or more Music Mills, a kind of waterwheel-powered music box, as built by traditional woodworker Roy Underhill (b. 1950) and demonstrated in the season five episode 11 PBS broadcast of "The Woodwright's Shop" (1985) (Figure 16). (YouTube "Music Mill" 1985)

Figure 16. Music mill; Photo: unidentified, www.shopwoodworking.com.

The shallow stream moves water wheels which turn, lifting hammers via a rotating drum with pegs in the fashion of a music box. The hammers fall back when released, tapping tuned glass bottles. A simple wooden toggle can be used to prevent each water wheel from turning thus silencing them if they are not needed in a performance. By adding or pouring water out, bottles can be custom tuned to any composition.

14. **Stone Tappers.** Several Japanese *sozu*, sound-producing water features found in many Japanese gardens, form an ensemble of water-activated, random stone tapping percussion instruments (Figure 17). Water from the stream trickles through openings in its side, flowing into the up-ended hollow bamboo (or PVC pipe) tubes of each "deer chaser" (*sozu*). When the weight of the water in each tube shifts the tube's balance point, the tube tips down emptying the water into a secondary sluice. The empty tube then flips back to its upright position tapping a stone at the tube's heavy lower end in the process.

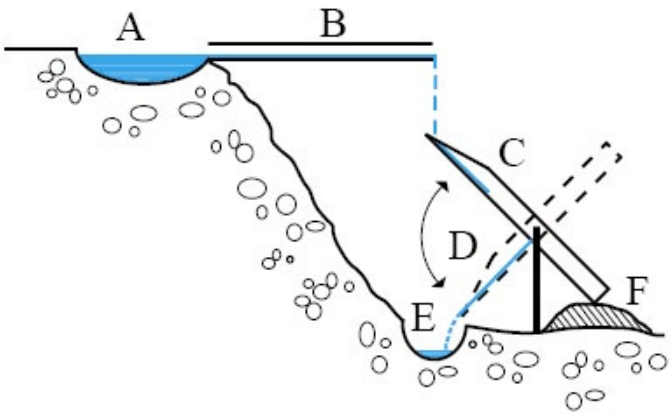

Figure 17. Diagram of *sozu* showing stream (A), PVC pipe (B), which drips water into up-ended bamboo tube (C), which tips down (D) when heavy emptying into drain or sluice (E). Empty unbalanced bamboo tube tips upright striking lower end on stone (F); Image: author.

As these tapping sounds can be quite loud and audible from "about 100 feet away," (Bier, James in conversation with the author, 2015) a mechanism such as a toggle can be used to prevent each *sozu* from tipping and therefore turn off the instrument when more quiet is needed.

15. **Water Organ.** When stream water reaches this station, small gates can be lifted allowing water to flow into gravel filled boxes with tuned pipes inserted vertically (Figure 18). The water displaces air in the gravel which, if tightly covered, forces air into the pipe sounding a pitch. A second latch is opened allowing the water in the box to drain out restoring air to the box.

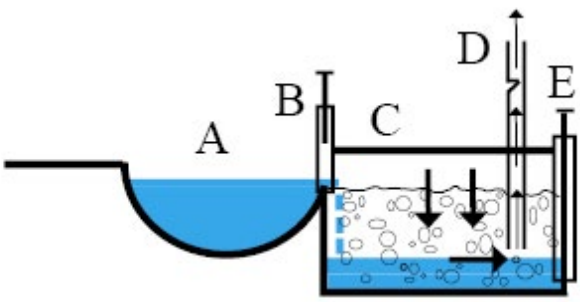

Figure 18. Diagram of water organ showing stream (A), gate (B) which allows water into airtight chamber (C). Water pressure forces air into musical pipe (D). Gate (E) drains water from chamber after pipe sounds; Image: author.

This is a simplified model of the great Renaissance water organs, the most famous of which is the one at Villa d'Este in Tivoli central Italy (1572), designed and built for Cardinal Ippolito II d'Este (1509–72), and was apparently programmed to play "madrigals and many other things" (Figure 19). (Jeans and Ord-Hume 2015)

Figure 19. Water organ at Villa d'Este, Tivoli, Italy; Photo: unidentified, https://quietcassandra.wordpress.com.

16. **Double Amphitheater Water Basin.** Run-off from storms as well as all the stream water empties into the gravel-filled basin at the lowest level of the double amphitheater. A pump buried below returns most of the water to the fountain "spring" at the top of Windy Hill. In addition, several *suikinkutsu*, Japanese water pots of various sizes, are also buried under the gravel. After water drains into the holes at the top of each ceramic pot, it drips into a pool contained within and resonates within the chamber (Figure 20).

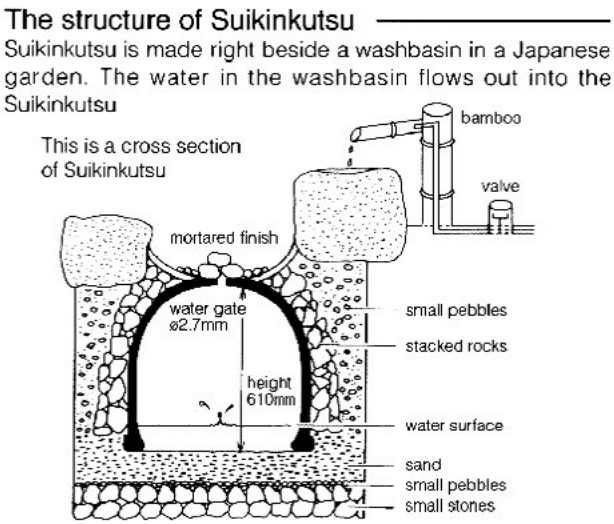

Figure 20. *Suikinkutsu* diagram; Image: www.ceramicstoday.com.

English musician and composer Jem Finer (b. 1955) designed and built an installation in the woods of Challock, Kent, England, directly inspired by the rain-induced meditative sounds of the Japanese *suikinkutsu*. Called "Score for a Hole in the Ground" (2006), it consists of a 21-foot-deep concrete well, seven feet in diameter, containing suspended metallic percussion instruments such as discs and bowls which chime and reverberate when rain water or water from a small constructed supply pond drips on them from above. The shaft is covered by a metal perforated cover. Standing high above the buried chamber is a 21-foot-tall metal gramophone-like acoustic horn to amplify the sounds underground (Figure 21).

Figure 21. "Score for a Hole In the Ground," Challock, Kent, England; Photo: unidentified, www.scoreforaholeinthegroundground.

(Finer 2015) Finer describes how Nature "plays" the installation, "Weather changes the music. In a torrential downpour it reaches a crescendo, while the summer's drought rendered it silent, save for the effects of the breeze gently brushing the instruments as it eddies around the chamber. It becomes one with the climatic forces of the forest, relying purely on gravity, water and wind for its energy." (Finer 2006) Several dozen buried echo chambers in the double amphitheatre would have quite a similar effect.

With the design of the sound garden/acoustical park completed, it is now time to consider the composition of music for this specific site and its designed acoustical properties.

3. Site-Specific Music Composition and the Soniferous Garden

In composing music for outdoor places with designed acoustical properties, there are several important pre-compositional factors to be considered which would probably not affect the composer of indoor concert music. Once these have been taken into account the actual composition may begin.

3.1. Acoustical Alignment

In landscape design, architecture and art, visual elements are sometimes arranged such that when viewed from a particular pre-determined angle the elements seem to come together or are aligned. In French Baroque landscape, allées and sight lines are used to draw attention to distant objects and extend the illusion of great space (Figure 22). (Pregill and Volkman 1999, 236)

Figure 22. View from Hercules to the Chateau de Vaux-le-Vicompte, Maincy, France (17th century); Photo: unidentified, journals.worldnomads.com.

In English landscape of the picturesque, points of interest within the garden are framed by structures or plantings to direct the eye that way (Figure 23). In Japanese landscape, the artificial garden design incorporates distant natural scenery for a "borrowed landscape" (*shakkei*) when viewed from one pre-determined viewing station (Figure 24). Architecture, too, draws connections between the structure and distant natural objects as in the astronomical alignments of Stonehenge and in Xenakis' architecture. (Xenakis 2001 23, 49–50)

Figure 23. Framed view of the Rotunda at Stowe House, Stowe, Buckinghamshire, England (18th century); Photo: unidentified, www.geograph.org.uk.

Figure 24. View of Adachi Museum garden (20th century), showing borrowed landscape of distant mountains, Yasugi, Shimane Prefecture, Japan; Photo: unidentified, bonsaiunearthed.com.

Marcel Duchamp's (1887–1968) *Étant donnés* (1966) is an example of art restricted to just one viewer at a time, being a painting viewable only through duel peep holes (one for each eye) in a wooden door (Figure 25). (Philadelphia Museum of Art 2015)

Figure 25. "Étant donnés" (1966) by Duchamp showing door with peepholes (left) and view through peepholes (right); Photos: www.philamuseum.org.

For the sound garden/acoustic park design presented in this paper, alignments are of an acoustical nature and can be separated into two distinctly different types: acoustical alignment and acoustical induced perspective. Acoustical alignment in this case is when a performer connects musically with an off-site sound source such as a carillon or passing train. The connection can be imitative or accompanimental and can be heard, if not everywhere in the park, at least from whole areas as the sounds are dispersed and not focused. There are several opportunities for acoustical alignment in this paper's master plan as identified on the acoustical site survey map above (Figure 4).

3.2. Acoustical Induced Perspective

Acoustical induced perspective is different from acoustical alignment in that acoustical induced perspective requires that in order for a particular sound to be heard best or at all, both musician and listener must be in specific locations. The sound is focused to one point. Examples of acoustical induced perspective are the whisper wall and acoustical mirrors above (Figures 8 and 10). It will be noticed that acoustical induced perspective is exactly analogous to forced perspective in landscape where only one or a very few people at a time can experience a given view.

3.3. Acoustical Dispersal

One of the problems of playing music outdoors over a large area is that musical sounds do not always carry well or evenly, depending upon the loudness of the instrument and atmospheric conditions such as temperature and wind. If instrumentalists and vocalists are spread out over a large area they may never hear each other and the audience may never hear all the performers. This is one characteristic of Robert Morris's *Playing Outside* mentioned in the Introduction. The composer of music for any large outdoor place must decide if this characteristic will be a disadvantage or an advantage to the musical experience.

3.4. Flexibility

One of the ways that performing outdoors can be challenging is in all the uncontrollable things that can happen: rain, wind (when one doesn't want it or no wind when one does), passing vehicles, acoustical dispersal (above), heat, cold, animals, etc. Sonic events that are supposed to occur on a predictable schedule (trains, planes, carillons, etc.) may be early or late for their "entrances" or never happen. For these and other reasons the composer and musicians need to decide how flexible the music will be to accommodate such an organic performance. Flexibility can be produced by levels of improvisation, a score which allows for "vamping" and indeterminate notation and graphic scores.

3.5. Coordination

Another challenging aspect of outdoor performance, especially for musical forces spread out over wide areas or in places which obscure sight-lines, is how to synchronize performers with each other and with sonic events. Robert Morris solved this problem by having each group follow stopwatch timings for general coordination, such as when different groups should gather by the flagpole. (Morris 2001) Nevertheless, each group was musically independent of other groups. R. Murray Schafer conducted his *Music for Wilderness Lake* (1979) from a floating raft using colored signal flags. (Schafer 1979) In this case all the musicians could see the conductor. Each composition for the sound garden/acoustic park presented in this paper will have to be carefully considered with this in mind. Ideally, the composer should visit the site beforehand, but because this is not always possible, a good description of sight lines should be included in the site plans for composers. Once the site is actually built, such specifications can be better calculated.

3.6. Number of Elements

The composer will also need to decide how many of the given acoustical elements in the landscape design to use. A composition for large forces may use nearly all available acoustical elements while a solo instrument piece may only use one (a solo for flute with music mill accompaniment, for example). One must be careful, of course, not to become so diverse that the music loses its coherence (the "kitchen sink" syndrome).

3.7. Instrumentation

As with all composition, how to score a work is an important consideration. For a sound garden/acoustic park design, however, some additional consideration may be necessary. For example, should the composer try to match timbres with known sonic effects such as mooing cows or rustling grass? Should the composer try to dominate the space with "outdoor" instruments such as brass and marching percussion or risk having a violin and flute duo obscured by the wind? Will a light rain shower damage an instrument? These questions will have to be answered before composition can begin.

For the purposes of this paper a number of assumptions have to be made since the actual site does not yet exist: actual pitches of airplanes have to be imagined, schedules of trains and carillons are fictitious and precise effects of the echo canyon can only be extrapolated from what little is known of its model. Once the site is actually built, experimentation will fine tune many acoustical effects and precise transcription will capture actual pitches, rhythms and timings which will be described in the design plans for composers without access to the site to accurately write high-order site-specific music for this place's designed acoustical properties.

3.8. *Trio for the Wind*

One possible example of site-specific music for this paper's hypothetical outdoor space is *Trio for the Wind* (Figure 26) for flute, shakuhachi, glockenspiel and the site's acoustical amenities of two sound mirrors, tall grass and a musical wind chime sound sculpture. This small-scale "chamber" work illustrates the idea that not every acoustical aspect of the site needs to be used all the time. It also demonstrates several of the above listed acoustical and compositional considerations. For example, the flute's use of the sound mirrors to project sound to one specific spot which can only be occupied by one or very few listeners at a time demonstrates acoustical induced perspective.

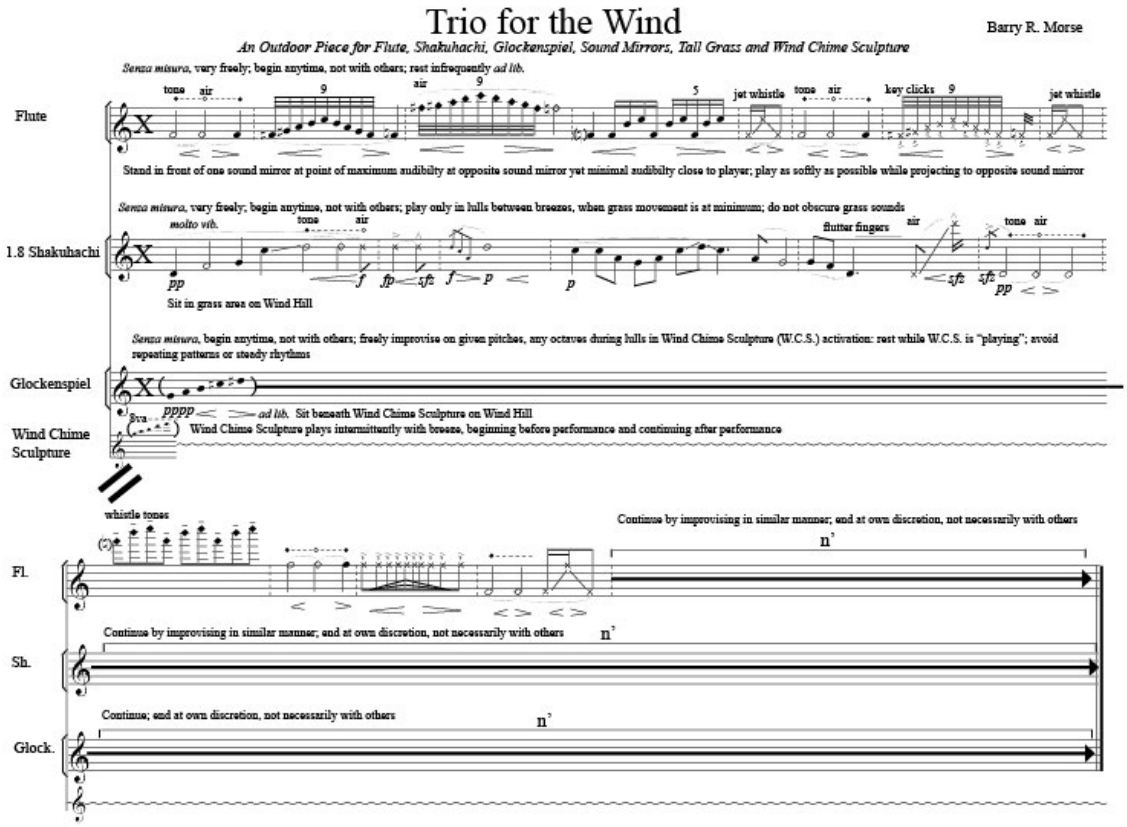

Figure 26. A Site-specific music composition for an outdoor space with designed acoustical properties; Image: the author.

The generally quiet nature of each instrument and their physical separation in outdoor space (especially considering the use of sound mirrors' acoustical induced perspective) create acoustical dispersal which, when combined with the possibility of poor sight lines among players, can present performance problems of coordination. These were solved in *Trio for the Wind* by allowing each player total freedom from any synchronization whatsoever including starting and ending times. Instrumentation as well was partly determined by the sonic elements in the landscape: a breathy shakuhachi to interact with the ebb and flow of wind in the tall grass and the metallic bells of the glockenspiel to extend the (assumed) metallic tones of the wind chime sculpture into performed music. It should be noted that

this piece is also weather dependent: it should only be performed when breezes will rustle the tall grass and move the wind chime sculpture in waves.

Larger, more involved compositions can draw upon more acoustical properties of the site. Nevertheless, even small pieces such as *Trio for the Wind* can be composed to be entirely high-order site-specific to this one physical location.

4. Conclusion

Why do people create site-specific art? This is difficult to say on an individual basis unless artists come forth with their motivations. Some general categories of site-specificity, however, might shed light on artistic reasons and show commonalities among examples. One noticeable feature of site-specific outdoor music is the relatively high number of Canadian composers involved (Schafer, Westerkamp, Truax among others). What is it about this genre that attracts so many Canadians? In the book *Canada and the Idea of North*, author Sherrill E. Grace explains that R. Murray Schafer's motivation is to create "a Canadian music shaped by climate and geography," which, for Canadians, is embodied in the idea of "our nordicity as inherent in the natural environment." In other words, living as intimately to such a vast wilderness of cold, silent, empty expanses, some Canadian composers naturally will use that unique resource to inform their musical character. (Grace 2002, 136)

Another reason for using specific locations for performance could be social/historical/institutional criticism. According to art curator and educator Miwon Kwon, " [T]he possibilities to conceive the site as something more than a place – as repressed ethnic history, a political cause, a disenfranchised social group – is a crucial conceptual leap in redefining the 'public' role of art and artist." (Kwon 1997, 96) Meredith Monk feels this impetus about her *American Archeology No. 1: Roosevelt Island*: (1994)"This is a young country...We have a sense of the future, of speed, of not having to carry around on our backs a lot of the past. That leads to a fragmented and violent contemporary reality. The present moment has to incorporate the past. This is my attempt to do something about it, I guess." (Dunning 1994)

For others, site-specificity in relation to a building might be inspired by the idea of sonically extending the architecture. The various works of Henry Brant come to mind, especially when considering his attempts to design a special acoustical theater. (Brant 2002)

My own motivation for creating high-order site-specific music composition for acoustically designed landscapes lies in fascinating discoveries in the new field of acoustical archaeology. In his book *Stone Age Soundtracks*, researcher Paul Devereux discusses the role of natural acoustical effects and Paleolithic music ritual performed in the landscape and constructed spaces: "Indeed, in the light of the long prehistory of human interaction with sound, it becomes unreasonably conservative to doubt that there would be important

acoustic aspects to megalithic monuments, or that the dramatic resonance of caves would have been ignored by Stone Age people." (Devereux 2001)

Could it be that the accidental discovery by early people of naturally occurring acoustical effects in the landscape, believed to be "magical" and thus of special significance, actually encouraged the development of human vocal and instrumental interactions with them later known as music? If this hypothesis is true then site-specific music composition for the soniferous garden brings us full circle, after 100,000 years, back to the fusion of music and landscape.

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Sound, Heritage & Homelessness

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ABSTRACT: This paper presents early findings from an on-going research project, through which I am exploring sounds and ways of listening at a London shelter for homeless people. In detailing and discussing my research process and the data this has yielded to date, I argue that a focus on the circulation and transmission of particular modes of listening (auditory heritage) may offer researchers valuable insights into the ways in which social injustice is produced and perpetuated.

KEYWORDS: sound, heritage, homelessness, voice, listening.

In the call for submissions for this year's Invisible Places conference, the organizers appealed for participants to take a leading role in the "focused study and intentional stewardship of our sound heritage". They also expressed interest in hearing about works through which the study of soundscapes achieves or aims at achieving a particular social or political intervention. Responding to both these aspects of that call, this paper represents a first attempt to discuss findings from an on-going research project, through which I am exploring what I term the 'auditory heritage' of homelessness.

Since June 2016 I have been working with guests, volunteers, staff and other visitors at a London homeless shelter, trying both to understand the ways in which sound might feature in and shape daily life for homeless people, and to map the routes through which homelessness is made audible to the broader public. In laying out the project here, I have two main intentions. Firstly, I want to argue for an expanded understanding of the term 'heritage', particularly as it has been applied to sound, and to think through some of the potentials that close listening through a heritage framework may hold in store for activists engaging with a range of social issues. This I will do, in particular, through a discussion of the notion of auditory heritage; that is, the very old idea (rebranded for heritage purposes) that each of us inherits and brings to bear on the world a mode of listening shaped largely elsewhere, over time, by other people. (See Feld [1996], Stoever [2010], Back [2011], Abu Hamdan [2014], Iscen [2014], Peake [2014] for a range of perspectives on how, as Francois Bonnet [2016, 4] puts it, our ears are always operating "under the influence".)

My second aim, since, as I mentioned, this is very much work in progress, is to court criticism and feedback as I look to refine a methodology to take the project forward. I want particularly to think about some of the ethical issues raised by the work. Does my focus on homelessness in the context of research that is largely about sound and heritage merely instrumentalise homeless people for the purpose of marginal academic or industry point scoring, and if so, should I call the whole thing to a halt? What I hope, on the contrary, is that the data I present from my work will confirm both the value of engaging with sound across an ever-expanding range of social and political contexts, and the importance, too, of complicating and claiming terms like heritage for activist ends.

Writing from within my home discipline of heritage studies (wherein methods drawn from anthropology, archaeology, cultural geography and cultural studies are deployed in analysing how the past is actively created and used in the present), I very often find myself asking (and in turns frustrated, bored, or fascinated by) the question: what is 'heritage?' What value is the word meant to signify? Is it in any way different to 'culture'? What, for example, is the 'sound heritage' alluded to in the IP2017 call for papers? My sense, with regard to this last question, is that the organizers were referring to a primarily natural resource of sounds. Whatever the case may be, however, all of these questions are virtually immaterial unless one stops to ask what work it is that the idea of heritage really

does on a social level. In addressing this issue, numerous scholars engaged with heritage have emphasised how the work of listing, preserving and interpreting cultural and natural environments and objects enacts a kind of soft power. To designate a particular cultural practice, object, or environment as heritage is to engage in a twofold process of inclusion and exclusion, to celebrate on the one hand, and to cast aside, on the other.

Most often, the heritage industry applies itself to a very narrow range of materials. Critic Laurajane Smith has coined the term Authorised (or Authorising) Heritage Discourse (AHD) to refer to:

> a professional discourse that validates and defines what is or is not heritage [...]. This discourse emphasises the authority of experts to act as stewards for the past and its heritage, but also defines heritage as innately material, if not monumental, aesthetically pleasing and as inevitably contributing to all that is 'good' in the construction of national or group identity. The universality of heritage values tends to be taken for granted, as, too, is the assumption that heritage is intimately linked with the expression and manifestation of 'identity'. (Waterton and Smith 2010, 12)

The link Smith makes here between the concepts of heritage and identity is an important one, and its significance is stated nowhere more clearly than in the work of Stuart Hall. "We should think of The Heritage as a discursive practice," Hall writes. "It is one of the ways in which the nation slowly constructs for itself a sort of collective social memory [... and it] follows that those who cannot see themselves reflected in its mirror cannot properly belong" (1999, 4). Also helpful, I think, in understanding the social function of heritage, and in linking this back to the aesthetic and the sensory, is the distinction Jacques Rancière draws between politics and the police, wherein the police describes a certain highly resilient ordering and distribution of ways of being and sensing, and politics consists in acts so powerful as to disrupt, supplement and reconfigure that order. Crucially, in this analysis, much of what normally goes under the name of politics is considered a part of the police: a system, which far from effecting meaningful change, serves habitually to reinforce perceptual, behavioural, and discursive norms. I propose that we understand heritage as belonging to the class of bodies and agencies that constitute and patrol the police order, and that therefore dictate, as Rancière puts it, the extent to which "a particular activity is visible and another is not, that this speech is understood as discourse and another as noise" (1999, 29).

At this point in my discussion, my purpose for engaging with homelessness through the framework of heritage will hopefully be becoming clearer. Along with others, including contemporary archaeologist Rachael Kiddey (2013, 2017), and Jessica and Matt Turtle who are working in London to establish a Museum of Homelessness, I want to position home-

lessness as heritage for two reasons. Firstly, the concept of heritage, and the industry and networks that have built up around it, represent valuable vehicles through which marginalised people might achieve social recognition and inclusion. Secondly, by juxtaposing homelessness with the range of objects, edifices and environments more usually thought of as heritage, I hope to play some part in disrupting the self-aggrandizing, self-congratulatory narratives that heritage traditionally spins, and which make widespread public satisfaction with a rotten status quo just that bit easier to comprehend. Homelessness, after all, is an enduring social ill, perpetuated by ingrained social inequality, and as such it has many monumental properties of its own. In this sense, it is not so very different to more classical heritage objects: Stonehenge, for instance, or the Great Barrier Reef.

Speaking on the disruption of longstanding norms in heritage practice, it is time now that I said something about sound. One of the most notable developments in heritage practice in the past decade has been an increase in engagement with the sensory, and with sound in particular (see, e.g. Kytö et al. 2012, Benjamin 2014, Schoer 2014, British Library 2015, Kannenberg 2016, Mansell 2016). This is to be welcomed; however, as I have argued elsewhere (Tourle 2016), a concerning feature across much of this engagement has been a reliance on archival methods and the preservation of sounds, over and above any concerted examination of practices of listening. I adopted the term auditory heritage in order to describe a set of perceptual biases, shaped and transmitted through time that come now, in the present, to define the way in which we hear or are able to listen to various sounds. At the time, this was part of an effort to show that heritage professionals themselves seem to have a particular way of listening to sounds, a way of privileging the natural, and ignoring more political aspects of the sonic environment. Nevertheless, I think that the concept of auditory heritage can have many more positive uses beyond critiquing archival practices. In much the same way as I feel it would be helpful for heritage institutions that work to shape public understanding of culture to engage with homelessness as heritage, so too I think it would be valuable for them to look in the same way at the perceptual norms that dictate public engagement with homelessness and in so doing work to perpetuate it.

This brings me to a discussion of my research project. As I mentioned above, the project is based at a shelter for homeless people in London, and has been underway for around nine months. During that time I have drawn upon a range of methods in trying to investigate the significance of sound in the lives of guests living at the shelter, and to understand the various modes of listening deployed there. Having begun initially by making informal observations in my capacity as a volunteer, I moved on to hold a series of workshops mapping and discussing shelter sounds. Later I organised a sound walk around the local area, and more recently I have been working to produce collaborative audio documentary pieces with guests, providing handheld digital recorders to participants. As of December, I have been conducting further interviews with members of a film crew that visited the shelter late last

year to produce a television advertisement for one of its sponsors. Within the confines of this paper, it is not possible to attempt a full discussion of the findings these various forms of research have yielded. I will therefore focus on examining only a few key themes which have emerged so far, and which I intend to explore further going forward. The first of these relates to voice.

I had been visiting the shelter for around three months, gradually getting to know some of its guests, when I made my first attempt to gather together a group to work as partners in the project. I explained the nature of my plan to anyone that showed an interest, handed out fliers, and eventually assembled six guests after dinner one Tuesday evening for a launch workshop. "What are we going to be talking about?", asked Linda, one of those assembled. "It could be any sounds at all that you find interesting," I replied; "the sounds of the building, of your day-to-day life, work, voices even...". "Not your voice, I hope", she shot back. "It'll make people want to kill themselves... it's so monotone, so boring." For a split second, as she said this, Linda's face was poker straight, then moments later it relaxed into a triumphant grin. I was relieved; better to be the butt of a joke than to actively incite suicide. Nevertheless, there was something very troubling about having my voice scrutinised in this way, and it gave me pause for reflection. How did I speak to the homeless guests I met at the shelter, how about the other volunteers, and the staff? Was it the same voice I use when I speak with other people, and, in all seriousness, what was it like to have to listen to me?

The more I reflected on this, and the more I listened to others going about their work in the shelter, the more it seemed that there was something either empty, or if not altogether empty, then premeditated in the voices that volunteers in particular inflicted on guests. It is a somewhat lost voice, one that aims at neutrality, seeking to disguise any sense of judgement, and that seems laced by default with a rather falsely cheerful sympathy. It is very difficult I think to analyse such a voice objectively, or to say where it comes from. My sense, however, is that it is a voice that I did put on, and which I now try hard to take off. I would say I realised when Linda called me up on it, that the voice in question is one addressed to a cause, a malady, or an affliction, far more than it is to an individual; as if I was speaking to homelessness or to a homeless person (and to all the preconceptions I have about how a homeless person thinks, feels and acts) rather than to a person first and foremost. I discussed this with the shelter's founder and manager, and she agreed that there was something in the voices: a degree of performativity that coloured most interactions. For her part, she described a voice she uses herself, drawn straight from a rich back-catalogue of stern, and overbearingly matronly female characters of the kind that populated BBC television and radio throughout the last century. This is a voice that grants a degree of control and necessary emotional distance in a context where guests are often highly vulnerable and prone to becoming attached to caregivers. In this sense it might be

thought to embody a dual heritage, functioning both as a sonic trace of social neglect, and as an echo of female typecasting throughout media history.

Building on the theme of voice, but branching out also to consider elements of the physical infrastructure of the shelter, I found in workshops, as well as through discussions with other volunteers, that there a range of key sounds that contribute to the production of a familiar shelter soundscape. One approach I took to mapping sounds with guests was to try to chart out a timeline of common sounds heard at different times of the day. Unsurprisingly, given that guests live in shared dorms with up to 15 beds in each, the sounds of snoring featured heavily in our early discussions around this theme (a rich topic in and of itself). Eventually, however, we moved on. Janek, who himself admitted to being a snorer, was eager to talk about his friend "Tony 7:30", so called because, each day, volunteers working the morning shift would call in to his dorm to try to wake him ahead of the other guests. 'Tony! 7:30! Wake up!' As a heavy sleeper, Tony takes longer than others to get going.

What was telling about Janek's anecdote was the way in which it led other guests to list the various other, mostly gentle, commands that structure their days, week in, week out. "WAKE UP, TIME TO GO!", first thing in the morning; "DINNER!" at half past seven every evening; on a good day, "SECONDS!", half an hour later, and so on, every day. Though there is very little aggression in shelter life, there is an inescapable, and largely unavoidable violence in the mode of collective address necessarily used to run an operation like the shelter efficiently. This is a problem, which manifests itself in the very fabric of the building, too. Never designed for domestic use, the shelter is based in a converted light industrial unit. Everything is upscale, from the number of bedsprings creaking in the night, to the kitchen ovens and extractors, whose roar fills the building when evening meals are being prepared, to the bank of oversize washing machines parked in a room adjacent to one of the men's dorms. For those guests sensitive to sound (and there are many who are), life on this scale provides little opportunity for peaceful rest. Headphones are a common sight, and as Léon (another guest) explained, he found it impossible to get to sleep without them.

As the series of workshops and discussions I held with guests wore on, we talked increasingly frequently about the importance of peace and quiet. We began to map the places where such a precious commodity could be found. Mary, a young woman, who like 30% of the shelter's guests is working full time but unable to afford to rent in London, described her walking route back to the shelter, which passes through the middle of the city. Very often, she said, she would stop off at the British Library on her way, not to go in, but to sit in the square outside, knowing that she would not be disturbed. Other guests described circuits around favourite parks, or visits to particular churches made for similar reasons. Thinking about homelessness as cultural heritage, one might conclude that it is marked as much by a series of absences as by anything else. A shortfall in welfare provision traceable to inherited notions of what constitutes economic good sense, long histories of underin-

vestment in health and other support services that push people with illnesses out onto the streets, and most pressingly a lack of space, whether in the form of social housing or of protected public land. For Mary, the British Library has less value as a seat of culture, than as a tract of land protected for public enjoyment. The steady if waning investment that organisations dedicated to preserving heritage have enjoyed over the past century pays off in the form of a quiet half hour; a sonic heirloom in the midst of half the world's accumulated knowledge.

As I draw to a close, I want to focus explicitly on the themes of audibility and ways of listening that I introduced above. In the most recent phase of my research at the shelter, I have begun distributing digital recorders to guests in order that they might record any sounds they deem to be significant. This is a way of trying to understand in what ways people experiencing homelessness may come to share a way of listening to the world around them, with the long-term plan behind the project being to produce collaborative audio pieces that might be exhibited and interpreted, particularly within heritage contexts. This work has yet to come to fruition, however, and so for the time being, this paper is all the work there is to show from the process. My voice, deeply inadequate for the task of communicating the experience of homelessness, can yet gain access to certain audiences, such as this one, and is able to talk about the work. Moreover, in the future, it is my aim to work more equally with the guests I collaborate with, in order that we might jointly present the knowledge we have produced together. Generally speaking, though, communication about homelessness in society circumvents homeless people altogether.

In the time that I have been visiting the shelter, its team has taken significant steps to raise the media profile of the organisation in an attempt to attract very necessary funding. Always, however, this process carries with it the risk of misrecognition. Just as when I first arrived at the shelter I found myself listening out for many of the wrong things, and shaping my voice to express sympathy for a weight of experience I had yet to come terms with, when media agencies approach the shelter, it seems they only ever come with one thing in mind. 'They want to see the track marks, the scars', as the shelter's manager puts it. The search for funding puts charities like the shelter I visit in a difficult position. Where government funding comes with ethical strings attached (for example, the obligation to assist the home office in border patrols), seeking publicity through the media means exposing guests to broadcasters, advertising firms and brand agencies who long before they arrive on site, know exactly who and what they are listening for: a redemption narrative; a tale of hard luck, not systematic social failure; something that will sound good cut against a melancholy piano track. The pursuit of social justice must of necessity take many forms; for those of us engaged with sound, however, I suggest that a critical examination of modes of listening is a good place to start.

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Sounding Natural History

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ABSTRACT: Tracing instances, object specimens, potentials and practices wherein the fields of sound art, sound studies, science and natural history are either entangled or at stake, this paper attempts to navigate ways in which underwater sound is converted into what Stefan Helmreich terms a "scientifically, technologically, and epistemologically apprehensible zone." More broadly, the paper investigates how nonhuman sound production and reception extends the notion of hearing beyond audition and where (nominally) "mute" natural matter might transmute into "things that talk" through mechanisms of sounding or notions of ecological auscultation.

KEYWORDS: Multispecies ecology, underwater audition, ocean acidification, bioacoustics, sensory realities, prostheses, auscultation, unsound.

A version of this paper was delivered at Sound Art Matters, Aarhus University, June 4, 2016.

To what extent are etymological, material and metaphorical entanglements between water, sound and hearing meaningful alongside evolutionary chronologies and actual physiological mechanisms in querying normally landed or "terracentric"[1] paradigms of sound and human voice propagation?

That mechanical wave transduction takes place within the *spiral*-shaped cochlea and watery endolymph of the inner ear, also known as the organ of Corti – named after Latin cochlea for "snail shell" and Greek *kokhlias* for "spiral," related to *konhkos* for "mussel, conch" – might imply that the very mechanisms of hearing itself, at least in their otological or ear-based dimension, are materially entangled with the figure of the spiral and water. Evolutionary biologist Lynn Margulis advanced a theory of symbiogenesis in which the human senses evolved from a once freely swimming, spiral-shaped bacterium called "spirochete," rather than from mitochondria or chloroplasts. She posited that cilia, tiny hair cells at cells' edges, which enable the mechanosensory functioning of vision, smell, touch and hearing in humans, are the result of infolded and invaginated spirochetes: instantiations of *bio-chimerical* compounds.[2]

Moreover, in that the perception of "sound" results from operations of physiological transduction of vibrations into nerve impulses or "action potentials" – except in instances of hypersonic effect or auditory hallucination, where sound is perceived without auditory stimulus – it could be proposed that "sound," so-called, is a biological imaginary, always co-produced by a sensing agent. In *Elements of Physiology*, published between 1834–1840, Johannes Muller (a mentor to Hermann von Helmholtz and Ernst Haeckel, and who favored fish and marine invertebrata in his research) provoked that "without the organ of hearing with its vital endowments, there would be no such a thing as sound in the world, but merely vibrations."[3]

Muller's statement is not strictly true, for as anthropologists Michele Friedner and Stefan Helmreich convincingly argue, "far from being peripheral, sound also penetrates deaf worlds" through alternative modes of sensing, both analogue and bionic. Yet Muller's assertion retains validity in underwater realms where, for humans, conditions of habitation and communication are paradigmatically "other" to those on land and above water. Indeed, humans, unlike highly adapted marine species with still external cilia, are effectively "deaf-mute" in underwater contexts – where sound waves propagate four times faster than in air – for the reason that human eardrums are too akin in density to that of water, and where

1. Philip Steinberg, "Of Other Seas: Metaphors and Materialities in Maritime Regions," *Atlantic Studies* 10(2013): 159.
2. Stefan Helmreich, *Sounding the Limits of Life: Essays in the Anthropology of Biology and Beyond*. (Princeton, NJ: Princeton University Press, 2016), 175.
3. Cited in Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction*. (Durham, NC: Duke University Press, 2003), 11.

vocalizing would require the skilled manipulation of air pressure shifts, bubble noise, and bone conduction.[4]

Prosthetic technologies of transduction must, therefore, serve as substitute ears (and eyes) as underwater realms are, according to Helmreich, "not immediately a soundscape for humans because it does not have the spatiality of a landscape; one might, rather, think of it as a zone of sonic immanence and intensity: a soundstate."[5] As such, these spaces must be transduced into a "scientifically, technologically, and epistemologically apprehensible zone,"[6] and always as what Philip Steinberg dubs a *more-than-human* assemblage.[7] But how can the various sounds and "inaudible sonorities"[8] of natural, nonhuman agents and forms of life be transduced into audibility as voiced biophony in order to become "apprehensible" to publics not underwater – such that natural agents might themselves articulate conditions of climatological change? Can *re*-sounding "natural histories" of hearing through attunement to aural nature create openings for an inaudible auditory culture, or a multispecies ecology of audition?

To attend, as humans, to the mechanisms of sound production and reception in marine species themselves, "from molecular perceptions to molar perceptions,"[9] and hearing always already as a threshold condition boundaried by heterogeneous points of entry and exit, motivates the enactment or *inhabitation* of a perspective – a *habitus* – that is, I argue, (generatively) *hard-of-hearing*. Drawing upon this perspective, this paper will attempt to frame artist Jana Winderen's sonic output in terms of the complex modularity of listening and attunement elicited through her practice of underwater sound recording over time, which gathers a variety of auditory knowledges around itself, as an operative, alternative metrics for "sounding" usually unsounded dimensions of paradigmatic environmental shifts – and for theorizing the "un" in unheard, unexplored, unsound and underwater. It may even generate legal potentials.

Throughout, I am particularly interested in the conjunction that Friedner and Helmreich assert between the disciplines of sound studies and deaf studies in their co-authored essay "Sound Studies Meets Deaf Studies" (*Senses & Society*, 2012). I propose a further connection to ocean studies, especially in relation to ongoing, accelerated changes to the undersea sonic environment caused by ocean acidification; shifts which might be read productively against a discourse of disability studies and "impairment" vis-à-vis a variety of detrimental effects on marine species' own auditory apparatuses and sensory systems.

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4. Stefan Helmreich, *Sounding the Limits of Life: Essays in the Anthropology of Biology and Beyond*. (Princeton, NJ: Princeton University Press, 2016), 143–149.
5. Stefan Helmreich, *Sounding the Limits of Life: Essays in the Anthropology of Biology and Beyond*. (Princeton, NJ: Princeton University Press, 2016), 143.
6. Ibid., 137.
7. Philip Steinberg, Of Other Seas: Metaphors and Materialities in Maritime Regions, *Atlantic Studies* 10(2013): 159.
8. Eleni Ikoniadou, *The Rhythmic Event: Art, Media, and the Sonic*, (Cambridge, MA: The MIT Press, 2014).
9. Gilles Deleuze, *The Fold: Leibniz and the Baroque*, trans. Tom Conley, (Minneapolis, MN: University of Minnesota Press, 1992).

Jana Winderen is a Norwegian artist whose practice and sonic output intertwines artistic, aesthetic and scientific engagement, and bridges multiple genres of water that encompass the oceanic, sea ice, coastal regions, rivers and lakes. For the ways in which her work proposes to experiment with technologies to sound, in the original definitional sense of to *measure* or to *fathom*, ecological health, through mechanisms of resonance production, her work would seem emblematic of Helmreich's notion of *sounding* as a method of inquiry across and beyond the contemporary sciences – and in that, per Helmreich, resonance both "*is* and *is not* sound."[10] Her protocols, methodologies, and above all, sensitized acumen for marine species recognition and compositional assemblage, coax her subject matter into speaking, so to speak, for itself, and ultimately, I propose, into *mattering* in an active, Latourian sense, transducing *ding* to *sache*.

Trained in mathematics, chemistry, biochemistry and fish ecology at the University of Oslo, intending at the time to become a marine biologist, she then studied Fine Art at Goldsmiths College, where she deliberately diverted her attention away from making objects towards experimenting with sound and compositional processes as "physical material."[11] As a naturalist collects specimens, so Winderen conducts "sound research" under, above and around the surface of water by "fishing for sound." To collect sonic data, she makes use of processes of "vertical recording" with three or four hydrophones per session, some reaching up to ninety meters in depth, as well as Petterson Ultrasound Detectors, in order to achieve sufficiently complex "surround" sound recordings, which she later "time-expands" when recomposing her material into output mediums, translating it into an audible frequency range for human auditors – from vibrational unsound to perceptible sound.

Central to Winderen's work is her interest in understanding the physiological bases of marine species' own auditory apparatuses, and their novel mechanisms of sound production and reception, concerned as she is by "human created sound underwater and the influences it has on the life there."[12] Her projects are sited in "threatened acoustic environments," often taking years to unfold in their true complexity. Interviews emphasize the epistemological value that she attaches to voyages and field trips; she repeatedly visits her geographies for the purposes of diagramming marine inhabitants, local communities and international scientists in relation to issues or conditions at stake. Winderen's long-term project *Silencing of the Reefs*, an ongoing collaboration with Thyssen-Bornemisza Art Contemporary (TBA21) and a consortium of institutions, including MIT and Woods Hole Oceanographic Institute, accrues hydrophonic recordings from more than twelve coral reef environments off Central America and throughout the Pacific. That sound is crucial to the vitality of underwater life forms, in

10. Stefan Helmreich, *Transducing*, in *Experience Book: Culture, Cognition, and the Common Sense*, eds. C. Jones, D. Mather, and R. Uchill, (Cambridge, MA: The MIT Press, 2016), 162–167.
11. Jana Winderen in an email to the author, February 7, 2016.
12. Jana Winderen in an email to the author, February 7, 2016.

general, finds concentrated expression in coral reefs, which are hubs of multispecies noise, and makes Winderen's sited "sound research" highly pertinent in the face of "mass coral bleaching" and impaired rates of calcification. Her recordings set out to document species' "sound signatures"[13] on a per-reef basis before such sources vanish, riffing on scientists' use of sound as a technology of identification of species and population movements in the field, as well as for monitoring crucial behavioral responses in laboratory contexts.

Interpreted alongside recent scientific studies and ecological reports, Winderen's work becomes, broadly speaking, evidentiary as aural testimony of the planetary-scale phenomenon of ocean acidification, manifest as a panoply of effects deleterious to marine life forms' sensory vitality. Recent scientific studies have shown that seawater with lower pH absorbs less low-frequency sound, a phenomenon which scientist Tatiana Ilyina describes as the "less anticipated consequence of ocean acidification."[14] One study used a global ocean model to predict that the chemical absorption of sound will almost halve in regions with high levels of industrial activity, such as the North Atlantic Ocean, over the course of the twenty-first century, and could fall by sixty percent in deep latitudes and high latitudes over the next three centuries. This, paired with anthropogenic ocean noise emission, exacerbates a condition that Christopher Clark, Director of the Bioacoustics Research Program at Cornell University's Lab of Ornithology, terms "acoustical bleaching," wherein marine species can no longer navigate via sound.[15]

The full spectrum of effects remains uncharted in spite of proliferating, if largely unaggregated, scientific studies and governmental research initiatives. A study in 2011 was the first to directly link CO2-enriched environments to altered auditory behavior in juvenile clownfish in response to daytime reef noise. Conversely, a study in 2013 used 3D microcomputed tomography to model and analyze the otolith (ear stone) size and density of larval cobia, raised in acidified conditions in-situ, and found that their hearing range, auditory and vestibular sensitivity increased due to denser otolith formation.[16] This study was the first to model otolith development while inside the heads of larval fish.

Another Winderen project, titled *Nature and Renaturation: A Sensory Overview of a History of Changing Watercourses*, deploys sonic data in different ways to interrogate processes of renaturation following multiple dam dismantlements around the River Orne in France's Basse-Normandie region in an effort to improve water quality, uniting social geographers

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13. TBA21, Silencing of the Reefs, accessed April 10, 2016, https://www.tba21.org/#item--silencing_of_the_reefs--564.
14. Katherine Harmon, "Could Ocean Acidification Deafen Dolphins?" *Scientific American* (2009), accessed April 13, 2016, http://blogs.scientificamerican.com/observations/could-ocean-acidification-deafen-dolphins/.
15. Richard Schiffmann, "How Ocean Noise Pollution Wreaks Havoc on Marine Life," *Yale Environment 360* (2016), accessed March 21, 2016, http://e360.yale.edu/feature/how_ocean_noise_wreaks_havoc_on_marine_life/2978/.
16. S. Bignami, I.C. Enochs, D.P. Manzello, S. Sponaugle, and R.K. Cowen, "Ocean acidification alters the otoliths of a pantropical fish species with implications for sensory function, in *Proceedings of the National Academy of Sciences* 110(18)(2013): 7366–7370, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3645591/.

with scientists and artists. For her contribution, Winderen interprets nonhuman sound production as its key analytic component – and as an indicator of health. She subverts a technique from biology, wherein fresh water biologists count underwater insects to measure levels of pollution in a river. Underwater insects produce relatively loud sounds via acts of "stridulation," which denotes vibration emitted by bodily contortion and rubbing. Aware of this, Winderen pushes said technique further by hypothesizing that, if she can identify the sounds of insects likely to survive particular pollutants in contrast to those that are not, then she might listen to and extrapolate upon the "health of a river through hydrophones."[17] Her proposition suggests that processes of (de-)pollution might be *overheard* and, consequently, that the very "health" of an ecosystem might be monitored through attunement to transduced soundings of underwater insects. According to Winderen, she would be the first to correlate underwater insect sound production with the ecological health of a river.

I would like to advance the notion of *mediate auscultation*, developed in 1816 by René Laennec, who is acknowledged as the inventor of the stethoscope and its accompanying techniques, in relation to Winderen's hypothesis that technologically assisted, hydrophonic listening to underwater insect sound production can be used as a diagnostic mechanism to ascertain or overhear the health of an ecosystem. As Jonathan Sterne theorizes in *The Audible Past: A Cultural History of Sound Reproduction*, mediate auscultation acted to redefine "the meaning of listening itself" in modern medicine, beyond a simply physiological notion of hearing, into a "mediated, skilled, and technologized" practice and episteme for medical knowledge production.[18] Laennec's monaural or "single-eared" stethoscope was a descendant of the ear trumpet, extending its principle function to assist listening: "Even as it posited the possibility that doctors could become virtuoso listeners, mediate auscultation endowed its practitioners with a functional disability. The unaided ear was not enough... now doctors – whose hearing was ostensibly healthy – could augment their auditory abilities."[19] Sterne connects its design to a lineage of other sound reproductive inventions, such as Alexander Graham Bell's ear phonautograph and telephone, and Thomas Edison's phonograph, which "fetishized the cultural status and trappings of hearing loss"[20] and were admitted by their inventors to have been born out of their proximity to (and desire to cure) deafness. Laennec's *Treatise on Mediate Auscultation*, published in 1819, served as an epistemological guide for "audile technique," emphasizing the conjunction of two types of knowledges: a comprehensive cognitive knowledge of pathological anatomy and physiology, on the one

17. Jana Winderen in an email to the author, February 7, 2016.
18. Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003), 100.
19. Ibid., 106.
20. Ibid., 106.

hand, and a "socially organized... feel for the activity, a habitus," on the other, derived from the practice of sensory perception, thereby combining both the sensory and the empirical.[21]

Stethoscopic listening signaled a shift in the semiotics of clinical diagnosis, deemphasizing patient speech in favor of the doctor's maneuvering as a silently sensing agent – now that audile diagnosis, in creating an acoustic enclosure, had turned into a veritable form of "physiological hermeneutics." Laennec's *Treatise*, which attempted to codify sounds heard through the stethoscope, instructed that the linguistic content of the patient's speaking voice was no longer as important as the resonant, purely sonic content of various bodily parts in motion; of the internal passages of liquids and gases. In this scenario, "speaking patients with mute bodies gave way to speaking patients with sounding bodies."[22]

Later, the innovation of the *binaural* stethoscope, perfected by George Philip Cammann in 1852, enabled its listener to compare multiple soundings simultaneously, extending "the stethoscopic principle to include the possibility of a rudimentary echolocation." Physician George Carrick went further in evoking the binaural stethoscope as a prosthetic device, writing that "proximal sounds had become effects of relations at a distance." Interestingly in SONAR, too, hydrophonic signals from separate underwater receivers would be converted into stereo through the use of binaural headphones to permit a dimensionally perceptible portrait of ocean space for human auditors – generating "not so much a soundscape as a soundedscape.[23]

As early as 1680, a "microphone" initially connoted an "ear trumpet for the hard of hearing."[24] I hazard that the hydrophone, first fabricated in 1901, like the stethoscope and other sound reproductive technologies that substitute for the ear, is essentially an underwater microphone that is "hard-of-hearing," and thus, proffers an extended listening. An operator like Winderen, who experiments with scenarios of recording, compositional praxis and ecological auscultation, might offer a *hydrophonic habitus* for attuning to Steve Goodman's "sonic potentials" at the interstices of sound, vibration, and the "physiologically and cultural inaudible"[25] in nonhuman sound production and reception. For Winderen's attentiveness towards the actual mechanisms of nonhuman sound production and reception in the field, we might, as a potential public, better understand that the acuity of marine species' sensory perception, and especially hearing, is at stake due to the entanglements of anthropogenic noise emission and acidification; that hearing itself is problematized by undersea sonic conflict and chemical shifts; that species are, increasingly, dispossessed of senses and,

21. Ibid., 108.
22. Ibid., 117.
23. Stefan Helmreich, *Sounding the Limits of Life: Essays in the Anthropology of Biology and Beyond* (Princeton, NJ: Princeton University Press, 2016), 141.
24. Etymonline. "Microphone", accessed November 14, 2016. http://www.etymonline.com/index.php?term=microphone.
25. Steve Goodman, *Sonic Warfare: Sound, Affect, and the Ecology of Fear* (Cambridge, MA: The MIT Press, 2010), xvii.

spatially, displaced by sound – an echo of Goodman's "(sub)politics of frequency," where sonic warfare takes place in the sensations and resonance of the texture of vibration."[26]

Can the auditory consequences of acidification be read as a form of distributed impairment that either disables or "differently enables" organisms depending upon adaptation? Can sound studies, deaf studies and ocean studies be "sounded" together to further dissociate terracentrism and phonocentrism? Are Winderen's techniques of audition a form of *hydro*phonographic anticipation, a versioning of Karl Marx's "subjunctive figure of the commodity who speaks," which Fred Moten frames as prescient "phonographic anticipation"?[27]

That she insists on "understanding" the environments, ecosystems and their (both human and nonhuman) inhabitants' stories in which she works, as part of her method for *sounding*, is interesting in relation to the point that "hearing," both historically and etymologically (in French), has doubled to connote "understanding" – the source of Jacques Derrida's notorious critique of phonocentrism in *In Grammatology*. Mladen Dolar writes: "The double sense of the French *entendre*, which means 'to hear' as well as 'to understand,' points to the direct link between the voice as the origin of conceptuality, between vocality and ideality."[28] Instead, Derrida calls to "think of a new situation for speech, of its subordination within a structure in which it will no longer be the archon."[29] Winderen's sonic output, for its emphasis on *overhearing* (a form of what Brandon LaBelle postulates as "sonic agency") rather than *speaking over*, might offer such a situation.

In his essay "Some Elements of a Sociology of Translation: Domestication of the Scallops and Fishermen of St Brieuc Bay," sociologist Michel Callon uses an initiative to repopulate scallops in Normandy to reflect on the technologies of "interessement" and representation between various actors – scientists, researchers, fishermen and scallops – in view of the irony that scallops, although the constituency in question, lack articulable agency:

> A few larvae are considered to be the official representatives of an anonymous mass of scallops which silently and elusively lurk on the ocean floor. The three researchers negotiate the interessement of the scallops through a handful of larvae which represent all the uncountable others that evade captivity.
>
> To speak for others is to first silence those in whose name we speak. It is certainly very difficult to silence human beings in a definitive manner but

26. Ibid., xix.
27. Fred Moten, *In the Break: The Aesthetics of the Black Radical Tradition* (Minneapolis, MN: University of Minnesota Press, 2003), 6.
28. Mladen Dolar, *A Voice and Nothing More* (Cambridge, MA: The MIT Press, 2006), 39.
29. Jacques Derrida, *Of Grammatology*, trans., Gayatri Chakravorty Spivak (Baltimore, MD: The Johns Hopkins University Press, 1997), 8.

> it is more difficult to speak in the name of entities that do not possess an articulate language.[30]

It would seem that Winderen is less concerned with her prolific amassment of sonic data in itself, mostly of sound produced by underwater inhabitants, inaudible to humans in raw form, than with its transduction in post-production into audibility for a variety of publics – in *resounding* unsound, and thus, in *making things public*, to borrow from Latour, such that publics form around matters-of-concern rather than matters-of-fact. If "to publish" originally meant to make public through speech,[31] then Winderen's output plays at publishing the "speech" of nominally "mute" nonhuman actors. Through technological mechanisms of transduction, "mute" natural matter *transmutes* into "things that talk" for themselves – possibly extending the notion of hearing beyond audition or audibility, into the realm of underwater unsound, along the way.

Figure 1. Emma McCormick-Goodhart, *Sounding in Sign: Helmreich/Sounding the Limits*, 2016, with Louise Stern. Courtesy of the artist.

30. Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen at St Brieuc's Bay." In *Power, Action and Belief: A New Sociology of Knowledge?*, J. Law (London: Routledge, 1986), 196–223.
31. Brandon LaBelle, *Lexicon of the Mouth: Poetics and Politics of Voice and the Oral Imaginary* (London: Bloomsbury Academic, 2014), 46.

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Soundly Planning – Listening Practically to (Belfast) Sound Spaces

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ABSTRACT: This paper stems from PhD research in urban sound studies which explores how applied listening practices can help usher in a consideration of sound into urban planning. The paper describes how ideas and methods from sound studies and sound art practices might be applied in site-based fieldwork, in particular uses of soundwalking, surveys and in-situ interviews. I describe the iterative development of these approaches in my project and further reflect on the process of re-situating the project according to the specific physical, social and sonic characteristics of an unfamiliar city, Belfast; reframing the project from one of translating strategies to one of guided listening and dialogue.

KEYWORDS: listening practices, sound art, urban planning, hearing perspective.

1. Foundation

In my PhD, *Listening Practices for Urban Sound Space*, I investigate how cities can be critically heard and how sound might be considered in qualitative and personal ways in city development. The project is based in Queen's University Belfast, as part of the *Recomposing the City* research group[1], which draws on expertise from the Sonic Arts Research Centre (Music) and Architecture/Planning departments. Critical influences on the project include my experience of the Sound Studies (MA) Berlin with sound art classes under Sam Auinger, auditory culture under Sabine Sanio, and prevalent discussion in the Berlin network around sound arts and urban planning[2] all of which helped inspire and inform this research.

In a sense this paper starts where my contribution to the previous Invisible Places leaves off (Flügge 2014). In that paper I considered how sound arts practice might be valuable for developing an awareness of city sound space, aid in developing concepts for future city sound environments, and suggested that many artists were already developing *audile techniques* (Sterne 2003) for addressing city sound space. Such techniques could support a constructive attitude toward sound quality and encourage sonic thinking for sound planning. Here, I understand sound planning not in a sense of directly designing or producing sound, so much as influencing the physical, social and infrastructural elements that lead to the possibility of particular sonic situations or sonic ambiances arising. Thus, sound planning might include built structures that condition acoustics as well as explicit or implicit rules guiding audible behavior.

My current PhD research focuses on how applied listening, informed by sound art practices, might offer a multilayered understanding of sound spaces. It is using site-based auditory research strategies to investigate this network of conditions influencing urban sound environments. Fieldwork is based in public and shared spaces and streets, which are vital arenas for urban life (e.g. Whyte 1980; Gehl 2013) but also complex as they are outside the bounds of conventional architectural acoustics. The fieldwork approaches, which were devised with reference to practices and concepts of sound arts and sound studies, are now adapting in response to a re-situation in the urban specifics of Belfast. This paper reflects on those processes and thus is not meant to deliver final results of analysis, but rather report on its current state and some developing aspects of the project.

1. This research group is co-directed by Dr. Gascia Ouzounian and Dr. Sarah Lappin, and "brings together artists and researchers in exploring the relationship of sound to urban spaces" http://recomposingthecity.org/.
2. These include influences within Sound Studies e.g. workshops in *Sound Urban Planning* (Yukio King) and *Auditory Architecture* (Alex Arteaga and Thomas Kusitzky) as well as e.g. the symposia of *Berlin Sonic Places* 2012 (Peter Cusack) and events such as *Bonn Hoeren* festival in 2013. For an overview of these discussions see e.g. "Stadt, Kartographie, Klang" *Positionen* 94 2013; Lappin and Ouzounian 2015.

2. Sonic practices and sonic thinking

I began the research by analyzing a number of urban sound artworks, considering their processes of conception, production and reception – for example, how works were acoustically and socially embedded in city spaces. They included numerous uses of soundwalking, sound mapping, notation or phonography, translocation (transmission and re-situation of sound spaces), filtering (e.g. as a form of 'tuning' urban sound), sonification, improvisation, as well as strategies of navigational composing (i.e. guiding listening in urban locations through the use of maps, scores and instructions).[3]

Alongside such sonic practices, I also drew on extant ideas for framing sound space. From sonic arts, sound and ambiance studies and related fields, these included paradigms such as *sonic effect* (Augoyard and Torgue 2006), and concepts such as *sonic commons* (O+A 2007), *acoustic Atmosphere* (Böhme 2007), and *ambiance* (Thibaud 2011) etc. Many are concepts parsing sound space in terms of its shared, experienced, social and or personal facets. I considered such sonic practices and sonic thinking as potential components for fieldwork strategies addressing concrete sites. The question was, how could I investigate sound space and sonic experience on the ground, drawing on those approaches and ideas, and how could this lead to practical approaches for comprehending sound space in more qualitative, aesthetic and personal ways.

3. Tuning to Belfast: autos and accents

When I moved to Belfast to begin my PhD, the urban site of my research changed. With the fieldwork so linked to immediate urban context, being in a different place meant I had to adjust methods and rethink my position as researcher. My notions of urbanism and expectations of the function of city planning were heavily informed by my experience of living in other cities, such as Berlin. Both conceptual and practical aspects of the project had to change to address a physically, socially, politically and sonically different context.

3.1. Solo soundwalks and routes

I began with soundwalks[4] as a primary sonic practice. Needing to recalibrate to Belfast sound space, these walks simultaneously helped for orientation and exploration of an unfamiliar city and its sonic topography, as well as identifying areas and aspects for closer study.[5]

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3. This is not to suggest that these are categorical or exclusive to music or sound arts. Some of these practices, e.g. soundwalking in particular, are established as part of research methodologies (e.g. Adams et al. 2008; Drever 2013).

4. Or listening walks, to distinguish them from walks which use apps and multimedia, See e.g. Belfast Sound Walks http://www.socasites.qub.ac.uk/belfastsoundwalks/

5. Walking and an experience of urban spaces in progression is an important element of the project. While beyond the scope of this paper, it refers back both to navigational sound art works but also to research in the ambulatory perception of urban space (e.g. Southworth 1969; Wunderlich 2008; Careri 2009 among others).

Among aspects that struck my unfamiliar ears was the particular hum of car traffic that seemed to permeate the area of North Belfast where I first moved. There, the drone of an unseen motorway was prominently audible in an otherwise relatively quiet area. It sounded different than the tidal ebb and flow of vehicles from the busy boulevard outside my living room in Berlin: that was a varied fluctuation of distinct autos, buses and trucks, passing directionally down and up the nearby avenue, and joined by voices of pedestrians, whirrs and clatters of bicycles – even a rare sound of a horse carriage. Compared to this, in Belfast, traffic from my window was a removed, monotonous and non-directional shhhhhhh.

The first route I used frequently – an hour long stretch, from a new residence in North Belfast to university in the South – traced a line through the center, along main arterial routes, past City Hall, and intersecting the city East and West. Even these early walks indicated broad sonic contours of the city, and a few rhythmic tendencies. For example, there was a shift of ambiance overall over three main segments: in the North the necessity of walking along heavily trafficked roads in order to get to the center was characteristic. The sonic atmosphere was dominated by the sharp noise of autos on a large-granulated tarmac. There was little opportunity to drift into side streets which might provide alternatively sounding paths to the center. There were also few shops or cafes and scant street life – no snatches of chatter – that would interrupt the persistent car noise, aside from a series of beeping pedestrian crossings. Instead, the route necessitated passing a busy traffic circle – which became more sonically tranquil at rush hour when traffic was near standstill – and then just after that, an overpass of a large motorway from which emanated a dense mass of tire-noise and engine-sound, emphasized by the sunken u-shaped concrete of the half tunnel. This six-lane highway, known as the Westlink, constituted a significant punctuation of my walk, just before arriving at what I considered the edge of the center. In fact it has been framed as a spatial as well as sonic boundary in the city (see e.g. previous work by Ouzounian and Lappin in *Recomposing the City*).[6] For me, it also served as an orientation mark on recordings, easily spotted by a stretch of increased waveform height.

The center offered more sonic diversity than this initial acoustically full but aurally dull approach. However, the density and diversity of sound depended greatly on the time of day. During shopping hours it might be well-populated, with main streets sounding of people walking and conversing, occasional radio coming out of open shop doors. I often passed the strains of a particular street violinist or other musicians playing over a foundational layer of cars, buses and, as the afternoon wore on, growling drone and swishing of street cleaning vehicles. But in late evenings almost the whole central area emptied by dusk into an uncanny

6. Belfast motorways are urban structures that significantly colour Belfast ambiance, and their nature as a sonic boundary has been explored by *Recomposing the City* (Ouzounian and Lappin) e.g. in *Sound Mapping Sailor Town* in cooperation with *StreetSociety 2014* http://streetsociety14.blogspot.co.uk/2014/03/final-product.html. The Westlink has been more widely acknowledged as a significant demarcation of city space (see e.g. Gaffikin et al. 2016, and various work by the former *Forum for Alternative Belfast* (FAB).

quietness. Streets like Royal Avenue, full of traffic and people a couple hours before, were nearly abandoned, maybe a couple seagulls would be gurgling over some strewn bread, and the few people around were curled up in doorways. I didn't hear sounds of people's activity, walking, talking, interacting, or any of the sounds that might seep out of people's apartments – occasionally cars would zoom by, or ventilation systems would hiss from various buildings. On a few occasions I heard music being played from a loudspeaker set up on mostly empty central streets – eventually I learned this was a form of pop-up station where food was given out to homeless. But this sporadic island of dislocated music made the rest of the center echo all the more emptily after dark. Being used to cities with active late street life, this seemed odd to me. Or rather, it was odd until I realized I was assuming people live in city centers, i.e. in floors above shops. While this would be common in other cities I knew, it was not true of Belfast – these buildings were not even available as residential space. It sounded empty because it was.

Saying that I could walk the length of the city in an hour gives a sense of scale – and yet the intimate size of Belfast did not seem to translate into the dense communal sound spaces I initially expected. Even such broad-stroke first impressions of Belfast showed a few sonic elements, such as ubiquitous tones of traffic that seemed disproportionate to its size, and tendencies, such as the stark nightly stillness of center, that hinted how systemic elements – such as road structure, bus system design, and lack of available central residential space – and use patterns – such as a large number of workday commuters – audibly contour this particular city.

In describing their notion of *sonic commons*, artists O+A point out how what we hear in urban space is both a given sonic event and the way it is shaped by the built environment. Thus, city spaces can be heard as various layers of past that resound in the present. Since their built environment has resulted from past and present expressions of cultural, social and economic power, in listening to cities we can interpret what we're hearing as a layering of those underlying interests and power mechanisms (O+A, 2009). This includes for example, building motorways, prioritizing one form of mobility, or deprioritizing inner city living in favor of suburban areas. Such decisions, not made with listening in mind, have physical, infrastructural, social, and also sonic consequences. As a listening pedestrian in Belfast, those effects are palpable. In some sense, what is striking is what is not audible: sites of dense public social activity I expect from a city are harder to find, unless you look in specific spots or at specific times, such as the retail corridor during shopping hours and good weather, or inside spaces, such as pubs or the covered marketplace. I could walk through the center without hearing noise from a playground, trams, or an echoing underground system – entire sonic microcosms I strongly associate with urban sound spaces seemed missing.

3.2. Accents and voices

On the other hand, my ears were piqued by a new variety of speaking accents, and the many voices that are a distinct sound of this city. Besides unfamiliar local expressions, there were also nuances to words I thought were familiar, including ones relating to city space; words like "community" and "shared space" have a particular local tenor. While public space is a site of complex social relations anywhere, in Belfast it is further accented by lingering sectarian dynamics parceling the city in "ethnic" or "neutral" territories, for example, authors Gaffikin, McEldowney, and Sterrett contrast the "ethnic" residential areas and so-called "peace walls", to a "neutral" space of the commercial city center (Gaffikin et al. 2010). While my PhD research is not focusing on such politics or divisions, a growing awareness of these power dynamics and how they are spatially and infrastructurally embedded, offers another local filter for what I am hearing (or not hearing).[7]

Like getting used to a dialect, getting a sense of Belfast's particular architectural, industrial, economic, as well as social character all offer clues for how to critically hear the city, i.e. understand how sound quality might be shaped by those conditions. It also helps me relate to how other people might hear places. This is crucial because, more than any of the other ways of listening so far, listening to more voices in and of Belfast – residents, artists, architects etc. – has been shaping how I hear spaces in this city.

3.3. Site surveys and walking dialogues

Focusing on shared and publicly accessible spaces in the center I began identifying sites of interest, or *nodes* (Lynch 1960) where besides recordings, I began measurements and observation in the form of site surveys. The first structure of these site surveys was determined by my main research questions, sonic concepts, and influenced by the 'auditory protocols' of Auditory Architecture Research Unit, UdK, as well as urban public life study, (e.g. Gehl and Svarre 2013).

Besides listing the category of urban site, and main recording or measurement methods employed, they also initially contained questions around:

- what could be heard
- where it sounded like one was
- who or what was creating sound in that environment and why.

It went on to ask about notable sonic effects and thresholds, and included a section to make notes about the structure of the built environment, prevalent materials, setting etc.

7. Notable work has been done considering the spatial planning consequences of Belfast's recent social history by (above mentioned) FAB. The amount of central city space devoted to car parks, highways and left derelict, as well as reasons, have been outlined in their map "The Missing City". https://www.forumbelfast.org/projects/The-Missing-City.php. For more specific links between Belfast's contested politics and acoustic space see Ouzounian's account of explorations by sound artists in Belfast (2013) as well as the ongoing research project *Hearing Trouble*, led by Ouzounian and Lappin (2015-) which investigates sound art in post-conflict cities: http://gtr.rcuk.ac.uk/project/CDE0BAE1-6F4B-4C9B-8F24-3227ED7C2998.

that might have a role of shaping sound space. These forms were revised as I used them, and now integrate more free form writing, and fewer narrow questions.

Building on this, I began to do site visits with participants, to get a sense of their sonic experience. Beginning as a form of the survey which other people could fill out, these participant site visits went through several iterations. First, these accompanied visits used parts of the survey as the basis of a semi-structured interview conducted in the context of a guided soundwalk. Besides the survey questions, I considered a number of tasks relating to various sonic practices, aimed at exploring different aspects of sound environment. These tasks were intended to be modular i.e. tasks one could insert and remove during an accompanied site visit.[8] While these yielded interesting interactions, the structured interview and tasks constrained the site visit, which was problematic in that it was too prescriptive of what sonic aspects were being focused on – it was dictating listening rather than guiding.

This led me to open up the in-situ interviews and also extend them along walking routes, rather than having them based around a single site. For these routes, I focused on paths that would pass through specific nodes but also offer a variety of urban morphologies and social spaces. Rather than just survey questions on sound, I asked about impressions and familiarity with places; how people might use a particular space, and explored other associations of the area; such as people's memories, especially if they were local. Some memories were more directly auditory, others influenced the way a person might describe or reflect on a current sound environment. This allowed information about sites to surface, which placed them in a richer local and personal context, and also provided other sensory information about behavior in particular spaces. The less narrow interviews allow me to learn more about use of the city center and people's personal relationship to it, such as whether they thought of it as a center at all.[9] In a sense, I could hear more of the Belfast I was missing.

One recurrent topic, for example, has been transportation and how that changes access and use of the center. A number of times, participants made distinctions between their engagement with the city as a driver, cyclist or pedestrian. While as a pedestrian walking through the center it can seem fragmented by empty car parks, as a driver, the lack of easy parking might be cause for comment. The reason that this is a sonic question as well as a transportation issue, is that sound space is influenced by how and why people occupy a space. Preliminary fieldwork conducted in central surface car parks, for example, so far indicates

8. These included e.g. drawing or mapping the sound space on paper, or navigating or interacting with the site in another way. For example, in one task, I asked participants to walk around a site and listen for transitions of sound space. Wherever they thought there was a threshold they placed a marker, and then we discussed why they chose the spot and what they noticed.

9. For example, one of the routes passes through the site of former gated barriers of the "ring of steel" – a security border around the central city core that stood for years during The Troubles. This was not something I was initially attending to in my walks until one participant noted that (having the barrier still in their memory) they did not associate a particular street as going into the center.

that they neither provide many activities or events that are interesting to hear, inviting to listen to, nor are they restful enough to warrant staying around, even if there were any option to sit (which there generally is not). There are few conversational encounters – not yet have I heard kids at play, instruments, bicycles, or lingering passersby activating those spaces. There are rarely people socializing; there are people walking/driving in, turning their cars off/on and walking/driving off. The sonic variety that a surface car park affords, while very open-ended in theory, is proving quite limited in practice.[10]

Clearly, factors like memory and mobility influence how people access, inhabit, affect and perceive city space – but the narrower structured interviews and tasks, would have missed such contextual information on personal urban experience. This indicated the need to allow a sense of the overall qualities of urban spaces, not necessarily just sound qualities, to emerge through more open dialogue with participants in situ. It also led to a sense of the interviews as offering a many-voiced understanding of a site –rather than simply a description of their sonic experience – which could be mapped alongside personal and mechanical listening in a layering of hearing perspectives.

3.4. Nodes and mapping

Layering these hearings – i.e. mapping the sound spaces – is facilitated by having routes pass through particular nodes, which I might use as primary spots for interview portions, first person observation, or other measures such as sound pressure level readings or material documentation. Even if respective walks diverge in length or path, by documenting route and sequence taken, it is possible to trace where various parts of an interview took place, under what weather conditions etc. Different walks and interviews, along with other relevant data, such as materials of sites, historical information, or future development plans can be linked in relation to nodes. Juxtaposing such information may suggest how given sound spaces relate to local perception and uses of place, design intentions etc. This way, sites remain in the context of a route, but can also be positioned in relation to other aspects of city ecology (in the sense of urban context e.g. its immediate surroundings, or its functional, social and political network).

For example, adjacent nodes of Victoria Square, Cornmarket and the Entries connect in a pedestrianized area of the center. Victoria Square is a multi-level mall, finished in 2008, encompassing an entire block and accessible in the manner of a shopping street, except that it is covered by a large, curved glass roof and a dome. Being expansive, with significant height in the central atrium, and primarily using hard and reflective materials gives it a tendency of being highly reverberant and aurally cavernous. It is sonically coloured by a fountain feature

10. Thus, giving spatial privilege to driving means there are numerous plots in the Center where not much happens that is interesting to hear, or invited to happen to change that.

in its center, beside the entrance to an underground car park from which seems to emanate low bass tones. This, combined with continuously droning motors of multiple escalators and the bits of store radio that seep in from individual shops dissolve into a high baseline noise floor muffling additional sound events. Voices of shoppers get swallowed in a sonic mesh.

It connects on one side to Cornmarket, an open pedestrianized area where five lanes meet, featuring a good amount of foot traffic and a rotating set of street performers. In the middle it is possible to hear farther down the numerous streets and distinct individual voices of passersby, but it is also often dominated by amplified sound, both from live musicians or playbacks by (mostly) religious groups. The other side leads to a number of 'Entries', small alleyways which claim to be among the oldest remaining parts of Belfast. Their elongated and constricted built structure, paved with stones, attenuates much external city ambiance, concentrating sounds emitted in them and giving distinction to footfalls and voices of few passersby. Some, like *Crown Entry*, are most characterized by a distinct rattling of a series of vents, and frequent wing flaps as you are apt to disturb pigeons. Other Entries open into somewhat larger square areas, e.g. back areas of pubs where you can hear people talking or screens playing rugby or football.

These adjacent sites already afford very different sound experiences in terms of the acoustic properties of their built structure (e.g. large, enclosed from above; large, semi enclosed on sides but open above; elongated, constricted, enclosed on two sides but open above), prevalent materials, and activations such as voices, infrastructural systems, water features, singing performers, and air conditioners, along with contrasts of function, micro-climate, state of maintenance, etc. Moving from one to the other and back again emphasizes, for example, the influence of physical structure on shaping sound, varying levels of conversation audibility, and so on. Considering the sound and atmosphere of a particular site in its immediate geographic context as well as 'translocated' (to refer back to the sonic practices) into e.g. social, functional, contextual networks can emphasize different aspects of its sound space and how it fits – or not – in those networks.

4. Reflections on Guided Listening

The function of the accompanied site visits shifted from a focus on assessing how other people hear city spaces by explicitly guiding their listening, to more of an on-site dialogue, with those people also guiding me through their city, changing what I heard and how I listened. In some ways, I see the interviews as coming to resemble other sonic and sensory ethnographic practices, and also drawing closer to approaches used in ambiance studies, and

acoustic ecology.[11] At the same time they also refer back to elements of sound arts and the sonic concepts with which I originally started. The notion of guided listening, which features in urban sound art works that are composed by marking out interesting listening points, or which direct the listener through a variety of sound spaces has a particular importance.[12] In traversing routes, I draw on this as a reason to utilize available differences of urban morphology to indirectly guide listening during the walk, and find routes through public spaces which also form thresholds, constrictions, variations in social function, development, dereliction and use. Weaving through interior as well as exterior spaces, helps offer contrasts of ambiance allowing a clearer sense of acoustic atmosphere to emerge (Böhme 2007).

The in-situ interviews also function as an assisted soundwalk for me, sharpening my awareness of certain conditions of the place, such as where conversational spaces can be found. Recording our dialogue becomes a test of where it is possible to make an audible recording. In a sense, the interviews extend my hearing perspective. The interactions and voice of one walk inevitably echoes into the next one. The impressions that people provide, imbued with personal narrative, allow me to layer that description onto others, to form multiple hearings of a site.

Lastly, the project changed in its approach from thinking in terms of translation, to thinking in terms of dialogue. It seems that a shared understanding and relevant approach to listening critically to urban spaces needs to emerge co-productively, rather than come from transplanting tools or concepts – i.e. from "sound arts" to "urban planning". This is important because there is not only one single function or agent of urban planning which developed listening practice might address. Furthermore, regulations, developers' concerns, economic considerations, political ideologies, individual habitations, and more, all play a role in the design, development and determination of urban space. Thus the project is opening attention to a wider range of agents of city transformation, offering multiple auditors and interlocutors through which to develop potential listening practices for urban space.

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11. See, e.g. the commented city walks of Thibaud (2013) or walk methods described by Helmi Järviluoma and Nora Vikman (2016).

12. Here I would refer to, among others, the *Listening Points* work of Akio Suzuki as well as the *Path of Awareness* works by artist katrinem which can be characterized as art that arranges its listener (see e.g. Flügge 2016).

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Online Resources

RTC. Recomposing the City website http://recomposingthecity.org/

Belfast Sound Walks http://www.socasites.qub.ac.uk/belfastsoundwalks/

RTC Sound Mapping Sailor Town in cooperation with *StreetSociety 2014* http://streetsociety14.blogspot.co.uk/2014/03/final-product.html.

Ouzounian and Lappin 2015, Research Council site, *Hearing Trouble Project* (http://gtr.rcuk.ac.uk/project/CDE0BAE1-6F4B-4C9B-8F24-3227ED7C2998

FAB *Forum for Alternative Belfast* site https://www.forumbelfast.org/projects/shared-space-2011.php

FAB *Forum for Alternative Belfast* map of "The Missing City" https://www.forumbelfast.org/projects/The-Missing-City.php

Auditory Exploration of Derinkuyu Underground City Cappadocia Turkey

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ABSTRACT: This study seeks to understand the soundscape of Derinkuyu Underground City in Cappadocia in Turkey and its sonic characteristics from an analytical and practical point in relation to its different urban spaces with the application of acoustic space and arena theory and soundwalk methodology to understand these sonic experiences. Firstly, characteristics of Derinkuyu Underground City is described. Then the methodology is analyzed and the experience of the soundwalk on site is described. Later, the sonic observations that are unique to the site are presented and discussed. Finally, a further discussion is set regarding the lo-fi/hi-fi soundscape theory to analyze the social and cultural impacts of the city's soundscape and how the inhabitants of the city might have perceived their sonic environment.

KEYWORDS: soundmark, soundwalk, hi-fi soundscape, derinkuyu underground city.

1. Introduction

Soundscape could be the acoustic manifestation of a place, where the sounds give the inhabitants a sense of place (Fisher 1998) and identity. Soundscape could also be considered as a collection of sonic events; which also includes the aural architecture of the environment or a city. It can be suggested that a social unity among its inhabitants could be created by the special attributes of an aural architecture. Aural architecture does not only deal with the sound propagation or physical properties of sound; however, it evokes the question of perception of sound and the experience of a space by listening to it.

In this paper, characteristic sonic events that create the soundscape of Derinkuyu Underground City in Turkey are detected, its aural architecture is examined and it is analysed whether the special sonic events could have contributed to a social cohesion and feeling of identity among its inhabitants. Firstly, this study investigates the soundscape of Derinkuyu Underground City and its sonic characteristics with the application of acoustic space and arena theory as discussed by Blesser and Slater (2007). The theory defines auditory spaces as acoustical arenas, which are spaces defined and reproduced by sonic events. Then the soundwalk methodology is described and analysed to understand these sonic experiences in relation to different areas of the city leading to the discussion of the unique sonic events of an underground city and the exploration for the soundmark of the city. Within this framework, authors' soundwalk of Derinkuyu Underground City experience was used for associating and perceiving these experiences during the field research. The perceptions of the authors in the acoustic environment of Derinkuyu Underground City are in the centre of this paper. Finally, a discussion is made to understand the social and cultural impacts of the characteristic sonic events on its inhabitants in relation to the hi-fi and lo-fi soundscape theory of Murray R. Shafer (1977). The study focused not only on the soundwalk and sensory perceptions but also concentrated on the cultural history of the city to identify daily life and communication in the city.

The main objective of this study is to explore and define the unique sonic events of Derinkuyu Underground City and to discover whether there was a soundmark of this city. It could be claimed that there is a direct relation between soundmark of a city and how its inhabitants form and perceive their environment. It is aimed to understand if these unique sonic events and a possible soundmark of the city have created a unique acoustic manifestation for the underground city and its inhabitants.

2. Theoretical framework

In this section, the theoretical framework which describes soundscapes as acoustic spaces and acoustic arenas as described by Blesser and Slater (2007) are discussed to understand

how sonic events may define an urban soundscape. An acoustic arena could emerge when a particular event is heard by a group of people and a boundary is defined around an acoustical arena. The particular sonic event cannot be heard beyond this boundary. The particular properties of an acoustical arena are determined by the power and the frequency spectrum of the sonic source, the aural architecture, and the material properties of the structural elements and the volume of the physical space. The acoustic arenas might be flexible volumes depending on the sonic source and their interaction with the other acoustic arenas. The acoustic arenas can be experienced in large scales in urban areas. The topography, urban architecture, the traffic speed; they can all effect the boundaries and qualities of the acoustic arena in an urban area.

Distinguishable sonic events; such as traffic noise, train or boat noise, entertainment noise, sound of a specific wind, sound of a park with birds, fountains may be a unique sonic event that is recognized in that particular acoustic arena. These unique and distinguishable sonic events might be the "soundmark" (as defined by Murray Schafer 1977) of that acoustic arena or it can even define the boundaries of the acoustic arena itself. Group of people who are subjected to this unique sonic event can associate this sound with certain feelings, values or events. This soundmark can create a social cohesion among the inhabitants of an acoustic arena. The inhabitants can share the meaning of the sound and relate it to their unique acoustic arena. People might experience the urban acoustic arena through its soundscape with its sound symbols.

3. Derinkuyu Soundwalk and Sonic Observations

The underground cities had great potential as a defense strategy in ancient times to protect its inhabitants from battles. One of the most interesting and largest ancient underground cities is the Derinkuyu Underground City in Cappadocia, Turkey. Derinkuyu is a multi-level underground city which extends between 60–85 m below the ground surface. It was not yet possible to discover the complete extent of the city; however, it is estimated that it might accommodate approximately 20000 people at the same time. The city is also believed to be interconnected with various other underground cities via tunnels.

Derinkuyu has many of the spaces that are generally to be found in an underground city, such as stables, pantries, refectories, churches, living quarters and spaces for wine production. There are seven or eight floors in the city; however, the floor concept here is different from how it is used today. The floors do not have definite boundaries and are not exactly placed under the upper floor and the vertical distances between the floors can change from place to place.

Derinkuyu Underground City had originally many entrances from the surface, mostly very well concealed; however, at the moment the entrance to the city is from one designated

entrance. The soundwalk starts with steps in a tunnel lead down to a room, probably 3–4 meters below the surface. Entering this narrow tunnel marks first impression about the soundscape of the city; all the natural sounds that could be expected from an open air city are blocked. The ambient soundscape feels much more intimate. Then there is a much larger space, which is interconnected with other rooms. The larger space is supposed to be a stable for the animals and the other relatively small rooms are wine pressing rooms. The soundscape of these area are dominated by the high reverberation time. When other visitors filled the space, the loudness of the conversations of the people is too high. This is due to the relatively large volume; however, mostly due to the reflective materials.

Then branching tunnels go in different directions either as descending steps or ramps. These could be regarded as the vertical streets of the city. This soundwalk is mostly a vertical soundwalk in the city. It is also important to mention that it is dark all the way along in this city. At the end of the vertical street (Figure 1) there are larger spaces which can be equivalent of public squares. The dominant soundscape is a reverberant soundscape and an instinct to speak softer. These spaces lead to the residential areas of the city by long, narrow, winding tunnels. These long passageways combined with relatively larger volumes produces a Helmholtz Resonator effect; an acoustic structure that amplifies narrowband frequencies.

Figure 1. The end of a tunnel leading to a new level.

The individual living spaces are separated by arches, columns or walls; however, it is still impossible to have a private soundscape; since there is no private space with airtight boundaries. In between floors there are ventilation holes with diameters of approximately 5–10 centimetres, carved into the floor and ceiling of rooms to allow for ventilation and communication. The inhabitants of the underground city were able to communicate without having to walk through long and tiring tunnels and to act quickly and easily in emergency situations. This creates a unique soundscape for the living quarters of the city.

After levels of living quarters of the city, the deepest section is reached by the steep, long and narrow passages with sudden changes in direction. The lowest levels are reserved for church (Figure 2), cemetery and the end of the main ventilation shaft. The church is a relatively large area covered with a vault. The soundscape of the church is so loud that when more than one people talks, speech intelligibility blurs. In addition to that, if people want to talk each other they talk in a low voice due to the highly reflective materials around. The level of background noise determines the quality of an acoustic arena here. It can create a state of psychological tranquillity; a cooperative agreement to respect the public soundscape and be silent.

Figure 2. The church at the deepest level.

The main ventilation of the city was also located at the lowest floor. The importance of the ventilation shafts cannot be understood at first instance through the soundwalk. Most of the city was air conditioned throughout 4 main airshafts and at least 15,000 ventilations ducts (also communication holes) provide fresh air into each rooms of the underground city.

These ventilation shafts as communication holes contribute to the unique soundscape of the Derinkuyu Underground City. The city is organized around these ventilation shafts. It can be argued that the acoustic boundaries of the city is defined by the extent of the shafts and airducts. The isolated units of the city have the experience of social inclusion. It expands the acoustic arena and creates a vertical acoustic arena as well as a horizontal one.

It would be argued that ventilation holes create a shared experience of a soundmark and a sense of belonging and the feel of a particular city. In the exploration of a soundmark for Derinkuyu Underground City, the main ventilation shafts are regarded as the soundmarks.

4. Social and Cultural Dimension

Murray Schafer (1977) claims that ancient times have hi-fi and modern times have lo-fi soundscapes. He calls hi-fi soundscape that "allows the listener to hear further into the distance just as the countryside exercises long-range viewing". He continues to say "sound overlaps less frequently" in ancient times:

> there is a perspective – foreground and background sound relations. In modern cities there is no distance; there is only presence. (Schafer 1977)

Because there are lots of noise and they overlap that you cannot differentiate the sounds and their distances. Therefore, we believe that Derinkuyu has a hi-fi soundscape, people in Derinkuyu can easily hear each other and they might communicate very efficiently. These narrow corridors and rooms do not allow too much diffusion of sound waves and it was experienced by the authors that it is possible for people to find their ways following the sounds. The sound source distance and the direction can be understood very easily because of hi-fi soundscape. These thousands of small ventilation shafts which are connected to the 4 big main shafts can easily spread the sound. People in Derinkuyu could easily understand that where the sound coming from and which way to reach its source.

M. Schafer (1977) also asserts that people who live in small communities (he means villages rural areas also ancient times) have their ears always alert so that they know how to read changes in the sound environment. The soundscape of the Derinkuyu is so intense that it is almost impossible to hear clearly when 4–5 people talk at the same time in a room. In addition to that, if people want to talk to each other they should talk in a low voice. Of course when they use the air shafts for communication they should shout and wait for the response in the head of the shafts. This creates a vertical sonic perspective in ancient times. For instance, when one of the four main shafts is listened, there is a sonic perspective on the lowest level. This hi-fi sonic perspective creates a different listening experience on people in Derinkuyu. There are layers in sonic environment and if people want to stay alert during enemy interventions they should differentiate these layers and understand the distance and direction of the sound. Only hearing the voices should not be enough to stay alert. Therefore, it is believed by the authors of this paper, that the inhabitants use different listening modes in Derinkuyu. It should be understandable and useful that reading these modes through Barry Truax's (2001) and Michel Chion's (1990) different listening modes.

Truax's Listening-in-readiness is based on alert listening mode when there is an important sound and taking attention. It is

> ...an intermediate kind of listening, that in which the attention is in readiness to receive significant information, but where the focus of one's attention is probably directed elsewhere. (Truax, 2001)

Listening-in-readiness

> depends on associations built up over time, so that the sounds are familiar and can be readily identified even by "background" processing in the brain. (Truax, 2001).

In Derinkuyu, people always should be alert against enemy actions. They always listen their environments especially ventilation shafts very carefully.

> Even when a sound is unfamiliar or unexpected, this type of listening is ready to treat it as new information and evaluate its potential significance. (Truax, 2001).

They read every sound very carefully and analyze it according to its semantic meaning and source. Chion (1990) claims that semantic listening "refers to a code or a language to interpret message" (Chion, pg. 23). This semantic listening mode in Derinkuyu could help people to locate the treat and save their lives. Trying to understand the codes and the languages and paying the full attention to listening could create different and more layered mode than they have during their daily life in their village on the ground level. Also, this layers has not only horizontal perspective also vertical perspective that they should have to understand the directions.

Listening is a multidirectional time based event compared to seeing. Seeing is mostly directional and limited to angle of our eyes. However, listening wider; almost omni-directional event that our ears can hear sounds around us. Therefore, living experience in Derinkuyu with a limited view (narrow corridors, limited light sources, small places) is so difficult to compare to the rural life in the village on the ground level. In addition to that, listening becomes more important and peoples' ears stay in sonic alert mode more often. While the senses are posited as distinct fields, they operate and interact within a general structural frame of the body. This perspective posits an important break from treating the listening act as merely decoding or categorizing, but rather conceives of a whole body experience that creates a "resonant" subject (Nancy 2007). Although, it is very hard to see

enemy or other treats in this huge underground city, listening vertical sonic perspective in the ventilation system creates a safe place for their daily lives in Derinkuyu Underground city. We believe that, this multidirectional listening event also create a different time and space perception in the city.

5. Concluding Remarks

The main ventilation shafts and thousands of ducts connecting each otherwise isolated units of the city could be claimed to be the soundmark of the city. The inhabitants of the underground city were able to communicate without having to walk through long tunnels and to act quickly and be informed of what was happening. The boundaries of the city and acoustic arenas were defined by these ventilation ducts and main shafts. It could be claimed that the communication holes create a shared experience of a soundmark and a sense of belonging in Derinkuyu Underground City. It was also further examined how perspective of the sound helped people to find their ways and survive during the wars to emphasize the importance of hi-fi soundscape environment in Derinkuyu Underground City.

However, the effect of communication holes especially in different areas of the city and its cultural impacts needs to be further researched and supported via acoustic measurements such as reverberation time measurements and also background noise levels measurements.

It is also foreseen that research from Derinkuyu Underground City may contribute to the prediction of possible soundscapes for future underground cities; which is a great possibility to build more and more in the future.

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Recalling the River – The River Soundscape in the Site-specific and Social Practice of Tolka Nights

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ABSTRACT: Tolka Nights was a series of public events that explored the social, historical and ecological significance of the River Tolka, Ireland. Produced by an interdisciplinary team of six artists, the events took place in three distinct sites along the river in September of 2015. This paper outlines the project with particular focus on the aurally-engaged activities of two members of the artist team: Matt Green's field recording, film-making and sound installation practice and John D'Arcy's participative choral workshops and performances.

KEYWORDS: public art, site-specific, social practice, collaborative, interdisciplinary, field recording, location sound, film sound, sound art, sound installation, voice, improvisation.

1. Introduction

This paper concerns Tolka Nights, a series of public events that took place at three distinct sites along the River Tolka, Ireland over three consecutive nights in September 2015. The events comprised sound, film, performance and discussion, and explored the river's significance: as an ecosystem, to communities, to diverse histories, and to regional and national current affairs.

Tolka Nights emerged through the individual and collaborative practice of six artists of varying disciplines brought together specifically for the commission: Matt Green (project lead), Sven Anderson, John D'Arcy, Jennie Guy, Conan McIvor and Stuart Sloan. The artist group undertook an extensive programme of site-specific engagement that included onsite documentary and ethnographic activity; archive research; consultation with the river's residents, users and maintainers; choral workshops; and film-making.

Tolka Nights was commissioned under Ireland's Per Cent for Art Scheme, a government initiative that assigns one percent of the budget of any public development to arts commissioning. This project was commissioned within a flood defence development programme managed by the Office of Public Works (OPW). The commission was devised and supported by the OPW, three council boroughs through which the river Tolka passes (Dublin City Council, Fingal County Council and Meath County Council) and Create, an Irish arts agency specialising in collaborative arts in social and community contexts.

This paper commences with an overview of the context of the commission followed by an overview of the artist group's engagement and research process, and delivery of the three public events. The discussion then focuses on the practices of Matt Green and John D'Arcy of the artist team, whose work and activity engaged the river soundscape. The paper outlines Matt Green's location sound and field recording activity, and the application of his Tolka sound archive in the soundtracks of four films based on expeditions along the Tolka in search of the river's rarer and more elusive wildlife; as well as within a sound art intervention in the National Botanic Gardens, Dublin. The paper also describes the development and performance of Tolka Chorus – a collaboration between John D'Arcy and local amateur singers that involved sound-walking, vocal improvisation, environmental sound, and curation of literary texts regarding the Tolka.

2. The River Tolka

The Tolka is one of three main rivers that pass through the city of Dublin, the others being the Liffey and the Dodder. The Tolka flows from west to east, rising north west of Dunboyne in County Meath, and travels thirty kilometres through North Dublin culminating at Dublin

Bay. Over its course, the river passes through farmland, woodland, parkland, residential and industrial districts.

The name Tolka is derived from the Irish for 'flood'. Because of the Tolka's flat gradient and unsympathetic development, the river is prone to flooding and causing severe disruption and damage when such occurs. Large scale flooding is expected every 50 years. Flooding on a smaller scale occurs much more regularly.

Tandem to the OPW's flood defence work over the last decade, the three council districts through which the Tolka passes have invested considerably in improving the health of the river and extending and enhancing the river's green spaces. A highlight of Dublin City's work is the production of a four kilometre 'greenway', an off road cycle route through newly developed parkland and constructed wetlands[1]. In 2011, after an absence of more than 100 years, wild salmon were found to be living in the Tolka once more. This was attributed to both the OPW's removal of weirs and each council's effort to decrease pollution levels.[2] Unfortunately, pollution continues to be a problem for the river and this alongside flooding and crime in the river's parklands continues to dominate the press and public image of the river.[3]

The river catchment in the Fingal county district in particular has undergone much development in the last quarter century, predominantly within Ireland's 'Celtic Tiger' period (mid-1990s to mid-2000s). Within this district, in addition to the introduction of green space, developments have also included new road networks, a major retail park, several industrial sites and housing. The demographic of the river reflects that of Dublin as a whole: over the last quarter century, the river's populous has grown and diversified considerably.

3. Overview of Tolka Nights

3.1. The Process of Tolka Nights

The artist team were awarded the commission in March 2015 after a three-part application process. They adopted a site-specific approach, creating work in response to engagement with the localities and communities of the Tolka. The group's approach did not centre upon final production outcomes but rather a strategy for interdisciplinary collaboration and action at the river, and with the river's communities. Each artist devised their own programme of community and/or institutional engagement based upon their specific skills and interests. Each artist was paired with another of the group to carry out and document their activities. This documentation was then fed into the production of three public events.

1. For details of the Tolka Greenway: http://www.dublincity.ie/sites/default/files/content//RecreationandCulture/DublinCityParks/VisitaPark/Documents/Tolka%20valley%20Greenway.pdf.
2. For details of salmon returning to the Tolka: http://www.independent.ie/irish-news/salmon-return-to-the-tolka-river-after-100-years-26776249.html.
3. In 2015, a detergent company pleaded guilty to discharging detergent in to the Tolka that resulted in the death of an estimated 5000 fish (http://www.thejournal.ie/river-tolka-fish-kill-2252276-Aug2015/).

Matt Green's artistic engagement primarily comprised field-recording activities and a series of recorded river-walks with individuals whose work or recreation encompasses the green spaces of the river. Stuart Sloan accompanied Green to carry out video documentation of the river-walks. Sloan also researched and collated archive broadcast media pertaining to the river.

John D'Arcy facilitated Tolka Chorus – a series of choral workshops with local amateur singers that involved improvisation with environmental sounds and song-making based on archive texts about the river. These workshops were documented by Conan McIvor who, in his project worked with local heritage services to research art and literary texts inspired by the Tolka.

The third pairing in the artist team, Sven Anderson and Jennie Guy, consulted civil servant stakeholders in the river's maintenance, including the OPW's 'Engineer-in-charge' of the Tolka's flood defence program. They further explored governmental publications on the Tolka, and drew comparisons with other rivers around the world.

Figure 1. Tolka Nights event poster.

3.2. The Three Events of Tolka Nights

In a collaborative response to the individual and group activities that formed the research and engagement process stage, the artist team produced three public events (Figure 1.) comprising audio-visual presentations and live performances. Each event's distinct format was informed by the form and function of the specific riverside venue in which it was presented.

The first event, a Tolka River-themed pub quiz, took place at The Grasshopper Inn, Clonee, Co. Meath. Quiz teams were made up from the communities and organisations with whom the artist team had liaised and collaborated with during the earlier process stage. The quiz questions were derived from knowledge shared by these communities and organisations, and each group donated a prize that was awarded to the winner of a specific quiz-round. This format provided an opportunity for groups to meet and share their unique branches of knowledge, and artefacts, in a celebration of the river that unites them. The evening was enriched with food and drink produced from local riverside edibles and audiovisual production throughout the pub featuring riverside sounds and images captured by the artist team.

The second event features an outdoor screening of a programme of original films shown on a large screen erected in Tolka Valley Park, near Blanchardstown. The films screened at this event were produced by the artist teams, both individually and in their collaborative pairings. The subject and material of each film was derived from each artist's activity in the process stage. The event also included a coloured illumination of the river and a performance of Tolka Chorus, the choral group assembled by D'Arcy.

The third event commenced with a symposium at the College of Amenity Horticulture, situated by the Tolka as it passes through the National Botanic Gardens, Dublin. This featured artists and architects speaking about their work with rivers both in Ireland and further afield, programmed by Anderson. The symposium was followed by a sound art intervention featuring a multichannel sound installation and mobile sound hunt devised by Green and Anderson.

4. The Soundscape in the Four Wildlife Films of Matt Green

4.1. Green's Engagement Process

Over a six-month period prior to the three public events, Green travelled the full length of the Tolka in an effort to document the river in sound and video from a variety of perspectives. These perspectives included those of the river's wildlife, inhabitants and users, as well as hard-to-reach perspectives such as underwater, which Green sought to acquire through use of microphone and camera technologies. During most of Green's time spent at the river he was accompanied by Stuart Sloan. Sloan captured still and moving image documentation whilst Green recorded sound.

Green programmed his documentation of the river as a series of expeditions for which he would draw up maps and involve local guides whose work or recreation concerns the river.

One of these expeditions included a three-day cycling trip travelling back and forth along the river, engaging in prolonged periods of listening and sound recording activity (Figure 2.). The most significant of Green's interactions were a series of eight organised walks with individuals knowledgeable of the river's flora and fauna; a focus of Green's from the outset. The documentation of four of these excursions were compiled in to four films that were screened at the second event of Tolka Nights.

Figure 2. Matt Green fishing for sound at the Tolka.

4.2. Four Wildlife Walks

Green and Sloan undertook four expeditions along the Tolka that were specifically in search of the Tolka's rarer and more elusive wildlife. Each expedition was guided by a local river enthusiast knowledgeable of the animal being searched for. Sean Meehan led the search for bats, Brian Carruthers for kingfisher, Barbara Freitag for Otter and Des Chew and Christy Emmet for trout.

In each of the four walks, Green observed and shared in each guide's interaction with the river environment as they pursued a particular animal. Green also encouraged each guide to verbalise their activity as they went. This annotated each walk with further information, anecdote and opinion pertaining to the wildlife, the river and its environment. Green and his guides were fitted with a wireless lavalier microphone to capture their conversations. Sloan, acting as cameraman, would occasionally join the conversation but most often stayed behind Green and the guide, recording them from a distance. Use of the wireless microphones as opposed to a boom microphone, meant Green was more mobile and the job of recording was less tasking, hence Green was able to stay in better contact with the guide.

Furthermore, Green and Sloan found that 'indirect' surveillance of the guide elicited less nerves and restraint than, for example, a straight-to-camera interview.

Green conducted the four wildlife walks with reference to the ethnographic practice of 'walking with video' that Sarah Pink both termed and defined (Pink 2007). Pink comments that 'walking with' can "bring us closer to understanding how other people perceive their multisensory environments, constitute place through everyday practice and live 'in their bodies'" (Pink 2007, 246) and that video "provides us with a tool that can enable embodied communication about, empathetic understandings of and representations of other people's perceptions of their environments" (Pink 2007, 245).

4.3. Four Wildlife Films

Four films were produced to illustrate the wildlife walks undertaken by Green, Sloan and their invited guides. Each of the four films includes selections from the conversations that took place as the river and its parklands were explored, and recording of the sights and sounds both encountered in these journeys and evoked by them.

Each of the four films seeks to impart the pleasurable experience of the expedition it recounts. The films attempt to communicate a sense of travel and of time spent in close connection with the river and river environment, as well as the splendour and serenity of each setting. Moreover, the films attempt to convey the warmth and humour of each guide and his or her enthusiasm for, and knowledge of, the animal being searched for, and for and of the Tolka, the home of this animal.

Elsewhere (Green 2011, 17), with reference to phenomenological geographer Edward Relph, Green has stated that much of his artwork seeks to adapt or enhance an individual's 'sense of a place' (Relph 1976, 63) and lists a number of ways of doing so. One of the methods outlined by Green is to change the individuals' orientation and/or 'intention' (Relph 1976, 43) towards a place. With the four films, Green once more employs this tactic: Through inspiring interest in an animal, awareness that it inhabits the river and knowledge of the factors of its habitation, Green seeks to encourage the audience to visit the river and its parklands, and once there, to engage more deeply with the environment in a manner approaching that of the wildlife guides. This tactic recalls the motives of psychogeography. Christina Ray and David Mandl comment that psychogeography is "about exploring or experiencing the physical landscape in new ways: trying to find what's marvellous, life-affirming, or at least exciting about seemingly mundane places – or transforming them to make them more marvellous, life-affirming, or exciting".[4]

4. Quote taken from an interview with Ray and Mandl in the build up to 2nd annual Psy.Geo.Conflux conference, which they co-organised. The interview is here: http://gothamist.com/2004/05/10/christina_ray_dave_mandl_psygeoconflux.php. This quote can also be found in (Pinder, 2005, 391).

4.4. Sound in the Four Films

At the forefront of the soundtrack to each film is the voice of each guide. The guide's speech was captured close up, close to the body, with little treatment in post-production. As a result of this sound quality and the accompanying images, each film adopts a first-person perspective for much of its duration and this perspective is that of the guide. This supports the aim of the audience empathising with, and taking on to themselves, some of the guide's 'ways of being in the world' (Pink 2008, 181). In addition, clearly in two of the films but arguably in all of the films, there are points in which the 'point-of-view' and 'point-of-audition' (Chion 1994, 90) are from the perspective of the pursued animal. This is done both because of the aesthetic of their perspective and to encourage the audience to empathise with this animal and their ways of being the world.

In addition to the dialogue, the soundtrack contains river ambience and activity. These elements were derived from field recordings taken by Green within the course of his engagement with the river. The majority of these recordings were captured along the route of each guided wildlife walk but at a later time. Prominent in each soundtrack is the sound of walking through undergrowth and upon dirt tracks and stony banks as well as wadding through water. In terms of texture, these sounds are true to the environments explored but they are presented exaggerated, 'hyper-real' (Chion 1994, 99). As such, these sounds foreground the sense of travel and give dynamics, rhythm and interest to each soundtrack. Furthermore, the sound of footsteps appears exaggerated in an effort to express the multisensory nature of walking.[5]

The walking sounds serve an additional purpose. These sounds are applied across scenes to help build the sense of one coherent journey across space and time. Conventionally in film including documentary, music would usually serve such a purpose as well as provide dynamics, rhythm and interest. Music is also often employed to convey the emotions of characters or give colour to scenes.[6] In the four films, there is no music (at least not in a classical sense). In the place of music, there is the ambient sound of the river environment comprising primarily the sound of flowing water. This sound is regarded as being relaxing and symbolic of peace, vitality, good health and purity.[7] The river ambience imbues each film (and indeed the real environment each film depicts) with these qualities.

Green's four films share the approach of the documentaries analysed by Strachen and Leonard (2015). In these documentaries, the soundscape "has a crucial role to play and cannot be understood simply as a complementary bed always in service of the other elements"

5. With regard film, Marks comments "the audiovisual image necessarily evokes other sense memories" and "through intersensory links: sounds may evoke textures; sight may evoke smells" (Marks 2000, 213). Pink quotes Marks in a similar discussion of the capacity of film to illicit sense impressions beyond those directly engaged by the medium (Pink 2015, 172).
6. "Music provides continuity, covers up edits, facilitates changes of scenes, provides mood, offers entertaining spectacle, allows for narrative interludes and montage sequences, and comments on action" (Ruoff 1992, 229).
7. The qualities of flowing water mentioned are raised throughout (Symmes 1998).

(Strachen and Leonard 2015, 166). For Green's four wildlife films, the soundtrack was drafted first and images were added to this. Constructing the films in this way reversed the usual hierarchy in which "image, dialogue and music are prioritised over locational sound" (ibid.). Sounds were selected on their own merits rather than because they best suited an image. Moreover, in the four films, sound and image do not always align, which Strachen and Leonard suggests encourages the audience to "listen aesthetically" (Strachen and Leonard 2015, 174). Additionally, sound alone commences and ends each film and throughout each film there are moments in which the screen goes black, which places further emphasis upon the soundtrack.

4.5. Film Screening in Tolka Valley Park

The four films were produced for the second event of Tolka Nights – the outdoor screening event at Tolka Valley Park (Figure 3.). In addition to Green's four films, three other original films produced by the artist team were shown: Anderson and Guy's *Before the Flood* (2015); Sloan's *Troubled Waters* (2015) and McIvor's *Lady of the Tolka* (2015). Green's *Kingfisher Spotting with Brian Carrathurs* (2015) opened the event, and his remaining three wildlife films were sequenced in alternation with those of the other artists. Green's kingfisher film struck the group as an appropriate opening given it's beginning with an invitation from Carrathurs to walk to the river. The remaining three films because of their position in the programme, their short length and positive tone, appeared like adverts for visiting the river, a welcome byproduct of the event programming that empathised with Green's intentions of ecological advocacy.

Each film in the programme approached the Tolka differently. Whilst Green's four wildlife films mostly avoided negative aspects of the river, these were at the fore in other films. Whilst Green's films were naturalistic and affable, other films such as that of McIvor were much more abstract and assertive. McIvor described his film *Lady of the Tolka* as a 'trance film' informed by durational video art practices. McIvor's soundtrack was comprised entirely of ambient music: a large contrast to the aesthetic of Green's wildlife films.

Figure 3. Film screening in Tolka Valley Park.

5. The Sound Art Intervention of Event Three

The third event of Tolka Nights consisted of a symposium and a sound art intervention entitled 'river amplification' on event promotional materials. The symposium was held in the College of Amenity Horticulture situated in the National Botanic Gardens, Dublin. The river amplification was staged in the gardens across a knot of pathways leading away from the college and crossing the Tolka. The river amplification comprised a river illumination, a multichannel-channel loudspeaker installation and a sound-hunt accessed through use of handheld radios distributed to the audience. The intervention took place at twilight, a time when the gardens are usually closed to the public. The intervention provided opportunity for the audience to interact with each other, the gardens and river; participating in the production of a sonic artwork that augmented, annotated and animated the river's soundscape.

5.1. Multi-channel Sound Installation

The installation comprised four large speakers mounted on subwoofers that were placed in a clearing by the river situated directly beneath the college (Figure 4.). Two of these speakers faced away from the river towards a grassy incline that runs alongside the college. The remaining two speakers faced towards a footbridge beneath which there is a weir and through which the Tolka runs. Played through the speakers was a composition of ten water textures which Green recorded within his expeditions along the river in the months prior. Each texture first faded in and then out on the first pair of speakers, those facing the grassy incline away from the river. As a texture faded down in the first pair of speakers, it subsequently faded up in the second pair. As the texture faded down in the second pair of speakers, a new

texture faded up in the first pair. The composition included various river flows; underwater sound; wading through water; a thunder storm; and light woodland rainfall. Some textures were big, bold and bassy whilst others lighter, softer and airier.

The speaker stacks were capable of emitting very loud sound (they had in the week prior to Tolka Nights been used at Electric Picnic, a 50k capacity music festival). Whilst the speakers did not emit volumes at anywhere near their capacity, the river sounds were amplified much beyond their natural level. From the grassy incline, certain textures such as the underwater texture provided an intense and visceral experience: the sound strengthened by reverb engulfed the listener and the bass was strong enough to be felt throughout the body. This experience was intended to produce a feeling of immersion, as close as one might get to being submerged in the river without getting wet. Moreover, at such times, the river was impossible to ignore. The river appeared to demand attention, something which in the past it has lacked.

From the footbridge, towards which the second pair of speakers faced, both projected sound and the real river were audible. The river at this point runs with pace down a weir and is resultantly quite loud. At this location, the projected sound served not to amplify but augment. The textures accented the real river sound and over time transformed this sound, as though the river were shifting through its many guises; or carried by the river were images of itself from further upstream and further back in time.

Away from both the incline and bridge, the projected textures could be heard to move to and fro across the river, and reverberate throughout the undergrowth and canopy of the gardens. At such a vantage, the installation served to articulate the surrounding geography, express the scale of the river's influence and unify the radio projections of the sound hunt.

Figure 4. Sound Installation in the National Botanic Gardens, Dublin.

5.2. Sound Hunt

Through use of short range radio transmitters, twelve sound zones were dispersed across a knot of paths in the botanical gardens. At the exit to the college, which led down to the main installation area, the audience were provided with radios through which the dispersed sounds could be accessed. Participants were also handed a somewhat cryptic list of titles for each sound zone and informed of the radio frequency at which all zones were audible. Most participants undertook the walk in a group or pair, either each with their own radio or sharing.

Audible in each zone was a sound composition derived from the media and recordings of the two previous events or the raw materials of the artist team's process stage. The compositions included edited versions of the soundtracks to the films shown the previous night; a recording of the Tolka Chorus; a recording of the first event's quiz; the final episode of 1960s TV soap opera 'Tolka Row'; and various field recordings.

Green devised the sound hunt with support from Anderson. Green's previous work includes a number of what he terms 'mobile sound walks' (Green 2011, 2). These comprise sounds mapped across space that can be accessed through GPS-enabled devices equipped with headphones. On this occasion, the more primitive technology of radio was selected for a number of reasons: Firstly, radios are everyday devices and have made familiar the concepts of tuning 'in to' signals, and being 'in range' or 'out of range'. Radios also signify a condensing of time and space: through the radio one can access the sound of far away activity with accuracy and immediacy. Hence, one may more willingly perceive the radio installation as a 'heterotopia' (Foucault 1984), a space in which other spaces and times coexist and can be accessed. Secondly, radio static resembles the broadband frequency spectrum of water sound. This supports the illusion that one is tuned to and listening to the river. Thirdly, the sound hunt was inspired by Green's bat hunting on the river in which a device much like a radio was employed to access the ultrasonic calls of the bats. Green found the experience of hunting out bats (hearing the first call through the static of the bat detector) thrilling and sought for the sound intervention to be similarly pleasurable. Indeed, one zone comprised a composition of bat calls. Fourthly, the radios came with speakers so sound could be played out loud. This enabled participation in the event's soundscape, encouraged sharing of the experience and gave the event more of a communal atmosphere – attempting to provide a sense of community, which is a known quality of the radio medium (Truax 2001, 10).

In addition to locative media practices (Hemmet 2006), underpinning and informing the radio installation was, as with the Green's films, psychogeographic methods. Like Debord's alternative map of Paris (Pinder 1996), the request for the audience to search out sounds was a request to inhabit and engage with the site and river differently and perhaps go on to regard the site and river differently: the river's significance to the gardens and its catchment more evident, the activity of listening to and at the river more likely. Cristina Kubrisch's

'electrical walks'[8] and Janet Cardiff's 'audio walks'[9] make similar requests of their audience and were an inspiration to the sound hunt.

6. Tolka Chorus

Tolka Chorus was a series of riverside vocal workshops coordinated by John D'Arcy. Through the processes of critical listening, musical composition and vocal improvisation, these workshops invited local residents to engage with both the soundscapes of the river and a selection of archive material relating to the river's environmental and social histories. These activities facilitated the participants in their development of a songbook with an accompanying animated score for public performance as part of the second event of Tolka Nights.

D'Arcy's approach in Tolka Chorus had been previously developed in the production of a series of participative choral events presented under the moniker Belfast City Choir. These included site-specific performances by organised ensembles (*Letterkenny and Moving Song*, 2013) as well as participative actions by members of the public (*On the Move*, 2013; and *Literary Lunchtime*, 2014). The events of Belfast City Choir were each led by D'Arcy's printed verbal performance instructions for non-expert vocalists. These instructions encouraged individual and group exploration of a specific site through engagement with environmental sound, literary texts, oral histories, performative ritual, sound poetry, musical improvisation, acts of détournement[10], and inclusive performance practices. It was the aim of Tolka Chorus to engage a group of residents in Dublin and Meath with these elements as a means to explore their local riverside environment.

Tolka Chorus invited participants from a number of schools, colleges, choral societies and community groups in the river's catchment area. From this, a group of amateur singers was formed. Each participant had experience with classical choral music as well as personal memories of the river and its histories. This project gave the majority of the group their first experiences in sound-walking, group vocal improvisation, and graphic and verbal musical notation.

The workshops and performance were shaped by a dialogue between D'Arcy and the participants about how the group might explore the sounds of the river, its communities and histories through vocal performance. Drawing influence from site-specific sound works such as Susan Philipsz's *Lowlands* (2010), a public installation based on folksong, and Brian

8. For details of Kubrisch's electrical walks: http://www.christinakubisch.de/en/works/electrical_walks.
9. For details of Cardiff's audio walks: http://cardiffmiller.com/artworks/walks/.
10. The politicised subversion of existing productions and media through adaption and manipulation of recognisable characteristics – observed and categorised in the context of Situationism by Guy Debord and Gil Wolman (Debord and Wolman 1956). In the works of Belfast City Choir, detourned elements include classical performance contexts, Western counterpoint and harmony, and the original literary text sources.

Irvine's street-opera *Things We Throw Away* (2014); it was decided that the group should perform vocally at riverside locations so as to immerse themselves and the audience in the locale.

The group identified two key methods of vocally sonifying the river: (1) vocalising riverside environmental sounds in mimicry and sound poetry; and (2) giving voice to the river's social and ecological histories in lyric and melody.

6.1. Vocalising Environmental Sounds

In order to recreate environmental sounds, the group underwent a variety of vocal exercises that compartmentalised some discreet parameters of vocal sound production such as pitch, timbre, amplitude envelope, etc. These exercises were influenced by the inclusive music-making practices of John Stevens and Brian Dennis (Stevens 2007, Dennis 1975). The group practiced attending specifically to the timbral details in their vocalisation as they explored forms of sound poetry: paralinguistic sounds, non-semantic vocables and glossolalia. The sounds emerging from the group formed something of an acoustic lexicon as they began to discuss and imitate local environmental sounds – both in literal and abstract interpretations.

To augment this activity, participants conducted walks along a section of the riverside in Mulhuddart that took in areas of lush vegetation, forest, suburbia and arterial roadways. The group engaged in critical listening exercises influenced by Pauline Oliveros's *Deep Listening* (Oliveros 2005). This prompted further consideration of the distinct parameters of individual sounds as they emerge and propagate in the wild, as well as the density and texture of the overall environmental soundscape. At certain points where pathways intersected the river, the group stopped to perform echoes of the natural soundscape. Upon returning to the indoor workshop space, the group listened to a selection of the local animal calls and underwater soundscapes recorded by Matt Green. This was an opportunity to listen 'deeper' and observe timbres, melodies and textures that hadn't revealed themselves during the daytime walk in Mulhuddart.

The group then vocalised a short musical piece structured as a riverside journey along the River Tolka. As a visual guide the group looked to a series of large-scale maps of floodplains along the river. This improvised performance contained a variety of aural textures ranging from sparse rural scenarios to dense industrial dirges. Over the course of multiple performances, the group began looking at the illustrated flood plains as a graphic musical notation. The changing colour and span of the flood extent at different points in the river's journey towards Dublin Bay could be interpreted as changes in pitch, volume and timbre for individual voices, or the overall density and texture of the group's soundscape. Using the floodplain maps as a graphic score for a vocalisation of environmental sound would ultimately become the undercurrent of the group's live performance piece.

6.2. Giving Voice to the River in Lyric and Melody

In addition to vocalising the environmental sounds of the river, the group felt it was vital to give voice to the river's social and ecological histories in the form of spoken and sung texts. The group consulted a range of source material including news archives collected by D'Arcy, historical literature collected by McIvor, and oral history statements collected by Guy. The participants grouped these into categories of ideas and issues that they felt were pertinent. These included pastoral tranquillity, industrialism, ecological pollution, the riverside Battle of Clontarf (1014), and personal memoirs of riverside landmarks.

The group listened to musical examples where archive material was used as lyrics and in response began performing their own text sources in forms including verse-structure, improvised melodies, mash-ups, drones, echoes, chants, and graphic melodic notation based upon year-on-year Tolka flooding data. The group used verbal music notation as a means of defining these musical adaptations of the archive text sources. It was hoped that the plain language of verbal music notation (as opposed to traditional Western musical notation) would provide a comparable starting point for performers of all levels of musical experience, as well as engender opportunities for improvisation.

The group chose seven lyric sources, each married to a distinct compositional and performance mode. 'It's Not Flashy' adopted the typographic musical notation informed by Hugo Ball's *Karawane* (1916). Here, the dates of flooding occurrences were printed in different sizes relating to their devastation – this would inform the performer as to how aggressively they should chant the texts aloud.

'Best Kept' and 'Cool Water' invited melodic improvisation, echoes and tonal harmonies for the performance of the archive texts about positive aspects of the river. 'Best Kept' described Dublin's National Botanic Gardens ("In the bustle of the city majestic trees buffer against the noise and fumes"); whilst 'Cool Water' described the shared experiences of diverse communities living at riverside accommodation in Mulhuddart ("Old and New Irish honouring the differences [...] similar customs [...] similar cultures [...] similar traditions"). In contrast, the verbal musical notional for 'Waste of Water' asked performers to recite quotations from news articles about Tolka ecological disasters as "a polluted flow of sound", and to "contaminate the lyrics of others".

It was hoped that the verbal notation for performance would evoke a range of visual, oral and aural processes and thus prompt critical responses to the texts undergoing recitation – an opportunity for an individual performer or listener to reflect on the Tolka soundscape from multiple perspectives.

Figure 5. Tolka Chorus in Tolka Valley Park.

6.3. Performance at Tolka Valley Park

The performance of *Tolka Chorus* at Tolka Valley Park (Figure 5.) took the musical structure of a journey along the Tolka. This followed on from the group's improvisations based on flood-plain maps during workshops. For public performance these maps were adapted into an animated video by McIvor that was projected on the large screen at Tolka Valley Park. This allowed both performers and members of the audience to observe the map during performance. This animation acted as a graphic score that notated the changing position of the group's conceived geographical location.

Participants vocalised environmental sounds in response to the changing location and correlating extent of the Tolka flood-plain on the animated map. The seven text pieces were each designated to a distinct location along the map in reference to their conceptual underpinning (e.g. 'No Man's Land' was positioned at Dublin's industrial M50 roundabout; 'The Heron' was located in the pastoral townland of Piercetown, Meath). Upon arrival at a song destination the black background of the animated map burst into colour and an onscreen title indicated the change in mode to a text performance.

The performers were amplified with microphones and accompanied by pre-recorded fragments from their rehearsals. This bolstered both the density and reach of the vocal soundscape. The group also distributed songbooks that allowed audience members to read the text pieces and their accompanying verbal music notation, with the introduction: "Tonight you are invited to join in the chorus."

Tolka Chorus sought to give voice to communities and ecologies of the river, fostering new personal connections between participants, listeners and the local environment. By

attentively listening to their surroundings and letting their own vocalisations resonate through the landscape, the voices of *Tolka Chorus* demonstrated an alternative mode of aural engagement with the river.

7. Conclusion

Renowned Irish author and playwright, Samuel Beckett described the Tolka as one of Dublin's "infernal streams" (Nixon 2008). Whilst the Liffey proudly flows through the heart of Dublin, adorns tourist postcards and serves as an emblem of the city in literature, music and art; the Tolka flows through the margins of Dublin and, perhaps as a result of this, is marginalised. Industrial and urban development in Dublin has pushed the Tolka further and further out of eye and earshot, and resultantly out of the minds of many. When the Tolka rises back up, back in to consciousness, it generally does so either through flooding, pollution outbreaks or the accommodation of criminal acts. At these times, the attention the Tolka receives is understandably unfavourable.

Through public exhibition and performance, Tolka Nights sought to bring attention of a positive kind to the river. The events also sought to foreground the multi-faceted significance of the river and in doing show the river to be deserving of increased attention.

What the Tolka has in common with the Liffey and with rivers around the world is that it unifies in its single name a myriad of diverse people, geographies and histories. The river binds Dublin City with the townships of Meath; agriculture with manufacturing and recreation; the Battle of Clontarf with fish kills incidents. In its passage through territories, the river sets up a network of interdependency: upstream impacts downstream, downstream impacts upstream. In the process of Tolka Nights, the artist team sought to investigate, experience and creatively respond to the Tolka's variety. The three events of Tolka Nights in their wide range of both approach and content underscored the Tolka's variety. The events also sought to bring distinct communities together and spark discussion and interaction between these communities with regards the river that they all share.

The river soundscape was central to Tolka Nights. Through listening, recording, and studying the Tolka soundscape, Green ascertained a greater understanding of the Tolka's diversity. During Green's guided expeditions, the soundscape mediated encounters with the river's most captivating animals. The Tolka soundscape contributed music to Green's documentaries of the expeditions and helped convey the narrative of these journeys; and in doing helped express the worth of the river. The sound intervention of the third Tolka Nights event used the soundscape as a means to bring 'the real river' into the work; to magnify the river; draw the audience's attention and evoke their interactions. The sounds of the river evoked similar interactions between the participants of Tolka Chorus, allowing D'Arcy to facilitate musical composition and improvisation of an experimental nature that

attended not only to the riverside soundscape, but also to the social, historical and ecological contexts of the locale.

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Tracing Walfridus – A Quest for the Sound of a Past Landscape

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ABSTRACT: This paper tells of my artistic search for the sound of a landscape that no longer exists in the Netherlands. It brought me to the pristine raised bogs of Estonia, where I made binaural field recordings. That material has been used to make a series of new sound pieces. But more important, the undertaking revealed empirical insight in what it means to be somewhere and how space can become a place: not the spatial dimensions, but temporal aspects are paramount.

KEYWORDS: field recording, landscape, history, music, folklore.

1. Introduction

As a former physicist I used to keep the distance between nature, the object of research, and myself, the investigating subject, as large as possible for the sake of objectivity. This practice felt to me, however, as if something was kept out of the equation. Nowadays, as an artist, I have much more freedom to account for my own position with respect to my surroundings and to nature. It has, in fact, become the main motif in my artistic practice: what does it mean to be somewhere, what is the meaning of place, how does space become place? Recent events in the area where I am living, (Groningen, NL), have made these questions all the more urgent to me. Centuries of cultivation and exploitation – in former days as peat excavation, today as natural gas extraction – has led to regular earthquakes in that region. A safe and solid place should never be taken for granted.

Above-mentioned questions and events led to a closer examination of my own environment. Since my visual perception might be too rationalized due to a scientific training, I chose to observe my surroundings mainly by ear. In the course of one year, I made stereo field recordings on several occasions during each season in the area between Groningen, Bedum and Ten Boer (Figure 1). From that material I made a sound piece in four parts entitled *I-II-III-IV* (2014/2015). Composition of the piece was loosely borrowed from the most famous piece in Western art music that imitates sounds of nature: *Le quattro stagioni*.[1] The resulting sound piece gives a sonic impression of a typically Dutch contemporary cultural landscape.

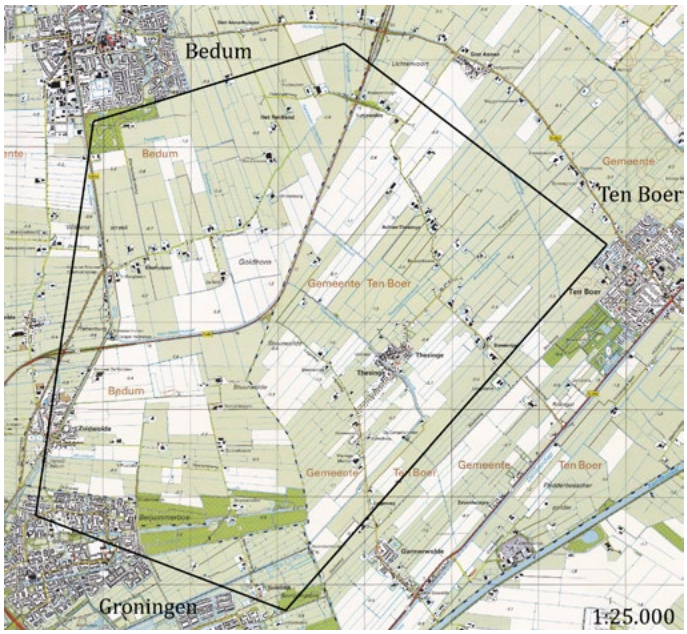

Figure 1. Topographical map of the region between Groningen, Bedum and Ten Boer (Kadaster, 2013). The figure roughly indicates the area where field recordings were made.

1. Nr. 1–4 of Opus 8, *Il cimento dell'armonia e dell'inventione*, by Antonio Vivaldi (1678–1741), published in 1725 in Amsterdam by the music publishing house of Estienne Roger and Michel-Charles Le Cène (Rasch 2012).

While making field recordings between meadows, in wheat fields and near gas extraction installations, I wondered when people started to cultivate that landscape for the first time. So I delved into history via several routes. From historical geography I learned that once a thick layer of raised bogs covered the area where I made my recordings. These bogs had formed since the beginning of the Holocene, almost 12.000 years ago. In early days, rivers that intersected the bogs were used for transport; first proof of permanent inhabitation has been found in monastic records, indicating that from around 950 AD onwards people had resided on the bogs (Ligtendag 1995). From local folklore I learned about Walfridus of Bedum, a pious figure who probably lived around 1000 AD and is according to legend the first person to have cultivated the raised bogs in my region (van Schaïk 1985).

After finishing *I-II-III-IV* and the additional historical research, the wish for a better understanding of the place I live remained. Moreover, the historical information that I gathered, had given rise to a further question: how would the bog landscape have sounded when first people started its cultivation? This question gave rise to a new project as counterpart of the one that had resulted into *I-II-III-IV*. The goal of this new project is to (re)construct the sound of a past landscape by following in the footsteps of the first man that allegedly entered the raised bogs in my region roughly 1000 years ago; or in other words, by tracing Walfridus of Bedum.

2. Method

Time travel is not possible yet. So, the only way to collect the sound of a past landscape is by travelling to another place where a similar landscape still exists. In my search for such a place I use the following requirements for an acceptable degree of resemblance:

- presence of pristine raised bogs;
- presence of certain natural features such as rivers and a nearby sea;
- bog area at least of same size as the area of recording in Groningen;
- similar climate zone;
- similar latitude;
- unknown territory to me.

The first two requirements simply describe the landscape in Groningen at the time Walfridus was living. Since the aim is to construct a counterpart of the contemporary piece *I-II-III-IV*, I demand the bog size to be comparable with the area where I made the contemporary recordings. Similar climate zone and latitude allow for similar weather and seasonal conditions. The last requirement gives me the opportunity to imitate Walfridus' first time entry into an unknown landscape.

The project plan is to visit that place of resemblance each season and to collect its sounds, this time by making not only stereo but also binaural field recordings. Binaural recordings emphasize my own presence in the landscape. That quality corresponds well

to a project that is all about first presence of people in an uncultivated landscape. In addition, optimal playback of binaural recordings is through headphones, which gives rise to a cocoon-like listening experience that strongly enhances the feeling of being at another point in space and time.

Next to the field recordings, I also plan to take pictures and collect other sensory information. Finally, the wish for a historical understanding of my own region forces me to travel to another place. Of course, that other place has a history of its own. To obtain a broader picture of that other place, I intend to do some research on its history as well.

3. Results

3.1. Similitude

A place that serves as a contemporary version of the landscape in medieval Groningen is Soomaa, a national park in the southwestern part of Estonia (Figure 2). Soomaa consists of five intact raised bogs that are separated by a few small rivers. The largest bog, Kuresoo, is by itself bigger than the area of recording in Groningen (11.000 ha versus 10.000 ha). Soomaa is located close to the Pärnu Bay, part of the Gulf of Riga and thus the Baltic Sea. According to the Köppen-Geiger climate classification Estonia lies in the zone of humid continental climates that have cool summers and mild winters due to maritime influence (type Dfb). This is not exactly the same as the (current) oceanic climate in the Netherlands (type Cfb), but sufficiently similar for my purpose. Last but not least, I have been neither in Soomaa, nor in Estonia, I don't speak Estonian and I know little about the north-eastern corner of Europe, so it is definitely unknown territory to me.

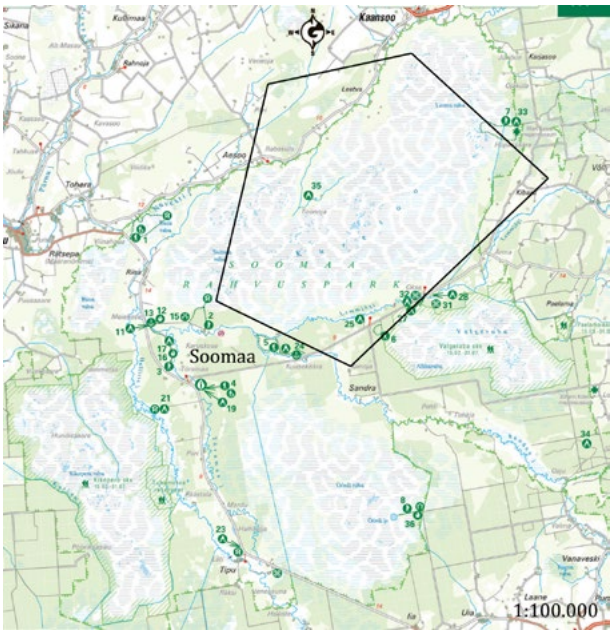

Figure 2. Map of Soomaa National Park (from www.loodusegakoos.ee). The figure indicates the size of the area where field recordings were made in Groningen (cf. Figure 1).

While preparing for my first visit to Soomaa, I came across several scientific publications about Nigula, another intact raised bog area located a little south from Soomaa. Since this bog seems to be so well documented, I decided to make field recordings there as well during all my visits.

I visited Soomaa and Nigula in 2016 during the following periods: in winter from January 29 till February 10; in spring from May 18 till May 29 and from June 1 till June 6; in summer from August 11 till August 28; in autumn from November 1 till November 15. The type of landscape I encountered during these visits varied more than I had expected. At first glance each raised bog is just as any other, a thick layer of moss with a few little pines and an occasional bog pool. At closer look however, each of the Soomaa bogs has its own particular appearance, determined by the amount of trees and the presence of large clusters of either bog pools or bog islands.[2] Furthermore, the various raised bogs are separated by forests, flood plains and rivers. All these different vegetation and habitat types are essential elements that constitute a typical bog landscape.

3.2. Sounds

During the visits I made both stereo and binaural field recordings at many locations at Soomaa (Figure 3) and Nigula. Each season I returned to these same locations as much as possible. Soomaa is famous for its regular floodings, the so-called fifth season. I happened to enjoy such a fifth season twice, once in winter and once in summer. On those occasions roads were flooded and subsequently closed, so some parts of the area were not accessible at that time. The best way of accessing the area during a flood is by canoe. But the canoe trips brought me to places I could not reach by foot at times without floods. Hence, I could not always visit all of my recording locations at every season.

2. A bog island is an area within a bog that is a bit drier than its environment so that trees can grow and reach normal height, and where other plant species such as heather or Labrador tea can survive the otherwise wet conditions of the bog.

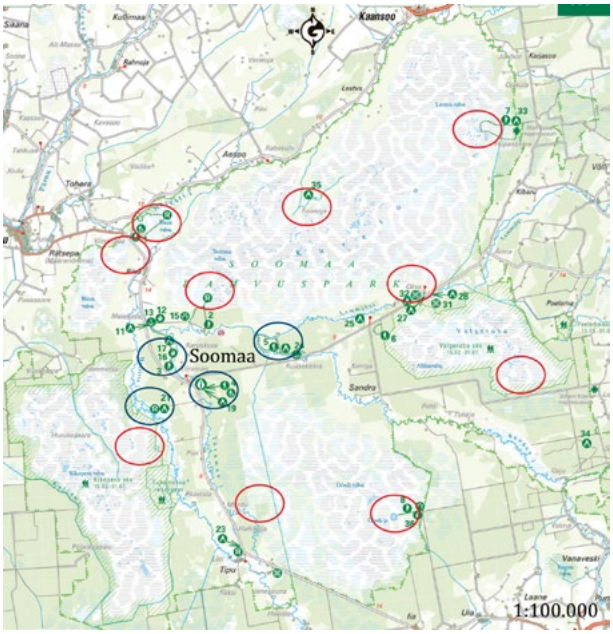

Figure 3. Again the map of Soomaa National Park. The red ellipses indicate recording locations on raised bogs; the blue ellipses indicate the locations in forests and flood plains.

The recording locations covered not only the raised bogs but also the forests, the grasslands and river shores, in order to gain an accurate impression of a bog landscape. Recording time differed from location to location, from visit to visit, depending on weather conditions or disturbances. Recorded sounds are mostly keynote sounds (Murray Schafer 1994) of geophonic and biophonic origin (Krause 2015). However isolated Soomaa may be, sounds produced by human activity are never far off (e.g. traffic, forestry, airplanes). Because of the historical focus of the project, I avoided these contemporary, anthropophonic sounds as much as possible in my recordings.

3.3. Songs

Background research on Estonian history revealed that folk music and especially singing has been of utmost importance for Estonians throughout their history. It was a Singing Revolution, a series of singing events and demonstrations between 1988 and 1991, which led to the restoration of the independence of Estonia after decades of Soviet occupation.[3] In less recent history, folk music and singing played a major role in maintaining the Estonian language and creating an Estonian identity in times of domination and repression by foreign powers (Hasselblatt 2012). The oldest folk songs are the runo songs ('regilaul').[4] It is believed that these songs were already sung millenia ago, so also around the same time Walfridus was

3. Interesting to note: first protests arose from within the environmental movement. So, protection of the landscape acted as lever to free its inhabitants from occupation. Apparently, fate of a landscape seems to be more intertwined with that of its inhabitants than is generally acknowledged.

4. See also: https://www.folklore.ee/pubte/eraamat/rahvamuusika/en/index (accessed May 20, 2017).

living in Groningen. Because I was curious whether traces of those bygone times are still lingering in these songs, I focused more on these songs in my investigations.

Runo songs have rather simple, repetitive melodies. Texts consist of eight syllable lines and are often characterized by the use of parallelism. Runo songs were sung at special occasions as well as during daily chores (Kurrik 2013). In the last century modern end-rhyme songs have almost completely replaced the runo songs, but recently the tradition revived: singers study old, archived recordings to perform the songs again, and musicians reinterpret or refer to the songs in their work (Koch 2012). A well-known Estonian composer whose work is largely based on runo songs is Veljo Tormis (1930–2017).[5]

3.4. Series

After my last visit in November 2016, I had a huge amount of sounds, pictures and research material. My only strategy that I could think of to process that data was to go through it step by step. Up to now, this approach has resulted in three series of works.

Figure 4. *Tracing Walfridus #00*, photo series, variable size, 2016.

5. A few examples from his enormous discography are *Litany to Thunder* (ECM Records, 1999) and *Eesti Ballaadid* (Forte, 2010).

The first series starts with a visual representation of the actual tracing activity and is entitled *Tracing Walfridus #00* (Figure 4). *Tracing Walfridus #01* (Figure 5) is a sound piece that represents the action of walking through a landscape, referring to the geological timescale from the last Ice Age until the Anthropocene; it includes a song that tells the story of Walfridus in the style of a runo song. *Tracing Walfridus #02* (Figure 6) is a next sound piece that guides a listener through the seasons in a bog landscape. More pieces will follow; the final goal is to develop a counterpart of the sound piece *I-II-III-IV* that I made of contemporary Groningen sounds.

Another series that I started is *Bog Book*, a series of textile books that look like scale models of a bog during the different seasons. Leafing through such a book resembles the excavation of a landscape. A third series is entitled *Suur tamm* ('Great Oak'), a photo series that focuses on the linear and cyclic time evolution in a landscape.

Figure 5. Exhibition overview of T*racing Walfridus #01*, binaural sound piece, 3 min 17 sec (loop), 2016. The exhibition took place in Veendam (NL), a place with a long history of peat excavations.

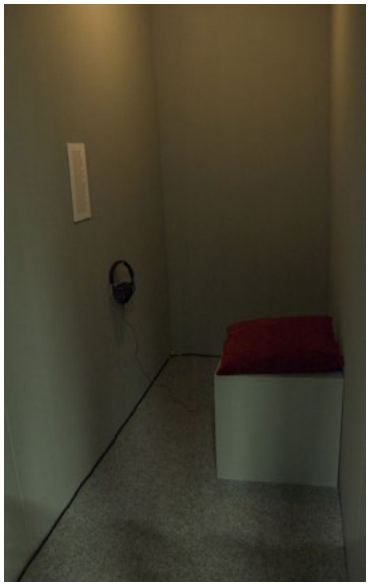

Figure 6. Listening booth at an exhibition of *Tracing Walfridus #02*, binaural sound piece, 7min 30 sec (loop), 2017. The story of Walfridus is presented as text on the wall.

4. Conclusions

My project is about the (re)construction of the sound of a past landscape. The intention and approach has been purely artistic. My main ambition underlying the sound pieces is to raise awareness and recognition of our acoustic environment and of the volatility of sound, or more implicitly, of time. It might be interesting though, to empirically compare the two places I have been listening to so intensively for a longer period of time.

4.1. Two places

Compared to the comfort of a cultural landscape, my impression of a raised bog is that of a hostile, uninviting and impenetrable environment. I am in great awe of the first people who started to cultivate such land. Despite the difficulties, lots of the European raised bogs have been cultivated or excavated though. Even in Estonia, raised bogs are protected in a national park. A small fraction of those bogs have been made accessible to the greater public by means of boardwalks. Only a few locals really know their way through the bogs.

A rough acoustic comparison between the cultural landscape of Groningen and the pristine raised bogs of Soomaa reveals some interesting differences as well as similarities. First of all, since a raised bog is in general a relative silent environment, sounds from far away are less obscured. This influences the perceived spatiality: a bog seems to be much bigger and wider than a cultivated, inhabited landscape of same size.

Spring is the noisiest season and winter is the most silent season in both landscape types. However, the difference in loudness between spring and winter is bigger in a bog landscape than in a cultural landscape.

The man-made cultural landscape of Groningen is inhabited, so its tempi tend to evolve more on a recognizable, human scale, whereas tempi in a raised bog predominantly evolve on a non-human scale (e.g. grow rate of the bog is only a few mm per year; insect cycles take place on a seasonal timescale). Hence, rhythm of cultural landscape sounds is generally faster and more repetitive than that of a raised bog. However, considering a bog landscape as a whole, including forests and flood plains, rhythms in both landscape types tend to be more similar, mainly because of the presence of birds and (bigger) animals.

With regard to the type of sounds: sounds in a bog landscape are more often water-related than those in a cultivated landscape with water management. Likewise, a lot of bird and animal species are more common in Soomaa than in Groningen, and so are their sounds. Surprisingly though, few of these species can still be heard in Groningen despite the absence of extensive forests, let alone raised bogs.[6]

4.2. Time

As stated in the introduction, the fundamental questions in my artistic practice are: what does it mean to be somewhere, what is the meaning of place, how does space become place? Although I am still processing the material of the present project, there is one aspect that is becoming ever more clear to me: the notion that being somewhere is primarily time-related.

First of all, time comes in different measures. The volatile moment is perfect for sharing experiences; in contrast, monumental history — a composition of many moments — passes down experiences beyond generations. Being somewhere is both volatile and monumental.

Not only time, but also the time scales that are present in a landscape appear in different measures. A pristine raised bog can be over 10.000 years old, an oak tree a few centuries; other organisms live several years or only a few months. If at a certain place a wide range of time scales is present, it can invoke feelings of futility or resignation. This might contribute to a sense of really being at that place.

Another aspect to be considered is the direction of time evolution. Some natural phenomena are characterized by a cyclic evolution, determined by the day-night cycle or the alternation of the seasons. Other phenomena show a more linear evolution in time. For example, peat moss grows at the top and dies at the bottom. This strongly linear growth is actually the reason why wetlands can develop into raised bogs. In my view, being somewhere requires a certain balance between the various types of time evolution. In Western life, emphasis is on the linear variant (i.e. on growth, on progress), while the cyclic variant is ignored.[7] This might contribute to the erratic feeling of haste in modern life and the inability to really be somewhere.

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6. This observation actually shows the adaptive quality of nature that I find a hopeful prospect.
7. As a matter of fact, since the linear growth of peat moss eventually leads to an oligotrophic, impoverished environment, such growth model might not be the best route to a blossoming future. In whatever field, sphere or realm.

Last but not least, I noticed that the more I visited Soomaa, the more the separate memories of previous visits blurred and started to cluster to just one instance. That composed memory also seemed to persist better than the memory I had after only one single visit. Obviously, multiple visits mean more time spent in Soomaa. But in my view, it is not so much the accumulated duration of the visits, but the repetition that transformed the specific moments into a persisting continuum. Perhaps this transformation is how space becomes a familiar place.

The ongoing construction of a continuous memory from repetitive, singular occurrences is, in fact, the basis of any folkloristic tradition. Questions about sense of place are therefore intrinsically related to folklore. So in hindsight, it is not a surprise that at some point during my quest runo songs sought my attention. The repetitive melodies resonated with some of the moments that constitute the continuum of memory in my mind. And since these individual moments themselves have been lost, the songs evoked my imagination instead. Probably this interplay is what happens during listening to sounds in general; it becomes an act of not only the perception of the sound but also an effort to restore lost memories by imagination. That would mean that the sound of a past landscape that I am trying to (re)construct, is already contained in each and every head. It is just a matter of kindling the imagination.

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The Secret of Sound in Jacques Derrida and Maurice Blanchot

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ABSTRACT: This paper aims to discuss and ask questions about the role and meaning of sound and voice in the constellation of language, writing, speech and listening in philosophy. I will reflect this in the thinking of two post-war philosophers and great literary voices both sensitive to sound: Maurice Blanchot (1907–2003) and Jacques Derrida (1930–2004). I would like to introduce a sense of sound existing on the outskirts of experience in silence, folding almost as a secret, that is inspired by Alice Lagaay's notion for the need of *philosophy of voice*. Especially in the landscape of (writing a) disaster interrelations between art and philosophy become the most visible addressing ways of meaning and meaning-making, experience and ontological presumptions behind any storytelling and writing. What could sound mean for philosophy?

KEYWORDS: Maurice Blanchot, Jacques Derrida, sound in philosophy, holocaust.

1. Introductions are

acts to bring something into existence. In the case of no introduction,
a being is called nothing, it comes from nowhere,
it has no relation to time nor space, it is merely a stranger,
standing legless in the crowd.
When introduced, a negative *no* becomes a positive *yes*.
When introduced, a name resonates in the room,
from lips to lips that slowly get familiar with its key
in the mouth.
And when introduced, a voice
has its turn to speak,

but it may prefer silence.

2. As we all know, in silence

there is suddenly sound everywhere: the multitude of sounds seem appear to a silent places that would otherwise be covered by other sounds. Silence, after all, is the moment when the listening begins, as Salomé Voegelin so eloquently writes. (Voegelin 2010, 82–82.)

Maurice Blanchot lived and worked in silence. He was just as notoriously reclusive as J. D. Salinger or Thomas Pynchon during his lifetime:

> *To write (of) oneself is to cease to be, in order to confide in a guest – the other, the reader – entrusting yourself to him who will henceforth have as an obligation, and indeed as a life, nothing but your inexistence.*
>
> [Italics included in the original quotation.] (Blanchot 1995, 36.)

Not much is known about him – except for his writings. However, no matter how hard he tried to make himself vanish and to give space for *the text itself to speak*, it is the silence of his voice that make his words to ring even louder. Although absentee from philosophical circles of his time, apart from active correspondence with close friends, the reason we still remember and discuss Blanchot is because of the likes of Jacques Derrida, Emmanuel Lévinas, Gilles Deleuze and Paul Auster, who have all been deeply influenced by his writings and have professed to his legacy.

For me, Maurice Blanchot's voice is clear, but it is not obvious. My personal fascination started at a failure not only to read, but to 'use' him. One cannot merely enter into a dialogue

with him, he simply does not discuss in questions and answers, or even arguments and concepts as is accustomed in philosophy. One has to read him differently. However, this does not mean that Blanchot escapes philosophical thinking, logic or even meaning – he simply calls for different means to it. He is not reinventing language used in philosophy, but rather rearranging it anew and making philosophical thinking inseparable from poetics. This is also the reason why I've chosen practice-based artistic research as my way to approach his thinking on the phenomenology of the outside and method of *writing a disaster*. As a theorist, I would rather try to sing his thoughts, than to cage them to mere concepts. I am currently writing and directing a radio play on Finnish Civil War (1918) together with documentary film director Katja Lautamatti where theory reflects on the artistic writing process, but does not dictate it (and vice versa).

In this paper, I've chosen to take Jacques Derrida and Maurice Blanchot as a starting point to reflect and to open a discussion about the role of sound and voice in philosophy, especially in understanding the experience of impossibility and limits of representation discussed in the after-math of 1945 in Europe. There is a strong connection between the two thinkers: they are not only contemporaries (although Blanchot belongs to a previous generation), but they developed their own ambitious literary approaches to philosophy. For both it was clear that thinking and writing are inseparable – that thinking happens through writing – and philosophy through writing otherwise,

and in the end, there s more to writing than meets the eye alone.

3. "I've no words; my voice

is in my sword!" says Macbeth before fighting Macduff, the figure of truth in the deceitful, disastrous world of William Shakespeare's *Macbeth* (1606). Throughout the play Macbeth's voice carries out a negative act; in the beginning of the play he lies about a murder, and finally with these *non*-words, his voice becomes the instrument of death itself.

Although a rather personal perspective on writing in philosophy, I have often feel limited by it in my studies and later in my research in art theory. In its worst it resembles a little like Macbeth's sword; raised high against language, charging for the truth, cutting through sensitive nuances, excesses or tropes that would interfere with *a concept* that is often defined to exhaustion and has lost all its lived qualities. On the other hand, I would not like to turn philosophical discourse into an art experiment either – it needs consistency and rigour. However, there is a demand for a discourse that can contain both the rational and the lived, philosophy and art, not as opposing, but parallel voices. In this, Maurice Blanchot is an inspiration.

After reading Alice Lagaay's talk on voice in philosophy, and her emphatic question on *the place* of voice in philosophy, I felt intrigued. In her talk she made a demand for a concept for sound that would extent beyond its resonance. This kind of *philosophy of voice* would "resonate and echo into and beyond silence". (Lagaay 2011, 7.) I see this kind of voice to create an important soundscape where sound would not only interfere with conventions of writing, but, if taken seriously, could actually introduce new aspects, even a set of topics in philosophy. Instead of asking what is sound or voice in philosophy, should we ask:

what philosophy could be?

4. Sound, although veiled,

has never been completely hidden in philosophy. Quite contrary, thinkers from Socrates and Plato to Jean-Jacques Rousseau, Friedrich Nietzsche and Martin Heidegger have given much consideration to music, sound and tonality of a voice.

In his method of deconstruction Jacques Derrida turned his attention towards ears as oppose to eyes, making questions of voice and sound essential for example in his three key texts from 1967: *Of Grammatology* (De la grammatologie), *Speech and Phenomena* (La Voix et le Phénomène) and *Writing and Difference* (L'écriture et la différence). In his short essay "Tympan" Derrida investigates ear and incorporates elements of art to a piece of philosophical writing where different voices begin almost to bleed onto each other. However, in *Glas* (Glas, 1974) his attempt to incorporate sound to writing is in its most experimental: 'glas' means a bell, and throughout the book a sound of bells is tolled to interfere with language.

Without a doubt deconstruction has taught people how to read and listen texts in a new way, and revealed multitude of voices behind univocality as well as demanded more broad take on sound and hearing in general as discussed also by Lagaay (Lagaay 2011, 2–3). However, after many openings and attempts to reach sound, does Derrida get any closer to giving it a place in philosophy?

Byung-Chul Han has argued that in the end, Derrida's ear is a deaf one: it hears no sounds and it is silent. In philosophy ear resembles inwardness, closeness and subjectivity, and Han follows to argue that philosophers in general may ultimately embrace a certain deafness as more objective and truthful way to hear (Han 1997, 5–7,10). Also Lagaay points out how Derrida writes in *Speech and Phenomena*:

> Isn't the dream or the ideal of philosophical discourse — ... — to make tonal difference inaudible, and with it a whole desire, affect, or scene that works (over) the concept in contraband? Through what is called neutrality of tone, philosophical discourse must also guarantee the neutrality or at least the

> imperturbable serenity that should accompany the relation to the true and the universal. (*Speech and Phenomena*, quoted in Laagay 2011, 3.)

In philosophy, the ideal discourse takes place in neutral tone and unwavering serenity that would connect it to truth and universality. Any traces of singularity of a voice, its tonality and audibility are connected with something disrupting not only unity, but its possibility to truthful meaning. In this constellation sound is treated as a disruptive element that causes interruption and fragmentation. Gerald L. Bruns demonstrates similar displacement, or non-placement of sound by quoting Emmanuel Lévinas:

> To see is to be in a world that is completely here and self-sufficient. – ... – In sound, and in the consciousness termed hearing [audition], there is in fact a break with the self-complete world of vision and art. In its entirety sound is a ringing, clanging scandal. Whereas, in vision, form is wedded to content in such a way as to appease it, in sound the perceptible quality overflows so that form can no longer contain its content. (Bruns 1997,106.)

Bruns continues: "Philosophy has no place for sound. Sound is foreign. It is always outside the world, threatening to invade it, like anarchy" (Bruns 1997, 106.). Either always too inside or outside, too much or too little, as either noise or silence, sound does not seem to find its way to philosophy in sensing and making sense of the world as such. Andrew Hass argues through Hegel and Derrida that sound has a half-way nature: in sound there happens a conversion where an exterior turns into interior, a physical into ideal, and they finally disappear into each other. According to Hass, this is however the way also art influences philosophy. (Hass 2014, 103–104.) Whereas eyes seem to construct and build, ears convert: maybe sound is in philosophy as much a visitor as it is an intruder,

> bringing about secrets beyond such a limit that *philosophy itself cannot contain*.

5. Can it be called philosophy if

it does not even try to communicate? Can it be taken seriously? Or is it some sort of anarchy? Destined to be dismissed as something obscure?

Both Derrida and Blanchot profess to the demand of neutral, even absent voice behind language in their writing, however, they seem to differ in terms of their relation to affect in and within language. As Derrida points out, the aversion in philosophical discourse is not aimed towards sound alone, but also towards affect and desire, strongly relating to the experience of sound. In other words, it can be seen that affect interferes with communication.

Against this notion it is easy to start to see radical, even anarchic qualities especially in Blanchot's writing of philosophy.

Outi Alanko-Kahiluoto speaks of phenomenology of reading in Blanchot as something opposing the classical theory of Roman Ingarden's phenomenology of literature: "for Blanchot reading is not a subjectivist act, but turns from consciousness to affection, and from perception to fascination" (Alanko-Kahiluoto 2010, 173). This impersonal logic of sensation is essential in understanding Blanchot's writing where two things come together: the demand of the neutral in philosophy and the unyielding fascination of literature. Unlike Derrida, the first and foremost ambition of Blanchot is not communicating meanings and truths, or communication at all, but to relate philosophical thinking to writing and language in a way that language itself starts to speak,

or as I hear it: to *resonate*.

One of the places to review Blanchot's turn away from philosophical unity and truth towards poetics, 'resonance' and affection takes place in his book on holocaust: *Writing of the Disaster* (L'Ecriture du désastre, 1980). It is a work of the literary genre that, in its own terms, cannot exist: how to write something that is indescribable? The profound problem of narrating holocaust is not in the indescribable, unspeakable horror alone, but in its nature as testimony, as a secret – and to give voice to those destroyed. Even Primo Levi, a witness par-excellence, a high-tuned listener of the camps who could afterwards play back even languages and dialects he himself did not speak, was destined to fail at it as discussed by Giorgio Agamben. (Agamben 1999, 16–17.)

Similarly this question of the impossibility of holocaust can be seen to start a crisis that inflicted all post-war philosophy: how to discuss something that defies all logic and is impossible to speak in terms of truth, knowledge, or wisdom? Do we need a new language for that? How to discuss secrets that philosophical discourse simply cannot contain?

6. "Every word is like an unnecessary stain

on silence and nothingness" says Samuel Beckett in an interview. Blanchot's method of writing of the disaster owes much to Beckett's literary oeuvre. Beckett is the master of silence; activating in his texts not only different registers of language, but voices and movements of the speakers and the space around them. This is most apparent in his radio plays, where the surrounding space is silence and nothingness, and words float in the airwaves as if stains on that invisibility, revealing their emptiness as symbols. Only silence as a lack of dominant sound, and nothingness as a lack of image can offer a backdrop for language to be revealed

as it is – an airborne solid – where the meaning situates mostly in the air, not in the solid. It is no wonder how in silence we begin to hear things.

Maurice Blanchot's *The Writing of the Disaster* is still a radical book of *philosophy*, and far more often passed as an obscure 'interesting' piece of writing than celebrated for its exploration of the limit of language. It is not an art piece, although, as Derrida puts it, it does mimic a piece of fiction: "(it) advances in the manner of work of art. Not as a work of art, but rather – which is not altogether the same thing – in the manner of work of art, perhaps by pretending to be fiction and thus as the fiction of a fiction." (Derrida 2000, 44.) In the book Blanchot activates the Beckettian silence in philosophy. He approaches the impossible topic of holocaust by making the form and the content relate to each other, in other words by placing on the same level *writing* and *disaster*, making them to be, and to become, the same thing. His fragmentary writing is writing at the limit: the experience of impossibility takes hold of language and its laws, rearranging its order to make it resemble something familiar, yet turning it inside-outside into something unrecognisable – into the experience of disaster itself.

The structure of the book fully coincides this double work: simultaneously creating a seemingly intact structure and then ruining it in an unseemly way. *The Writing of the Disaster* is notoriously difficult book to read – one Derrida calls to be "stamped with a black diamond like a musical note" (Derrida 2000, 44). Description is a good one: it is not a particularly long text, but it is extremely dense, affective and very much like a musical notation, where the textual weave is constantly leaking sensation beyond its writing. It is the very opposite way to write philosophy we have discussed: in this book it is the interference that constructs the view.

The Writing of the Disaster is, if not filled with sound, at least very much resonating. It creates a 'sonic environment' of a particular sort – a philosophical sort – a Beckettian sort – one that creates through a constant interruption of thinking a kind of a mute stammering, which I relate to the impossible speech of holocaust, and its silence. Hanna Meretoja has described a post-war subject standing "in the face of the incomprehensible" stopping to tell stories altogether. The experience of limitation and uncertainty can be seen as an experience of fragmentation, and even project the reduced agency of the subject in that way – without self-expression, identity, a cog in the machine. (Meretoja, 55, 57, 65, 92–93). This is a voice I would describe as no longer *who* but *what* that speaks, only belonging to human realm in half. It is the subject of concentration camps, still alive, but no longer speaking or reacting to the lived world. It is the experience of holocaust:

> *The unknown name, alien to naming:*
> *The holocaust, the* absolute *event of history – which is a date in history – that utter-burn where all history took fire, where the movement of Meaning was swallowed*

> *up, where the gift, which knows nothing of forgiving or of consent, shattered without* giving *place to anything that can be affirmed, that can be denied – gift of very passivity, gift of what cannot given. How can it be preserved, even by thought? How can thought be made the keeper of holocaust where all was lost, including guardian thought?*
> *In the mortal intensity, the fleeing silence of the countless cry.*
>
> [Italics included in the original quotations.] (Blanchot 1995, 47)

In the last line "*the fleeing silence of the countless cry*" Blanchot opens up a space of witnessing as a sound. In this sonic environment there is an opposition and rivalry of two sounds: a frail silence and a cry that is 'too many' and 'too much', pure noise. All this sound exists "*in the mortal intensity*": not in meaning, not in thought, not in memory, not in names or words, but in the mortal body as *intensity*. It is the very definition of an affect and requires a different kind of a response from the language – even in philosophy. It is words speaking, and words alone, against silence and nothingness thus letting the outside of silence and nothingness to resonate in within and through them.

And if indeed a language can resonate,
how about listening *The Writing of the Disaster* as a recording of
impossible speech, or as a philosophy of voice?

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The Soundscape of American Hyperincarceration

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ABSTRACT: In this paper I situate the Richmond city jail within the highly racialized context of contemporary American hyperincarceration. I describe the ways in which the sounds of suffering were muted in the transition from the old city jail to a new, "cutting edge" facility in 2014. I discuss the music that residents have produced in both facilities and conclude by arguing that the contemporary jail is only one component of several interlocking structures that sonically segregates Richmond's majority African American population from its minority Anglo-American population. Studying carceral soundscapes represents a political intervention by bringing into the public auditorium the sounds of suffering that have been muted both within and without penal institutions.

KEYWORDS: incarceration, jail, suffering, soundscape, noise, African-American, hip-hop.

Following an invitation by the Sherriff to perform in the Richmond Virginia city jail in 2013, I began volunteering weekly music sessions in the facility and organized the donation of a mobile recording studio in July of that year. At that time inmates were housed at the old Richmond City Jail (RCJ), built in 1964 to hold a maximum of 600 residents; by 2012 the facility was housing up to 1300 residents in overcrowded conditions. In late 2014 the residents were transferred to a new facility, the Richmond City Justice Center (RCJC), built adjacent to the old facility, which has since been demolished. The new facility is a total surveillance state designed to accommodate 2000 residents. Rather than being housed in overcrowded dormitories, as in the old facility, inmates in the RCJC reside in small cells built within six "behavior modification pods" each staffed by a deputy at a touchscreen.

This paper traces the sonic consequences of the shift from the old to the new facility. The new RCJC is a properly neoliberal space shaped by the massive changes in technology, society, labor and incarceration America has experienced since the old jail was constructed in the '60s. First I situate the Richmond jail within the highly racialized context of contemporary American hyperincarceration. I then describe the soundscape of the old facility, which was marked by the audibility of human suffering. In the new facility technology and architecture combine to mute the sound of suffering. I describe the studio program and the music residents have produced in both facilities. I conclude by arguing that the contemporary jail is only one component of several interlocking structures that render Richmond's majority African American population largely inaudible to its minority Anglo-American population.

1. Incarceration in the United States

My experience in the Richmond city jail conforms to Irwin's (1985) description of the jail as a particular kind of social tool rather than an effective deterrent for serious crime. Its residents are primarily refugees of job precarity and dispossession. Many are addicts or have mental disabilities. The historic capital of the confederacy, Richmond's post-civil-war history is pockmarked by a series of racist housing policies and attempts to extend Jim Crow laws. This included race-based grading of property values through the Home Owners Loan Corporation, racist zoning and "redlining" procedures employed by the Federal Housing Administration and the use of public housing projects to further segregate populations. In the 1930s, Virginia's "racial integrity laws," which prohibited interracial marriage, were used to segregate neighborhoods by disallowing a person from living in an area whose residents he or she could not marry. The Nazi's borrowed these policies to develop their own Aryan purity laws.

The Richmond City Jail was built in the same era and immediately adjacent to the low-income housing intended for the black communities displaced when the construction of interstate 95 destroyed their historic neighborhoods and business centers, primarily

in the Jackson Ward area, known for decades as the "Black Wall Street" for its high concentration of African American-owned banks and businesses. The Civil Rights Movement succeeded in enacting the 1968 Fair Housing Act, which opened some suburbs to non-white populations. In practice this largely furthered the already ongoing process of "white flight" out of the city, towards the west, further depleting Richmond of its tax base. As outlined in Figures 1–3, the legacy of racist housing is still clearly operative in Richmond (cf. Silver 1984). Figure One shows median income; the jail (indicated by "+") is at the center of the poorest area of the city, near the intersection of interstates 64 and 95, with wealth increasing towards the west. Income is highly correlated with race, as shown in Figure Two in which African-American neighborhoods essentially overlap with economically depressed neighborhoods. Finally, in Figure Three we see that unemployment density is also highly correlated with race and income. Built atop the ruins of slave shacks and down the street from the notorious Lumpkin's Slave Jail,[1] the Richmond City Jail is located at the nexus of African American dispossession in Virginia and many of its residents hail from the adjacent low-income housing developments. In their conversation, poetry and song many members of the jail music program have referred to the jail as a "housing program."

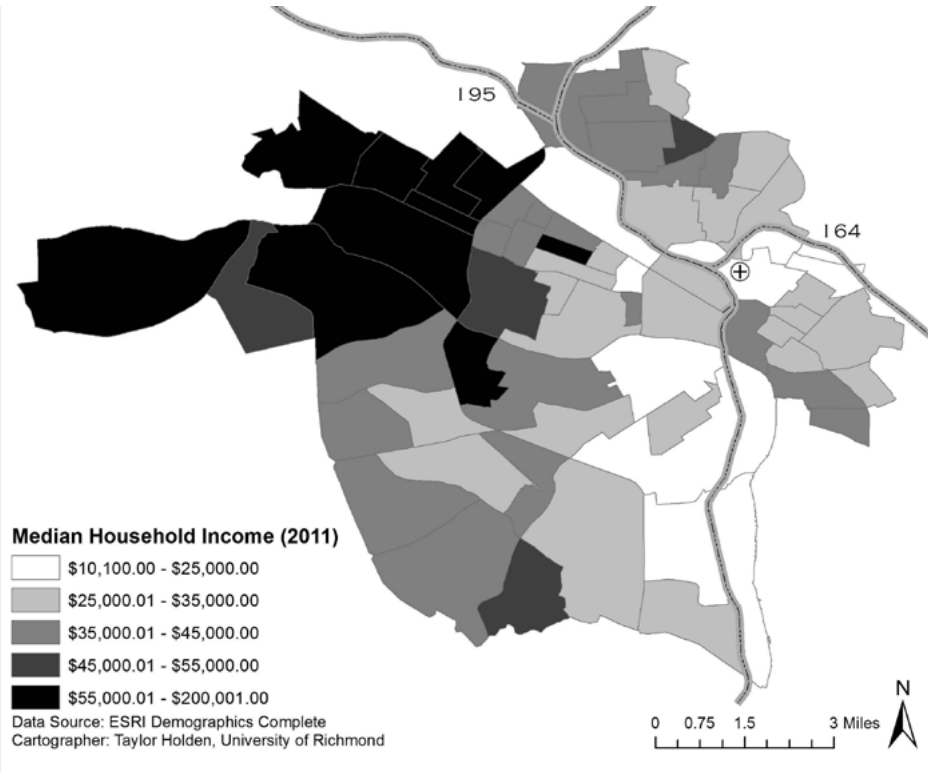

Figure 1. Richmond, VA. Median Income.

1. Prior to the Civil War, Richmond was home to the nation's second largest slave market after New Orleans.

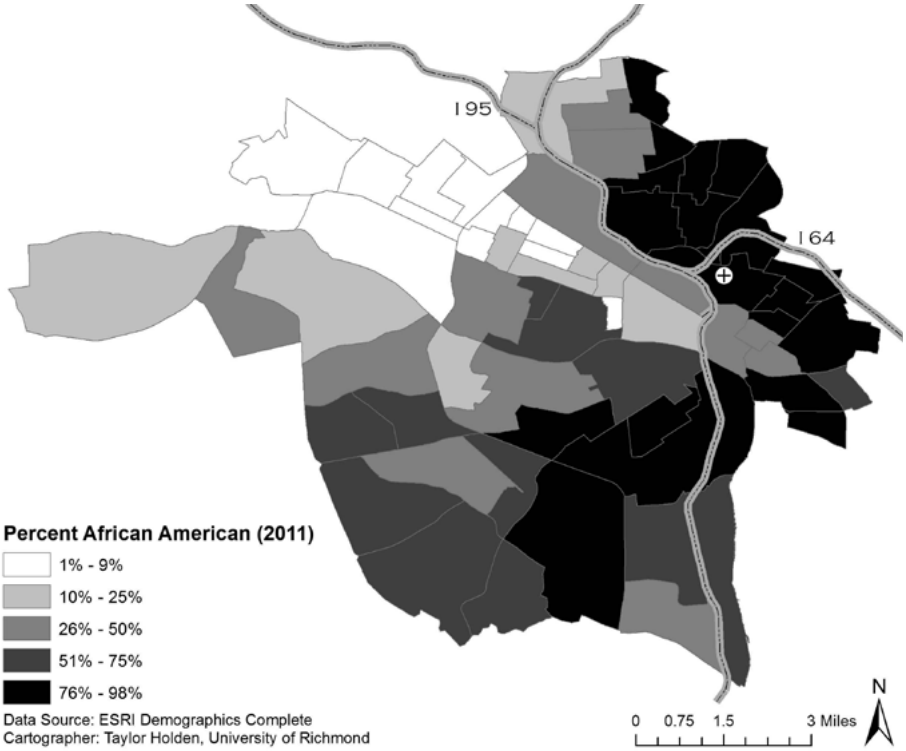

Figure 2. Richmond, VA. Percent African American Population.

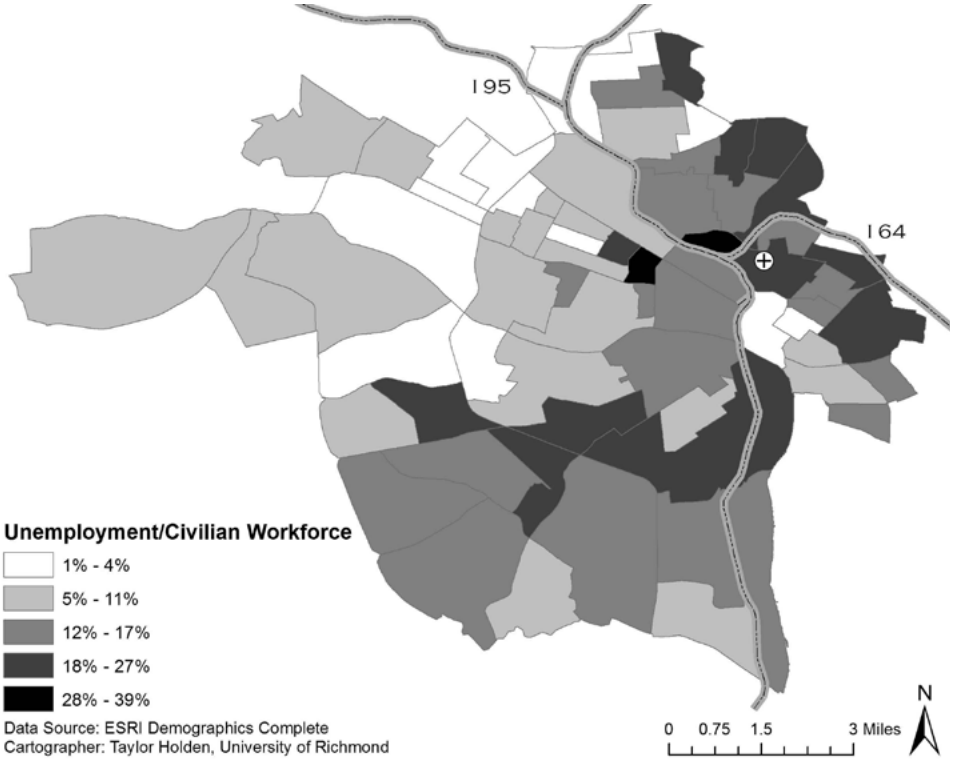

Figure 3. Richmond, VA. Unemployment.

2. Two Facilities

Dubbed the Sanctuary, the education room in the old RCJ was the only space not under constant surveillance. Here residents (men and women) studied together for their high-school equivalency test, took part in poetry and meditation workshops, read or performed and recorded music. As in its original meaning, the Sanctuary was a haven from the law itself, a respite from the dehumanizing and seemingly arbitrary cruelty of regulated life on the residential tiers. It was a space in which residents could engage in defining and creating a community.

Figure 4. Sanctuary. Photograph by John Dooley.

This space and the community that it catalyzed did not survive the transfer to the new RCJC facility in 2014. There is no longer a space or a community called the Sanctuary. Instead, education activities are temporarily held in one of many multi-purpose rooms. Men and women are no longer allowed to interact in any way and the population is fragmented and isolated through the use of individual cells constructed within small group pods. The studio is now assembled on a mobile cart. A maximum of five men at a time have access to it and only when I am in the jail, roughly two hours a week. Previously, residents had access to the studio for up to eight hours a day in the old sanctuary.

Incarceration in America is a form of sensory impoverishment. The soundscapes of both the old RCJ and the new RCJC are almost entirely composed of electronic or anthropogenic sound. When visiting the old RCJ guests passed through an aging magnetometer in the jail's entrance before proceeding through the first of a series of heavy steel doors to reach a

molded plastic bench in the cramped waiting area. Here visitors were immersed in the facility's booming, bass heavy soundscape, giving one the sense of being deep underground. In human audition, environmental sound is affective in Massumi's sense; it is registered prior to the activation of semantic, causal or cognitive listening; sound gets under our skin in ways we are hardly conscious of. The heavy thud of large metal doors swinging shut and of men walking in line, the constant clanging of Joliet keys and chains, large loud fans rather than air conditioning, unending chatter and shouting combined into a constant dull roar that seemed to produce an "affective jitteriness" (Goodman 2010:64) for most residents. Because of the difficulty of locating their sources, these constant low frequencies can produce an engulfing sense of disorientation and fear; it seems as if an attack could come from any direction.

In contrast, the shining lobby of the new RCJC is nearly indistinguishable from a modern airport lobby, with its numerous flatscreen televisions continuously broadcasting news and soap operas. A flat, non-resonant soundscape of amplified voices, buzzes, and beeps accompanies visitors as they are moved along through modern scanners, checkpoints and special gates separating them from residents. As one resident artist rapped: "NSA, TSA, RCJ, Inside, Outside; it's getting hard to tell the difference." In the RCJC a small fraction of the population – those who have displayed good behavior and are placed on the sixth floor where the music studio is located – have access to the external soundscape through open grills in the gym. Located in an industrial area near highway overpasses and train tracks, nearly all sound that enters these grills is anthropogenic. Occasionally residents report hearing crows.

Figure 5. Overcrowding in the Old City Jail. Photograph by Eva Russo.

Citing a Center for Disease Control report suggesting that overcrowding in the old facility represented a health threat to its population, the new facility was constructed around individualized cells. Although the official use of inhumane solitary confinement has been technically reduced in the new facility, isolation has become generalized through individual housing units and constant video and audio surveillance either by a human or, reportedly, software using behavior-matching algorithms. In the new facility each pod cell, housing one to four inmates, as well as all bathrooms, hallways and multipurpose rooms are continually monitored through video and audio surveillance devices, data from which is stored for an unknown period on hard-drive. Staff are unsure exactly how many cameras are in the facility, but all agree that the number is between 800–900. While objectively a safer space from an epidemiological perspective, the new facility is a site of extreme sensory impoverishment. The facility's pneumatic locks produce a rhythmic "fuh-fuh-fuh" sound as they automatically open and close in a pre-programmed order. Many residents describe this sound as "eerie" and "sci-fi;" they hear it in their sleep and it becomes the soundtrack to nightmares.

Ellis and Tucker describe the "affective atmospheres of surveillance" and their effect to produce "disruption, disfluency, and hesitation" in speech (2013:716). I frequently encounter effects of the surveillance atmosphere in the facility's recording studio. All residents know that any swearing or critique of staff may result in their being punished. When recording their rap, residents reflexively censor themselves or replace swears (crucial to the idiom) with bland alternatives. Many residents complain that the affective jitteriness they experience in the jail, its "heavy vibe," interrupts their "flow" in ways they can't quite explain. The affective atmosphere of surveillance causes subtle interruptions and pauses in their performance that seems to occur on the borders of consciousness. Some performers are only aware of this when hearing the playback. According to one performer: "I can't flow in here like I could in the [RCJ] Sanctuary." Casually listening to music (turned up to drown out the background sounds) and conversing as if we were on the "outside" for a period of time can help re-set the atmosphere conducive to establishing musical flow.

3. Hearing Suffering

How can we respond to pain if we cannot hear it? How can we abolish mass incarceration if we are unaware of its effects? Following Wacquant (2009) I argue that a combination of materialist and symbolic perspectives is needed to analyze the sonic experiences and expressions of incarcerated populations.

An overcrowded urban space, jails are typically louder than most prisons and penitentiaries, which are often placed in rural settings and incorporate an architectural style influenced by the original Quaker model and its ideal of penitential silence. In the old jail the sound of suffering in the form of crying, pleading, singing, rapping and chatter was nearly

omnipresent through the space's open acoustics. The wails of those going through drug withdrawal and enduring manic episodes were audible throughout the facility. The voluntarily organized sound of the Sanctuary defined the figure of its community against the noisy ground of the overall population.

In the corner of the waiting area in the old jail, two Access Corrections ATM machines constantly beeped while presenting a slide-show of images illustrating how visitors can deposit cash into inmates' accounts for a fee. Past these machines was a narrow visitation space, a row of eight thick Plexiglas windows with holes drilled through them.

Figure 6. Visitation in the Old City Jail. Photograph by Eva Russo.

There was no privacy in visitation. During my first visit I overheard a mother speaking in hushed tones to her husband through the glass. Their young son, about the same age as my mine, was oblivious to the concept of privacy and cried loudly for his father: "why can't daddy come home now?!" Grown men in the adjacent waiting area, involuntary witnesses to this family's pain, avoided each other's glances as their eyes welled up. Similar scenes occurred frequently during visits to the old jail. In contrast, the architecture of the new facility makes hearing others' suffering much less likely.

Figure 7. Visitation in the Richmond City Justice Center. Photograph by Daniel Sangjib Min.

Visitation in the RCJC is managed in a separate space in which visitors speak to residents – located on a separate floor – through screens placed in cubicles. Residents believed these conversations were recorded and monitored. Although I was unable to verify these claims, the fact that such technology is believed to be in place accomplishes the same result of self-surveillance.[2]

4. Music

Music existed in various forms in the Richmond City Jail prior to the establishment of the Sanctuary studio. For years, the institution's religious services incorporated a gospel choir and impromptu rap was sometimes performed on the tiers. In the Sanctuary's long-running poetry workshops, Hispanic residents often sang their poems with the accompaniment of a guitar donated to the Sanctuary years ago. However, because it incorporated easy to learn music software pre-loaded with hundreds of samples, loops and beats, the Sanctuary studio provided a musical outlet to a much wider community, beyond those with technical training in instrumental performance or singing. Within three months after being installed the studio's hard drive was becoming overloaded and files had to be regularly downloaded to external drives to free up space. By this time the community had collaborated to draft a "music manifesto" that outlined their shared intentions and differentiated their musical activities from their active poetry program:

2. See also: http://www.nytimes.com/2016/09/29/opinion/a-virtual-visit-to-a-relative-in-jail.html?_r=0.

You can read our words as you wish to, but you might miss the purpose, the animation, the revolution in our voices. Our recordings invite you into our emotions, into the intimacy of sanctuary, where every word carries a piece of our souls. Sound communicates expression that words on a page can not. It allows us to emphasize meaning, to infuse layers of music and mood, to collaborate and create a memory that will live in a different kind of permanence.

The choice to create recordings empowers us to reach out in more ways than before, in dimensions previously untouched *. Hear the feeling toning through our voices. Embrace the rhythms of our hopes, loves, and struggles. we are throwing out our hearts to you. we are creating, giving, and sharing, so that you can relate. Does it strike a chord? Or does it strike your soul?

Figure 8. Sanctuary Music Manifesto.

Several residents produced tracks anticipating and reflecting on the shift from the old to the new facility, fearful of the dissolution of the Sanctuary community. "No Just-us" is representative of these.

> I can feel wind blow
> bouncin' off bricks and through the window.
> I feel the breeze through my sheets.
> It sparks thoughts I can't let go.
> Thoughts of this new jail.
> where you won't feel the wind no more.
> They're callin' it the Justice Center.
> And to everyone who don't know yet,
> there won't be no Justice in it.

It'll be Just Us in it.
Inmates, residents or tenants.
Whatever you call it.
White, Black, Brown.
Men and Women.
Who nine-tenths of
didn't get a proper defense of
their cases
because of overworked public defenders who can't remember their faces.
And we are told to obey laws
that are so flawed.
How can a mother who injures her kids get bond
and bail be denied to people with a simple drug charge?
Oh. I forgot.
There is supposed to be a war on drugs.
But in the midst of
there's been a mix up
because the war is on us.
It's all over the paper, printed, the words
In God We Trust
And trust in God we must.
Because you can't trust the senate or the congress.
They're wolves in sheep's clothing, roaming amongst us.
And their disguises make it so easy for them to hunt us.
Who? The elected public officials, who push issues
That are no more than tissue
With shit on it.
Spit on it or flush the toilet.
The democrats sold it the republicans bought it.
Or vice versa, depending on whose in office.
We just elected the lesser of the two evils.
An olive branch and arrows clutched in the talons of eagles.
Symbols of a republic that don't truly represent its people.
So behold the pale horse. Of course.
A red one, a white one and a black stallion galloping
A sign that the apocalypse has come
So run.
Let's face it.

> We have to face it.
> This new place is
> a newly thought-up high-tech form of incarceration.
> So why am I mad?
> I didn't catch this charge I chased it.

The Sanctuary in the old jail and the smaller studio program in the new jail engendered soundscapes of conversation, listening, intimacy, friendship and community against the alienating din in the old jail and the alienating anomie of the enforced silence in the new jail. Much of the music recorded in both facilities incorporates a distinctive reverb profile and equalization. Preferred reverb profiles are reminiscent of open, natural spaces such as forests. According to one resident artist: "It's my voice, but I don't sound like I'm in here." Preferred equalization is extremely bass heavy. More than high pitches, energetic bass frequencies makes one's presence known to others. Strong bass allowed musicians in the old jail's Sanctuary to penetrate the noise of the tiers and allows the musicians in the new facility to be heard through the thick walls separating inmates from each other.

5. Inaudible Richmond

Black Richmond is virtually inaudible to middle and upper class white Richmond. While this is the case in most American cities, sonic segregation between the communities is especially pronounced in Richmond. The city jail is one node within a network of interlocking structures that sonically segregates black and white Richmond. The first structure in this arrangement is the school to prison pipeline. More than any other state in America, Virginia criminalizes problematic youth behavior, locking up more than 10,000 juveniles every year – primarily African American young men. The state spends fifteen times more on incarcerating youth than educating them. At this rate one in three Virginian black men will be incarcerated some time in their lives.[3]

In addition to silencing this population by physically isolating them through incarceration, the high correlation between race and Richmond's municipal ordinances and permits pertaining to live music further mutes the community.[4] Virginia's alcohol laws disallow the public consumption of mixed beverages outside of restaurants, meaning there are no bars in Richmond.[5] All establishments selling any kind of alcohol (including beer and wine) must also meet a $4,000/month food sales quota. As a result, most live music in the city is performed as the background to dining, restricting the kinds of music one tends to hear. The

3. http://www.performingstatistics.org/the-project
4. https://www.municode.com/library/va/richmond/codes/code_of_ordinances?nodeId=CORIVI01
5. https://www.abc.virginia.gov

Alcohol and Beverage (ABC) permitting office may also restrict the types of music performed in an establishment applying for permits; according to city officials, hip-hop appears to be targeted for exclusion. In 2011 a special exception was made for microbreweries, which tend to attract middle and upper class white patrons and cater to their musical tastes. Many musicians and lawyers in town viewed this as race-based legislation, suggesting that older conservative legislators continue to fear "pandemonium" in black neighborhoods if bars are legalized.

Also in 2011 a strict dancehall ordinance was passed that requires venues to pay for special permits, a yearly fee and security if more than ten percent if its floor space is used for dancing. That same year the city passed a very restrictive sound ordinance in which sounds exceeding 55 dBA when measured inside of structures within residential zones are in violation of code and may result in citations. When we add to this the restrictive permitting and licensing of building codes for venues the cumulative result means that most musical activity within the city of Richmond is somehow illegal. The practical enforcement of these structures is determined by the whims of the police and therefore related to their implicit and explicit biases, which often correlate with race.

The Richmond City Jail is characteristic of the sonic urban identity of American hyper-incarceration. It is one component of a complex ecology of legal and social structures that sonically segregates Richmond's black population from its white population and renders it inaudible to the structures of political power. These structures mute the sound of black political voices, black suffering and black joy. Understanding and explaining this soundscape represents a political intervention in which we can begin to imagine the sonic architecture of social change.

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Cultural Enclaves and Acoustic Territories – A Sonic Study of Urban Development in NYC and Chicago

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ABSTRACT: This paper focuses on navigating the soundscapes of ethnic enclaves in the urban environments of New York and Chicago. Is it possible to get a sense of segregation/cultural immersion through sound? What does the local soundscape tell us about the growth or destruction of native enclaves? What sounds are masking the native culture and what sounds resonate, be it sounds of urban development or sounds of a long-standing community? How does the existing soundscape shape the process of adaptation? How do the sounds frame the public perception of the environment? How can we embody the soundscapes of urban development?

KEYWORDS: soundwalk, acoustic territories, urban development, cultural enclaves.

1. Introduction

This investigation is constituted by the sonic analysis of the acoustic territories built by the cultural spatial codes embedded in soundscapes from diverse communities in two major cities: NYC, with more heterogeneous enclaves, and Chicago, delimited with geographically segregated enclaves. The paper will take into consideration the process of the Sound Walk, as a field research tool in the experience and identification of cultural codification of sounds. The writers (and sound ecologists) will engage in a closer observation of the role of sound, in the intersection and adaptation of the immigrant dwelling and its effects in urban development.

The paper is constituted in two sections, the first delivered by Jenn Grossman and will depart from the first of NYC, describing the sonic integration of several immigrant cultures sharing the urban territory. The second section, delivered by Amanda Gutierrez will explore cultural enclaves of Chicago. Both writers have resided in both locations and have thought actively about the role of sound in the geographies of urban development. In both cases, the sound walkers describe their relationship with the enclave, and their embodied listening experiences. Both writers approach the walk enacting the Situationist practice of derive, or the intuitive drifting through varied ambiences of a landscape, reacting to what is heard and observed.

2. NYC

As the largest and one of the most highly diverse cities in the US, New York City is known for its immigrant culture. As to bring attention towards less recognized cultural enclaves, the soundwalks taken were in four locations of the Brooklyn and Queens boroughs, including Jackson Heights, Bushwick, Williamsburg, and the surrounding neighborhoods of Prospect Park.

2.1. Jackson Heights

History/Community

As 60% of Jackson Heights residents are immigrants, more than 70 nationalities and 167 different languages are spoken. It is the fourth largest immigrant neighborhood in NYC. Until the mid-20th century, Jews and African Americans were not allowed to reside in the neighborhood. After the Hart-Cellar Immigration Act and Fair Housing Act were passed, the quota-based immigration policy changed to a preference-based system. Resultantly, in the 1970s and 80s there was an influx of residents from Mexico, Latin America, South and Central America, and Southeast Asia. Immigrant communities including Italian, Jewish,

and Irish, now cohabit harmoniously with newer waves of immigrants from countries like India, Pakistan, Thailand, and many countries in South and Central America. (Sahni 2016)

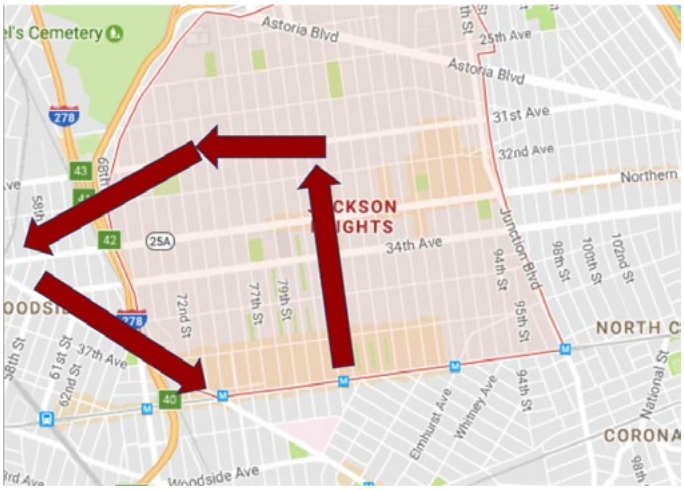

Figure 1. Soundwalk through Jackson Heights into Woodside, Queens.

Sonic Observations

74th St. outlined a main strip of Indian businesses and restaurants. Sounds of Hindi-speaking male voices were most prominent, followed by traditional Indian music from the stores. Popular music was also prominent coming from vehicles along Jackson Ave. The outskirts around the train stop was a mix of Asian and Latino cultures represented through the speaking of passersby; noticeably including Chinese and Thai, along with a Spanish-speaking presence. Near the public transit, sonic cultures became less distinct, revealing the merging of acoustic territories. (Figure 1)

2.2. South Williamsburg

History/Community

South Williamsburg's "Los Sures", the area south of Grand Street, houses a significant Puerto Rican and Dominican population. The population is nearly one-third Latino. Hasidic Jews, Italians and Polish residents also reside in the area which was recently called "Little Berlin" for its strong artist and musician culture, along with white affluent residents. The opening of the Williamsburg Bridge in 1903 played a large force in forging communities of immigrants and second-generation Americans leaving the slum tenements of the Lower East Side.

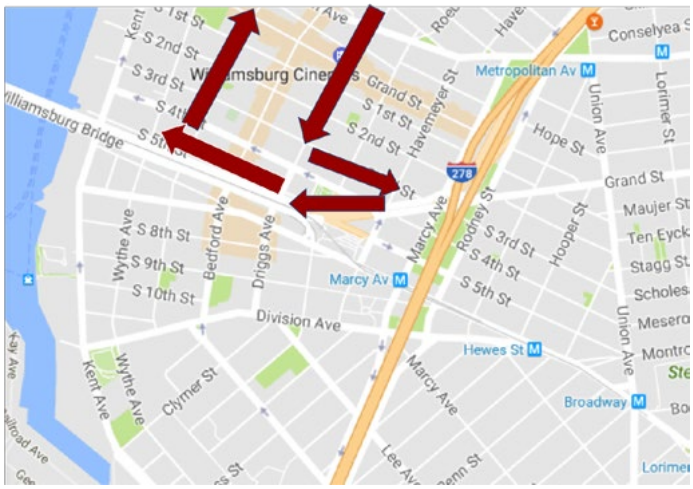

Figure 2. Soundwalk through Williamsburg.

Sonic Observations

Sonically, I observed a strong Spanish speaking presence and generally, a strong street presence, including sounds of families out on the sidewalk playing games and cooking, music like merengue, bachata, and reggaeton. Cars and industrial street sounds reverberated through the streets. The cultural distinction between North and South Williamsburg is noticeable, sonically. Moving north, languages like English and French were most observed, along with a heavy, younger white presence, people shopping, going to bars, and eating out – much less of a family – oriented, culturally rooted feel and sonic presence. (Figure 2)

2.3. Bushwick

History/Community

In the late 20th century, Bushwick has been predominately Latino, (69% Spanish speaking) including from Puerto Rico and the Dominican Republic, native born Americans, from Mexico and El Salvador. The population of white non-Spanish speakers tripled from 2000 to 2010, while the number of blacks fell 9%. It was ranked the 35th most diverse neighborhood in NYC in 2007. (Gregor 2016)

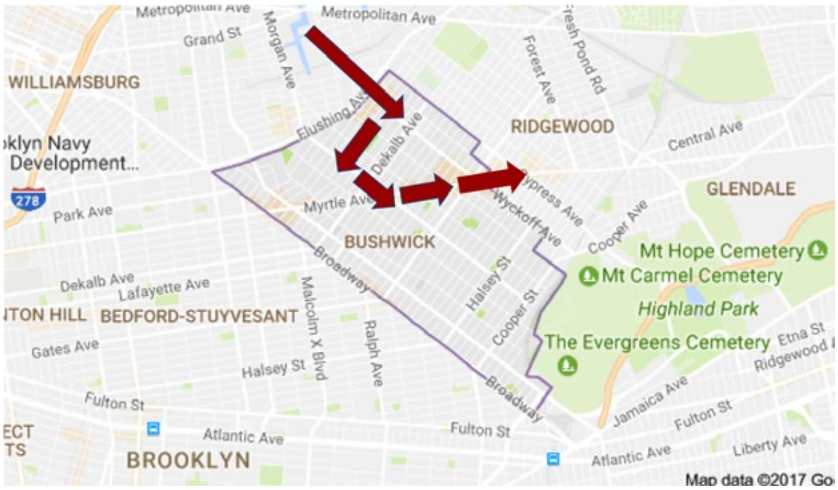

Figure 3. Soundwalk through Bushwick.

Sonic Observations

There was a distinct Spanish/Polish language difference below/above Myrtle/Wyckoff avenues. Heard below Myrtle/Wyckoff was mostly Spanish language, a range of pop music, Bachata, Mariachi, Merengue, Reggaeton tunes, bells from street carts, stores, restaurants, children playing, and church sounds. The energy was vibrant and active. In Maria Hernandez park was a clear cultural distinction of Latino and newer white residents. Verging into the Ridgewood neighborhood, were strong sounds of American commercial consumerist culture along with Christian influences, holiday songs being broadcast over sounds of shopping and cultural natives. (Figure 3)

2.4. Prospect Park (Park Slope & Crown Heights)

History/Community

On the west side of Prospect Park, the Park Slope neighborhood housed mostly Dutch residents until the 1850s when a local lawyer and developer purchased large tracts of farmland. During the Civil War era, he sold his to residential developers. Horse-drawn railcars spawned the migration of rich New Yorkers and its transformation into a streetcar suburb. Still harboring conflicts between Latino and Irish/Italian Americans and deep racial divides, with Brownstone renovation in the 60s and 70s, it again drew an influx of wealthier residents in the 80s and 90s. On the east side of Prospect Park, the Crown Heights neighborhood houses a 74% black, 19% white, 4% Latino, and 2% Asian population. There is much cultural influence from West India, Africa and the Caribbean, along with a significant number of Hasidic Jews. Through the first half century, the neighborhood was mostly white and Jewish, and as black immigrants began residing there through the 1960s, volatile race relations grew.

Poverty and ongoing cultural conflicts between West Indian/African American and Jewish communities created increased tensions in the area.

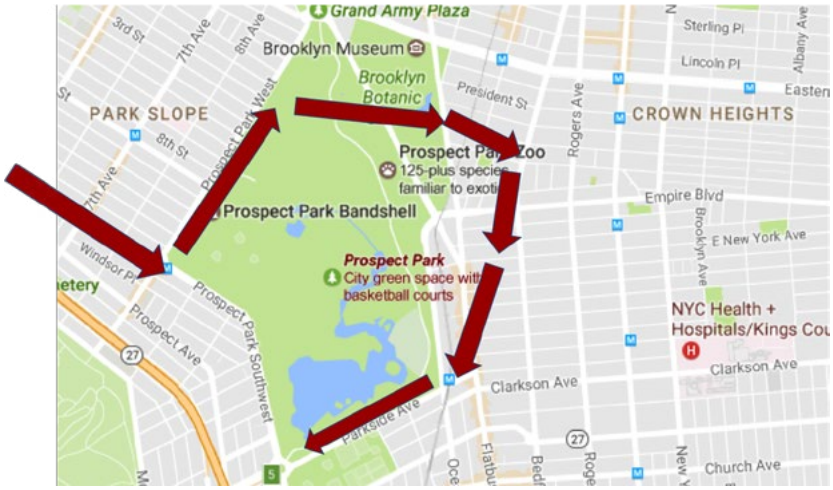

Figure 4. Soundwalk from Park Slope through Prospect Park into Crown Heights.

Sonic Observations

As described in the history, sonically and lingually there were strict distinctions between the east and west sides of the park. Sounds of families and children, mostly white English speaking residents on the west side contrasted strongly with the east side and south east side of the park. A variety of languages were heard including Arabic, Hebrew, and French. The urban ambiences on the Park Slope side were much more suburban sounding, while the Crown Heights neighborhood had a livelier city ambience during the day, including music like hip hop and reggae and a more desolate ambience at night. (Figure 4)

2.5. Experience as a Walker/Recordist

As the above descriptions comment mostly on my external observations of the environment as a sound walker, I do want to note the internal experience of firstly approaching these environments as both an inhabitant and an outsider, and secondly touch on how the technology used affects my perception. Having living in and explored the chosen neighborhoods for nearly 5 years, I am aware of my body as a white, non-native woman, and this process only brings more awareness to it. Therefore, I approach the soundwalk as a means to observe, connect and understand through sound to an environment in that present moment, rather than to simply assess what sound is telling us about that place or objectively document a place. For me, the experience of sound is already bodily, sensorial, perceptual, and emotional, therefore connecting me and giving me access to content on multiple levels. When integrating technology into the soundwalk, the notion of self and other becomes both more heightened and there becomes an immediate increased concern about consent

and surveillance which is at times uncomfortable. Yet, I make a point to shift back the focus to using the technology as a lens to deepen my own experience of the environment rather than to document or target specific people. By heightening what I'm hearing through headphones and recording, I am more highly attuning myself to and deepening my experience of the actuality of that environment, with a more intentional and focused ear.

2.6. Conclusions

The most noticeable differences distinguishing acoustic territories in the Brooklyn and Queens burroughs of NYC were lingual, then musical, and then other cultural sound marks. Especially walking and recording with binaural headphones, the sounds brought a great attention to visual cultural landmarks – religious institutions, stores, and food that I may have been less attuned to without headphones. I experienced a heightened attention to clusters of people and how they occupied space and how they gathered via demographics like age and gender, how groups changed near transit centers and parks versus on the street. The sound brought a clarity to effects of urban development such as gentrification patterns and noise pollution, including increased traffic, trains, and construction that often masked the cultural content I was attempting to capture. More generally, acoustic territories encompassed not only literal sounds, but an entire mood of a community. Each acoustic territory acted as an abstract entrance into another socio-spatial world, making me realize the importance of the soundscape in conveying and creating an ambience for habitation. Though there is an ease at which communities currently co-habitate space in NYC, as a result of the population density, geographic layout, and urban planning, the acoustic cultural territories were seemingly less integrated and more distinct than I previously perceived.

3. Chicago

Chicago is one of the most segregated cities in the United States due to the race and class distribution in the urban planning of the city. This sound research seeks to analyze this fact through the sound territories in three neighborhoods in the Southwest of Chicago, Pilsen, Little Village, and North Lawndale. On the map, these locations are connected by avenues, streets, and bridges, but geographically speaking they represent physical and cultural borders that obstruct their integration.

3.1. Pilsen

Historical background

Pilsen is known as The Heart of Chicago and it is accessible from the loop by the L train, which makes it a new and attractive spot for real-estate investors as well as business

owners. The process of gentrification in Pilsen has been a long battle by homeowner residents, mostly Mexican immigrant families who arrived in the late 50s. However, Plzeň was named and constituted by Czech immigrants in the late 19th century, followed by Polish communities. These immigrant communities integrated into the American economy and flew to the suburbs and North side of the city. Architecture is one of the physical elements that highlight its cultural transformation, from the Eastern European design to the Mexican style that emphasizes the current residents' dwelling. The spatial adaptation of schools, churches, parks and community centers, speaks about the multicultural evolution of the neighborhood.

The meat industry complex was located in the same area, making the neighborhood a settlement for factory workers. Nowadays, there are still several factories in the west side of Pilsen, which made the neighborhood a toxic spot for families who live in their vicinity. High lead levels have been found in the soil, next to the H. Kramer, a smelting factory[1]. The noise pollution remains an unrecognized problem, coming from the Fisk coal plant (closed in 2012), the H. Kramer factory, the newest helicopter airport in the West North side, and the big trucks parked in the warehouses' lot. These elements make Pilsen a concentrated space of industrial noise.

Pilsen is currently on the verge of gentrification, the neighborhood is divided by class and ethnicity, by old residents and newcomers. Therefore, the sounds depicted in the soundwalks change depending on their location, time of the week, and proximity to the 18th Street. The west side is mostly populated by working class immigrant families while the east side is highly populated by young middle-class renters. The ethnic and cultural division makes the inhabitants' interaction extremely polarized, creating a misleading conception of the problem only as a racial but not as a class issue.

Observations of the space as walker

I developed several soundwalks in Pilsen, derived from my experience as a resident, filmmaker, and a teaching artist. These soundscapes have changed drastically in the last five years due to the cultural industry, new business, residents, and housing developments. The extinguished sounds were mostly related to the cultural customs of the Mexican community. The old bars, restaurants, mariachi bands practicing in the plaza, and the local radio station, are now substituted by thrift stores, coffee shops, and popular food chains. Nowadays there are particular soundscapes, which are activated and heard at certain times during the week and in specific locations. These locations are local bars, concert halls, and restaurants that attract populations from other neighborhoods in Chicago. It is important

1. The news was announced on the Newspaper Chicago Tribune, on October 5, 2015. Nevertheless, this fact has been investigated by local non-profit organizations such as PERRO, since early 2012.

to emphasize the foreign relationship between the Mexican-American residents and the white population from other neighbourhoods, which is seen as a symptom of the gentrification process, since Pilsen still is a spot of ethnic tourism promoted as a cultural commodity. Relatively speaking, only in the last few years, the white population started moving into the neighborhood despite the proximity of the industrial pollution or the gang violence.

The marked division between the working class latino families and the middle-class newcomers creates a visible disparity in the use of the public space. These differences create a multiplicity of soundscapes, which can be perceived based on the cultural codes of each block. The use of the public space is differentiated by ethnicity and class. Newcomers, who are white middle class occupy the public space located in Racine Street and Allport Street, where recent bars opened, as well as East Pilsen (named as the Chicago Arts District by Podmajerski, its real estate owner). These spaces are heavily attended during the weekends or during the monthly art openings happening on Halsted Street. The language spoken is English, the soundscapes are generally dense with American Pop music from different genres and decades.

Walking towards the West Side of Pilsen, several landmarks are located such as two churches (San Pio and San Adalberto), Harrison Park, and The Mexican Museum of Arts, which are spaces where Mexican-American families meet for sport events, religious celebrations and cultural gatherings. The soundscapes are constituted by the Mexican traditions by immigrant inhabitants from different states in Mexico such as Michoacán, Jalisco, Zacatecas, and Guerrero. These popular events depart from the cultural syncretism between the Mexican and the American experience.

The negative side of the segregation has marked the southwest side of Pilsen as one of the hot spots of gang violence. The neighborhood soundscape is charged with gunshot incidents which peak during the summertime. Fireworks and gunshots are easily confused by residents, they become part of the everyday life normalizing violence as part of the noise background. Figure 5.

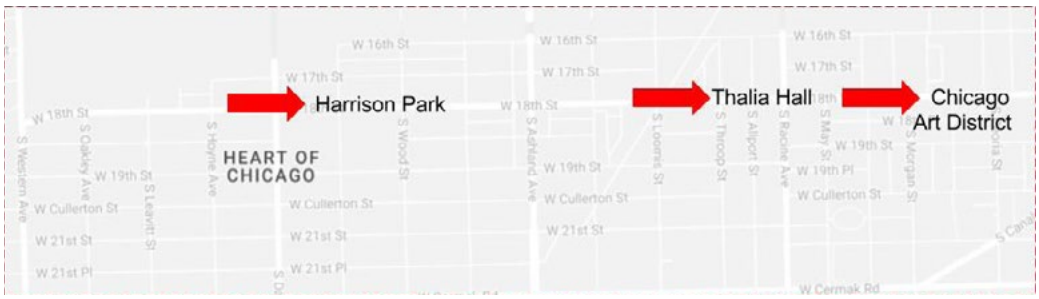

Figure 5. Map of the soundwalk starting from west to east side.

3.2. Little Village

Historical background

Little Village formerly known as South Lawndale, was originally settled by Eastern European and Irish immigrants in the late 19th century, after the Great Chicago Fire sent the population to the Southwest side. In 1970 the influx of the Mexican-American started, making visible changes to the business and architecture. This new population named it La Villita (Little Village) after the Mexican population had increased up to 84% in the late 1980s. (Schmidt, 2013). The Mexican-American population in Little Village is the highest in the Midwest, making the neighborhood very distinctive. This neighborhood is not an attractive location for real-estate investors, since it is still charged with stereotypes of ethnic delinquency. City services such as sanitation, lack of resources in public schools, and racial targeting by the police are visible issues of inequity linked to its urban marginalization. The neighborhood changes are not as drastic as in Pilsen, but the segregation has been an ongoing problem for its community.

Geographically speaking La Villita is confined in the South Side by the Chicago River, the Stevenson Expressway, train tracks, and a big industrial district. On the East Side the Cook County Jail is located and links Pilsen with Little Village. Sonically this neighborhood is fully charged with the presence of cultural codes such as the Spanish language, the Mexican regional music, and its acoustic dissemination in the public space. Its inhabitants and business owners express their cultural identity through loud music played to attract customers or to pass time waiting in a little food truck. The 26th Street has the second highest revenue in Chicago, a fact that can be appreciated by walking a few blocks west from California Avenue.

Acoustic Ecology as a tool of collective reflection on the sound territories in Little Village.

My approach to Little Village was always through my experience as a teaching artist. I have been teaching in the neighborhood sporadically in one public school and two nonprofit organizations. In the Summer of 2017, I developed an art workshop with the non profit organization Yollocalli Arts Reach. The teens' workshop emphasized the role of sound in the acoustic territories of Little Village. With the students, we created two soundwalks to appreciate the cultural codes present in 26th Street, such as *paletas cart* ring bells, business music, the language spoken, major noise spots, etc. (Figure 6) The second soundwalk was focused on the observation of the geographical and cultural divisions with North Lawndale, an African-American neighborhood which is highly divided by La Villita due to ethnic conflicts. The students' perspectives as long term residents, helped me understand crucial observations about the symbolic divisions and the invisible meanings of these borders.

These observations were discussed in our classroom using drawing, mapping, and writing methodologies that help us analyze our own relationship with space. I created a third soundwalk taking in consideration our previous excursions. This walk was recorded with binaural headphones and tracked with the app Audio-Mobile[2]. The digital and geographical observations gave me enough clues to create a sound log that ultimately constitutes the content of my current research, understanding the aural qualities of the visible and invisible borders in these neighborhoods.

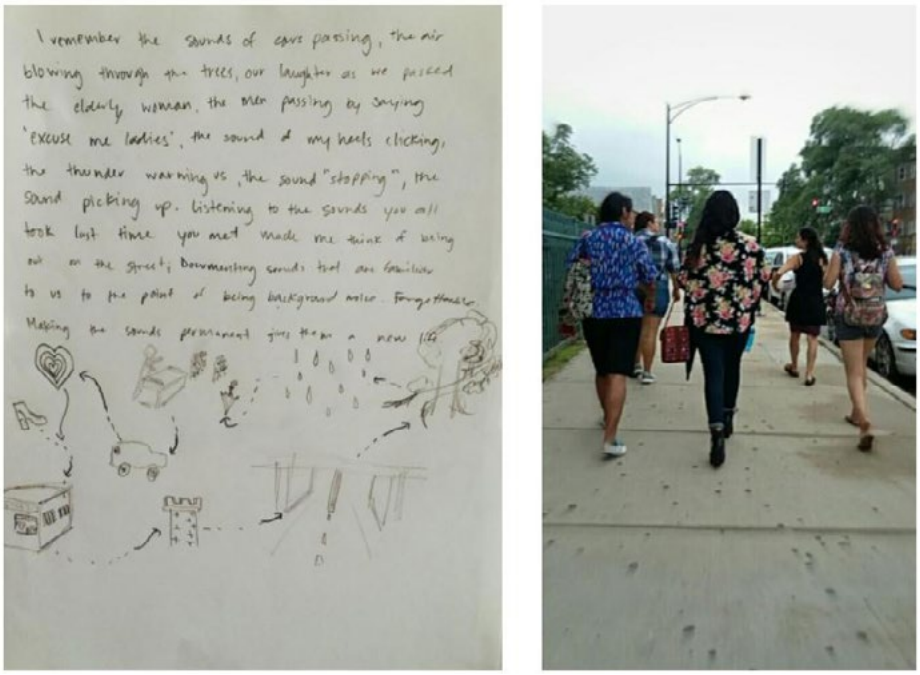

Figure 6. Writing reflection developed by students from Yollocalli as part of their soundwalk experience.

Walking in the space; notes about the soundscape and the sonic territories of immigrant enclaves

The soundscape in Little Village differs culturally from Pilsen in the homogeneous presence of the Mexican cultural codes. Nevertheless, the acoustic variations in Little Village make its soundscape dynamic and multidimensional. This can be perceived in each soundwalk, especially along the 26th Street, where the sound amplitude differs from the speakers directed to the streets, to the intimate noise of the radio inside stores and homes. In this location the music as sound cultural codes is from specific towns in Mexico, (Jalisco, Sinaloa, and Guerrero), predominantly constituted by music, language, and mass media background (radio and TV). In Little Village the sound represents the identity of the inhabitant or busi-

2. A tool for collaborative, dynamic field recording, AudioMobile allows users to record the sounds around them, attaching a photograph and GPS coordinates to the file. These elements can then be uploaded to an online sound map and shared with others in a variety of ways. For more information visit: http://audio-mobile.org/.

ness owner, it defines the character of the location, either as a business or as a home. The businesses use the public space as a sonic arena, since they produce their personal sound ads which are normally edited with a voiceover speaking in Spanish, mixed with their regional music style announcing the day specials. Walking along the smaller streets, in between the residential area, I could hear particular songs played in their patios or garages. I recognized some popular Mexican singers, nostalgic tunes, as well as some *narco corridos* describe an epic event of a drug dealer. Walking further I heard a Norteño song talking about the singer's struggles as an immigrant crossing the Mexican border, the loss of home. I stopped for a few minutes to listen to carefully the lyrics.

The soundwalk ended by the neighborhood's border to north side by Cermak Avenue, which represents a geographical and cultural boundary with the Afro-American population in North Lawndale. The most noticeable fact was the change of language to English which was predominantly spoken by transients while the music was mostly hip-hop songs. In my own experience as a pedestrian Cermak Avenue was a physical division making inaccessible some parts of the street by the train tracks and bridges. My Little Village soundwalk concluded by crossing this main street noticing the distinctive sound of a rap radio station. (Figure 7)

Figure 7. Soundwalk experienced with students and sonically documented in a second soundwalk.

3.3. North Lawndale

Historical background

By 1890 North Lawndale was originally populated and founded by Bohemian immigrants, then in the 1920s the population transitioned to be a Jewish community. In the 1950s black families started to move in and real-estate dealers used blockbusting tactics to promote ethnic prejudices. From the 1960s until 1980s, several economic and political events resulted in an accelerated housing and industry declined. Nowadays it is one of the poorest and

most segregated neighborhoods in Chicago, called by residents "an industrial slum without the industry". (Kozol, 1992)

My relationship with the neighborhood has been limited to the few soundwalks to the border of Little Village and a visit to a local High School. My experience is very limited, even if I have lived in Chicago for fifteen years, perhaps this is due to the misconceptions and fears about the neighborhood's safety. Walking through their streets and Douglas Park border brought me questions about my own prejudices and racial stereotypes of the space. In the past, I taught video classes to teens living in this location. In their documentaries, they expressed fear, anger, and frustration as individuals who confronted police brutality, and gang violence. I only knew about North Lawndale through their memories, photographs and interviews shared in our classroom.

Walking in the space; notes about the soundscape and the sonic territories of segregation.

The division between La Villita and North Lawndale is sonically present and geographically visible on Cermak Avenue. This avenue works as a border on which the division between the two ethnic groups (African-American and Latinos) is remarkable and almost irreconcilable. The sound territories between the two locations differ in terms of their cultural codes, such as language, music, the police presence, and housing decay.

During the soundwalk with my students we approached Douglas Park, which is well-known as one of the biggest public parks on the Southwest Side of Chicago, which assimilates this ethnic division and despair between both communities. The park is divided by Ogden avenue; from the north side mostly populated by Black communities and from the south side by Mexican immigrants. I walked north to the fieldhouse park on Ogden Avenue. I noticed only black teenagers playing on the basketball court, the sound of the English language, and the screams of the kids running in different directions. I spoke with the fieldhouse caretaker and she said that it was mainly attended by residents from the North Lawndale community. I walked out of the building and crossed a pound bridge where people parked their vehicles, fishing and playing loudly hip-hop radio stations from their car speakers.

The Medical District can be seen walking towards the east side of the park, it represents an important source of noise pollution for both communities. The constant sound of the ambulances made me tense and uneasy, my students warned me about this. By the end of the park, I found a playground where school kids were having a break. For the first time, I experienced the sound of both languages, English and Spanish. The group of kids playing in the playground was diverse in age, gender, and race, which made me think about the school as a safe place for integration. (Figure 8)

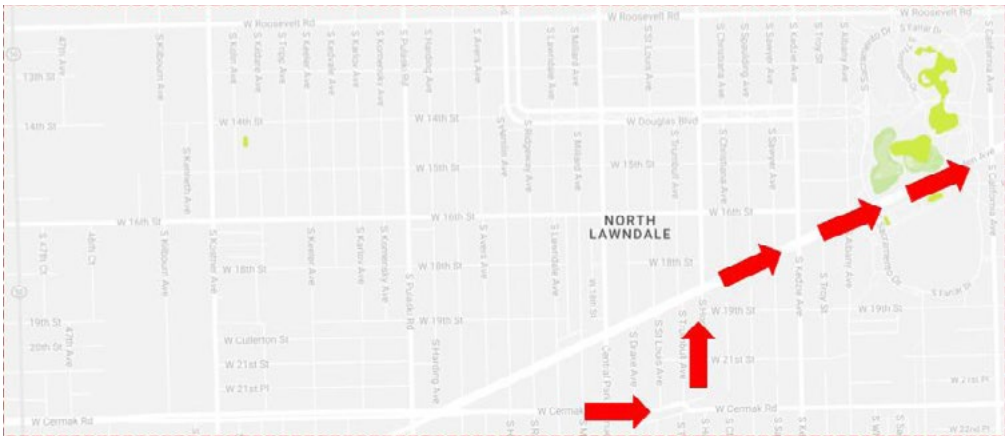

Figure 8. Soundwalk from Little Village to North Lawndale crossing Douglas Park in direction to the Medical District.

3.4. Conclusions

The Chicago urban planning and development model has been one of the earliest systems of segregation based on race and class. This is geographically visible on the North Side, predominately inhabited by a white middle-class population, and the South and West Side by the African-American and Latino working class population. The geographical boundaries between these neighborhoods can be perceived through the disparity in their public services, jobs, housing, school systems, markets, and the racial bias by the police in each location. These boundaries are created by physical obstacles through avenues, bridges, parks, and landmarks, not allowing integration but a remarkable division instead. This situation emphasizes the ethnic dispute over urban territories. The sonic and physical presence of buildings such as the Medical District and the Cook County Jail, on the South West Side, represents the systematic segregation of the African American and Latino communities in Chicago. The acoustic awareness in these three locations highlights important facts of their distinctive sonic territories. This study employs new methodologies with sensorial experiences for comprehending the systematic segregation in urban planning in Chicago. In my experience as a teaching artist and sound advocate, Acoustic Ecology works as a literacy tool which opens a reflexive experience for an individual in relationship with her space (Figure 9).

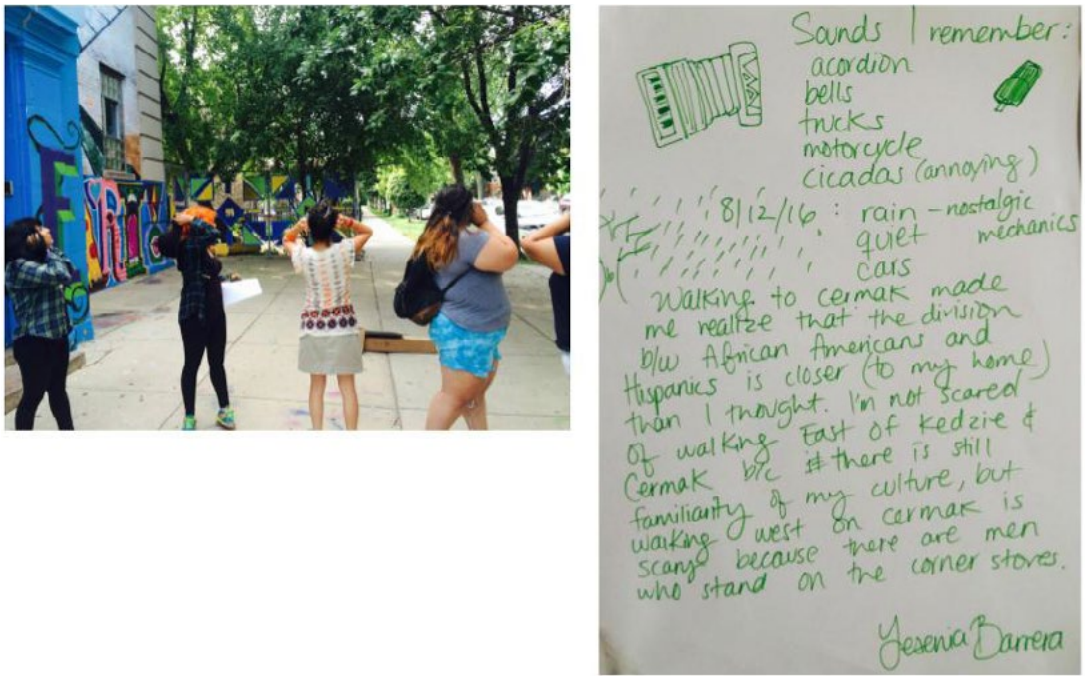

Figure 9. Photo and writing by Yollocalli student Yesenia Barrera as part of our soundwalk.

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Terrae Incognitae – Crossing the Borders of Sonic Ecology

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ABSTRACT: This paper argues that a contemporary perspective on the soundscape must inevitably acknowledge the invisible agency of sound as a force that reveals the possible assemblages that make a place, offering ways to rethink the relations between power, politics and space in a critical ecological perspective. A number of art-based case studies support this thesis statement. In particular, the paper focuses on some projects developed during the Liminaria 2015 sound art residency in in rural southern Italy. The analysis of these case studies entails a critical engagement with such notions, and the proposition of a possible approach in which the crossing of the current boundaries regulating the practices of field recording – in the 'acoustic ecology' perspective – is a prelude to a novel experience of place and territory.

KEYWORDS: acoustic ecology, sonic ecology, field recording, acoustemology, cultural and postcolonial studies.

1. Introduction

This paper proposes a critical perspective on acoustic ecology by questioning some of the categories which have traditionally orientated the interpretation of soundscapes within the field of sound studies in the last few decades. Since its formulation in the late 1970s, the concept of the soundscape has become increasingly popular, giving rise to a huge number of related theories and applications (Murray Schafer 1977; Truax 1984; Krause 2012). More recently, however, critical interpretations of the concept have tended to focus both on deconstructing the 'static' approach to sound which traditional theories of the soundscape often adopt (Augoyard/Torgue 2005; Chattopadhyay 2014) and acknowledging the possibility of reconfiguring the aural interaction between organisms and their environment in a new ecological ground (Barclay et al. 2014; Cobussen 2016).

Approaching soundscapes from a critical perspective leads us to break with the static categories that have previously dominated in most sound studies. It opens the field up to a problematic vision in which the relational and affective dimension of sound can emerge, offering a possibility to side-step the clichés of soundscape's musicality that have been so dominant in sound studies through acoustic-ecological drifts and the Schaferian tradition.

Even the concept of 'sonic identity' (Pisano 2015), considered within such a framework, arrives at new possible outcomes. Against such a concept, sonic identity can be understood as a present and vital dimension of the coexistence and conflict between humans and non-humans, that is, as a form or as a problem of ecology in action.

Marcel Cobussen recently defined sonic ecology[1] as "the aural interactions between organisms – in particular humans – and their environment." (Cobussen 2016)

This interaction has to be understood as a bidirectional process, engaging subjects action and reaction with their sonic environment – an environment which doesn't exist acoustically *a priori* but is rather activated by its inhabitants. Cobussen's perspective deals mainly with a new possible interaction between sound, the environment, and the human body, focusing on the 'sonic city' and marginalising the presence of non-human and more-than-human actors in the ecological sphere.

Expanding on Cobussen's reflections, any reconfiguration of 'sonic' ecology must inevitably acknowledge the invisible agency of sound as a force for revealing the possible assemblages that make up a place, and for reframing them in new and creative terrains

1. Of course there is a differentiation between 'acoustic' and 'sonic', and between 'sonic' and 'aural'. It draws on a problematic relationship stated by the same definition of 'sonic' given by Marcel Cobussen: "The term 'sonic' refers to almost any vibration that can be perceived by humans as well as animals, to the physical as well as mental affects of sounds, to what can be heard and listened to, but also to what remains inaudible and unheard. It thus encompasses musical as well as non-musical sounds, noise as well as silence, ultra- or infrasounds as well as spoken language and aural communication systems." (Cobussen 2016, 3)

for human and more-than-human negotiation. Sound offers ways to rethink the relations between power, politics, and space in a critical, ecological perspective.

2. Rethinking Acoustic / Sonic Ecology

The starting point of this analysis is the possibility of shifting one's sense of place by re-assessing the aesthetics of digital practices of recording, listening, and remediation. This possibility finds grounds in the speculative and practical approach developed by artist Thomas Köner in his sonic works such as *Novaya Zemlya* (Köner 2012).

Köner's artistic investigation offers a novel experience of place by crossing the current boundaries which regulate practices of contemporary field recording. In Köner's work, every aesthetic hierarchy which would normally identify anthropic disturbance as the discrimination threshold is here turned upside down. There is no longer any room for a reductive and stereotypical sonic ecology of 'the soundscape as masterpiece of nature'.

Here, sound reveals its materiality and ontology. It unveils the ideology and discourses surrounding it, in which it is made to function as a means of smoothing over differences in thought, economy, gender, and identity, and fuelling a collective imagination made up of 'exotic' places – that is, places predicated on partitions which exclude other experiences and places.

According to Köner:

> the notion of being 'at a special place' demands the acceptance of a world view that postulates a hierarchy of places, in which the special place on top is attributed more value than to the not-so-special. As these places are then declared as so very special, 'Human Disturbance' often is to be avoided, thereby enforcing the view that Nature and Human are separate and distinct entities. [...] Those who use this ideology try (successfully) to create an ill-natured hierarchy, as at its core it is less about the value of so-called exotic places but about a devaluation of all the other places that they exclude. (Köner 2015)

Augoyard and Torgue (Augoyard and Torgue 2005) call into question the macro-concept of the soundscape as masterpiece of nature, or a 'macrocosmic musical composition' (Murray Schafer 1994) which has been previously dominant in acoustic ecology theory. Such theories, see the soundscape as something perceptible in terms of musical concepts like aesthetic unity. Augoyard and Torgue oppose the clear and precise approach which Schafer demands as too connected to a hierarchy of high-fidelity soundscapes. Against this, they offer a hybridised, fuzzy idea of sound events inside a great many situations in the contemporary soundscape.

Through the concept of "sound effect", the two argue that listening experience within a soundscape is connoted by relationality, affectivity and contextuality, overcoming the pure notion of an 'objectual' listening. They open the way for a possible change of the idea of the soundscape, from a static-identitarian reading of sonic place, entangled in a (stereo-)typical categorisation (i.e. the 'soundmark'), to a more dynamic approach to sonic flows that characterise the continuum of listening in the contemporary ubiquitous media environment.

Any proposition for a 'new' sonic ecology should deconstruct not only hierarchical approaches to the sonic environment, but also "acoustical dogma" (Chion 2016), that is, the dogma of a causal listening in which every sound is considered as a sonic phenomenon produced by a material object. For Chion, this dogma is a deep ontological misunderstanding, driven by an obsession with causal listening, which leads us to consider sounds as consisting of *only* that which is produced by what we can see and hear, in disavowal of the dark, invisible, acousmatic, and intangible aspects of sound.

In this framework, we can argue for an 'ontological equanimity'[2] which would question any causal hierarchy connecting sound to its source object and instead point towards a different imaginative and speculative possibility, one related to the essential and ontological dimensions of sound itself. As Timothy Morton has recently written, "[a] sound talks about the physical entities that made the sound. And yet it doesn't talk about them. This is fundamentally because a sound is always a collusion between 1 + n things." (Morton 2017) Morton argues that sounds are independent entities which need a host or a vector. They act as viruses and spectral presences which bring us into contact with an irreducible gap between essence and appearance, blurring foreground and background and disrupting the anthropocentric separation between subject and object.

This gap cannot be filled because it always distorts the ontology of things. It reveals to us how strange, ambiguous, inexpressible, and weird every aspect of the world in which we live is. This means that the ecology of the Anthropocene is a "dark" ecology, one that offers us a series of unsolvable riddles and declares the impossibility of fully grasping an era in which human history and geological time are so tightly interwoven that we cannot discern the human from the non-human.

Morton's reflection on the soundscape interweaves with dark ecology theory when we begin to consider sound as a viral element that reveals the urgency of re-routing our approach to art, science, and language. Such a consideration suggests the possibility of crossing borders of sonic ecology into *Terrae Incognitae*, a space in which to imagine and configure other possible assemblages of place and to offer ways to rethink the relations between art, politics, and space in a critical, ecological perspective.

2. Email conversation between Miguel Isaza and the author, 14th February, 2017.

3. The Critical Listening Condition: Two Case Studies

To think 'ecologically' in this soundscape is also to consider sound art as a device through which to invigorate critical thought and open new and unexpected epistemological, methodological, and aesthetic spaces for rethinking the notion of 'acoustic' or 'sonic' ecology.

This is one of the conceptual elements on which Angus Carlyle and Enrico Coniglio developed their work during the *Liminaria* 2015 sound art residency[3] in rural southern Italy. The analysis of these case studies proposes an approach in which the crossing of the boundaries that regulate current practices of field recording – from a perspective of 'acoustic ecology' – is a prelude to a different experience of place and territory.

In the pages of his diary written in the week spent at Liminaria 2015, Angus Carlyle records the listening process, the routes, the meetings, and the moments spent with Chiara Caterina during the residency, where the two artists collected materials and compiled them into the film/installation *Night Time* (2015). The work is a story formed of scattered fragments, immersed in the villages and fields of Fortore region, searching in the margins of the folds for transverse temporal pathways, crossing a series of walkways near the village of Baselice. The mighty wind turbines, faceless watches that dominate these slopes, mark the circular alternation of darkness and light. In the waning of the day, they highlight a liminal transition to a sonic, mesmeric microcosm, hidden from human listening. The rhythms of the night reveal themselves when Carlyle and Caterina, with torches and equipment in their hands, advance in clearings and fields surrounding the village, intermittently illuminated by the red lights which signal the wind turbine.

While traces of human activity disappear into the invisible, distinct acoustic atmospheres emerge: the rustle of leaves stirred by the wind, the distant peal of cows grazing, the hiss of the air blades, scattered echoes of barking dogs, an imperceptible water dripping, night owls and bird calls, a fox barking. In this acoustic space, non-human resonances dramatically increase and the voice becomes an element that materialises vibration and body surfaces *beyond* the threshold of human language. Sounds, noises, and rhythms of this listening process suggest the possibility of moving away from a purely phenomenological understanding of acoustics, making it clear how this experience engenders in levels of sensations and contingencies of body flows.

It offers a sensation from which it is possible to question, as theorised by Michel Serres (Serres 1985), the hegemonic notion of language that has gradually separated itself from

3. *Liminaria* (http://www.liminaria.org) is one of the projects developed by *Interferenze new arts festival* (http://www.interferenze.org) taking place since 2003 in different rural regions of southern Italy: Irpinia, Sannio and Puglia (Barsento-Trulli area). All these projects focus on art, technocultures and the rural. From the original form of the art and new technologies *Interferenze* festival, a series of hybrid formats (residences, laboratories, workshops, research field projects) have been developed through the years, resulting in a research platform dealing with the concept of (neo-) rural and different multidisciplinary and critical approaches inspired by New Media Studies and Cultural and Postcolonial Studies.

the network of relationships that our sensory system builds with the world. From this perspective, talking about the sound and function of language offers us the possibility of reflecting upon the elements of uncertainty that regulate the production of meaning. Thus concepts of 'truth' and 'meaning', loosed from the constraints of rationality, rigidity, and accuracy in which they are confined by language, can be translated back into the sphere of processes driven by the senses.

Immersive sound works, such as the one described above, identify a research terrain within which to probe both the clichés of acoustic ecology (in which rural soundscape is considered as a hi-fi soundmark), and an anthropocentric approach to listening, shifting the perceptual relation towards the world from human to post-human. These recordings from different settings give back the enormous complexity of relationship between non-human agents (animals, atmospheres/density, geological formations, landscapes, and so on) and every possible understanding of the world through listening practices. In this non-anthropocentric, differential-ecological listening approach, diverse critical forces are involved, including bodily vibrations, resonant surfaces, and invisible agencies, revealing a process of materialisation in which territories reveal themselves in different ways and perspectives, not only in an urban but also in a rural context.

We can thus discover, for example, that the transformations of the soundscape reveal the methods of re-distribution of power and governance relationships, as highlighted by Anja Kanngieser's research on air pollution in India (Kanngieser 2012), or in Angus Carlyle and Rupert Cox's recordings around the deprivation of agricultural land in small, rural communities in the face of airport expansion in Japan. (Carlyle and Cox 2012)

This "acoustemological" (Feld 1995, 2015; Kanngieser 2014) approach also inspires Enrico Coniglio's work *Sounding out the Watershed* (2015), likewise developed during the *Liminaria* 2015 residency. Crossing the wheat fields, farmlands, and rural areas between the two villages of San Marco dei Cavoti and Baselice, Coniglio proceeds to a sort of sound mapping of a series of paths, allowing him to focus on both the *in-situ* and in transit sounds, shifting the focus from the visible dimension and luminous space to resonance and depth – revealing the territory itself as a porous environment through the invisible level of listening.

Basing his practice on the theories of landscape ecology, Coniglio deals particularly with the hypothesis that a landscape is composed of patches, minimum structural units which come in contact with each other to generate 'ecotones' and border areas in which elements belonging to the original patches merge. Coniglio translates this approach in the acoustic field, immersing himself in the soundscape of Fortore and focusing on the richness of its transition areas. His idea is that these acoustic border areas – produced by the contact of patches – are characterised by width, depth, and a much greater variety than that of the individual parts from which the sound originates.

By acoustically crossing these areas, the artist experiences borders as a category of interpretation, no longer de-limiting but interfacing different pieces of the territorial mosaic. These marginal areas next to the boundaries are border areas. They are not perimeters but places of threshold, transition, migration. The area on which Coniglio's sound mapping insists, is the border between the two villages separated from the plateau of Mount San Marco (1,007m above sea level), placed on the Apennine and virtually equidistant from the Tyrrhenian Sea and the Adriatic Sea. It is a space that fully reveals the complexity of its listening layers in the recordings of *Sounding out the Watershed*.

On the surface, the recordings seem to disclose a calm condition which materialises in an acoustic landscape far from a heavy infrastructural devastation of farmlands. On deeper listening, however, the apparently silent landscape unveils a stratification that highlights its position between the traces of a number of recent conflicts. The repetitive, hypnotic sound of wind turbines scattered like wildfire in the Fortore area, whose rotating blades cut through the air like rhythmic strokes of enormous swords, are signs of the painful deprivation of land, space, and horizons for the local communities – a total exclusion from all forms of economic benefit generated by the territory.

Projected on an acoustic backdrop of hissing wind, the sound of these turbines is distorted, saturating the slopes of the boundless spaces of empty land that separates each village from the next. The oscillation of the blades and the constant rumble of turbines generate a fluctuating soundscape in which the power of the wind, the distant clang of farm machinery, or the occasional passing of cars resonate as echoes in an enveloping blanket of noise.

In the intervals and in the transverse paths between noise and silence, the levels and chains of activity and stillness within these geographies increase. Through them, we can feel the depth and space of the landscape in its dense sonic flows, static in appearance but in fact saturated with deep rhythms and cadences. To cross such a territory by listening not only respects its vastness, but also the richness of its transitions, transformations, slips, and conflicts.

The works of Angus Carlyle and Enrico Coniglio raise the possibility of defining a critical listening condition that could open itself to other modes of knowledge production. Beneath its apparent quietness, rural territory unveils itself through sound as a heterotopic space and extraordinary wealth of sonic-ecological otherness. The landscape can be reconfigured as an environment in which to experiment with crossing and recombining the elements, forces, and practices that exist within it. It offers the possibility of working on the crest of an ecological approach that recoils from any tendentious use of rural economy from a perspective of capitalist development.

4. Conclusion

Through a cursory look at some of the theoretical limitations of traditional discourses on soundscape, this paper proposes to re-consider the contemporary soundscape as a critical space within which to question categories and relations between subject and object, human and non-human, visible and invisible, material and ephemeral. Expanding on this ongoing process of deconstruction, we find that concepts of sonic or acoustic ecology open up a number of possibilities to trespass into the realm of responsibility, ethics, and socio-politics.

This attempt relates also to a possible 're-semantisation' of the traditional lexicon of sound studies – not to discard terms like 'soundscape' or 'acoustic ecology' but to critically renew their definitions. Acknowledging that the etymological root of the term 'soundscape' connotes an adjacency to visual terrain, it is within the conceptual scope of the soundscape that we must track down and approach the landscape, understood in its broadest sense, through its levels of transience, multisensoriality, and invisibility. To traverse contemporary soundscapes is also to encroach on post-human territories. It is to deal with a critique of acoustic anthropocentrism and with the possibility of exploring political relations in their material aspects, to re-define the terms of negotiation between human and more-than-human.

Sound, as a fluid, vibrational, and affective matter, enables a (re)negotiation of meanings away from the hegemony of language which has marginalised our relationship with *experientia* and with the 'nature'. By creating junctions and associations in its presence and absence, by revealing its imprecision as object and form, sound triggers auditory imagination and produces a different, sonic sense of things. In this way, sound can lead to new, uncharted territories in which it becomes possible to experience a more constructive relationship with the 'natural' world.

In creating an undifferentiated suspension of boundaries – 'grey zones', areas of "dark ecology", or 'noise' that appear to the listener with crucial questions – sound is in constant motion to disclose new aspects of the world, raising a series of questions about the notions of 'sustainability', 'environment' and, ultimately, 'nature' (Latour 2004). It is a proposition that can lead us to find new drifts, new havens, new escapes drawn by the infinite and unpredictable trajectories of listening. Within this context, we re-discover not only the possibility of inhabiting place but also, once more, of imagining and building complex environments. To make the experience of our thought, finally, an endless resonance.

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Acoustic Communities of the Forest – Confessions of a Dendrophiliac

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ABSTRACT: I wish to draw our attention to trees... their ubiquity, their vulnerability and their capacity for communication have until recently been neglected in most areas of study. The forests of the world are under siege. The clear cutting and burning of vast tracks of temperate and rainforests have reached epidemic proportions. Irreplaceable complex forest ecosystems have been eradicated.

Recent research in forest ecology, plant bioacoustics and forestry practice reveals complex communications relationships among communities of trees, which include subtle components of sound. Our growing awareness of the vulnerability of global forests lends a sense of urgency to current research by people like Professor **Suzanne Simard** at the University of British Columbia, a forest ecologist whose research focuses on organisms, like fungi, living in soil helping trees establish and grow. Her research program focuses on natural and anthropogenic disturbance and climate change effects on the structure, function and resilience of forest ecosystems. She specializes in examining feedbacks and communication between plant and soil communities. In 1997 Simard was part of a team of researchers that discovered that trees are connected through underground webs of mycorrhizal fungi. These networks allow trees to communicate by transferring carbon, nutrients and water to one another. Dr. Simard also helped identify something called a hub tree, or "Mother Tree." Mother trees are generally the largest trees in a forest area that act as central hubs for vast below ground mycorrhizal networks. Mother trees support young trees or seedlings by introducing fungi to their root systems and thereby transferring the essential nutrients needed for them to develop and grow. Under each square foot of forest floor there are hundreds of miles of mycorrhizal fungi examining every inch of the earth and transferring nutrients via their fine hairy networks as if they were neural networks. Even in dying forests the mother trees pass on their own carbon and nutrients to others in the canopy area around them to provide continued support for the survival of the surrounding community of trees. (Suzanne Simard: Thinking Like a Forest: http://www.ttbook.org/listen/75606)

German forester **Peter Wohlleben** writes about his discovery that trees are social beings. He elaborates on his experience, observations and research by articulating how trees working together establish consistent local climates moderating extremes of cold and heat and other significant factors that allow trees to reach old age. In his runaway best seller, The Hidden Life of Trees, he states,

> They can count, learn and remember; nurse sick neighbors; warn each other of danger by sending electrical signals across a fungal network known as the 'Wood Wide Web' – and, for reasons unknown, keep the ancient stumps of long-felled companions alive for centuries by feeding them a sugar solution through their roots.

Through these processes complex communities evolve creating healthy ecosystems that bring benefits to each other as with all forms of life.

When coming upon a pair of huge beech trees in the forest of some 3000 acres he managed near Cologne, Wohlleben wrote,

> These trees are friends. You see how the thick branches point away from each other? That's so they don't block their buddy's light." "Sometimes," he adds, "pairs like this are so interconnected at the roots that when one tree dies, the other one dies, too.

Monica Gagliano, from the Center for Evolutionary Biology at the University of Western Australia along with colleagues Daniel Robert from the School of Biological Sciences at the University of Bristol, England and Stefano Mancuso from the Department of Plant, Soil and Environmental Science, University of Firenze, Italy have been studying grain seedlings. These seedlings are easier to deal with than working in a natural ecosystem like a forest. Before too long they found that their devices were registering roots crackling softly at 220 hertz, one octave below standard pitch at A440. Upon further examination they noted that,

> the roots of seedlings not directly involved in the experiment reacted whenever the seedlings' roots were exposed to a crackling at 220 hertz, they oriented their tips in that direction. That means the grasses registered this frequency, so it makes sense to say they "heard" it.
> https://www.youtube.com/watch?v=m-lq4sTMCqg
> (Towards Understanding Plant Bioacoustics: Monica Gagliano, Stefano Mancuso and Daniel Robert)

Gagliano and her colleagues go on to state that:

> Much of this research has arisen at the interface between scientific disciplines, such as ecology and chemistry. As a successful example of interdisciplinary partnership, chemical ecology has greatly advanced our understanding of plants by unveiling their strikingly 'talkative' nature and the eloquent diversity of their volatile vocabulary. [ibid]

They continue to stress the importance of further research on the micro-details of biological ecosystems. To me the significance of interdisciplinary collaboration is key because it opens most specialized languages up to fresh options and interpretations offering up new insights and possibilities.

> Similarly, we reckon that multidisciplinary research is required for an effective exploration of the functional, ecological and ultimately evolutionary significance of acoustic communication in the life of plants. [ibid]

The exciting thing for me about these findings is that **the trees of the forest are sound articulating acoustic communities**. It is also becoming ever clearer that these communities become identifiable through establishing place and a sense of place invariably must also be defined through the sounds of that place. I have thought for a long time that even a single tree embodies place. They affect everything around them, providing shade, providing dwelling places for countless creatures, establishing a below ground feeding network encouraging more trees to grow and contribute to evolving ecosystems. They are chronicles enclosing within themselves variations in climate and environmental conditions… and now we know they talk to each other.

In my visual work I make drawings of trees whose entire images are composed of the name of the particular tree I am representing in tiny letters up to as many as 50,000 times. In order to make each drawing I also intone the name of the tree out loud each time I write the name.

My studio space is alive with the names of trees, the production becomes a personal performance, akin to an incantation that I imagine lends support and strength to the trees.

This series of drawings/incantations is primarily concerned with the forests around my home along the Niagara Escarpment in Canada. The Niagara Escarpment is recognized as one of the world's unique natural wonders and is the most prominent topographical feature of southern Ontario. The landform is a forested ridge of fossil-rich sedimentary rock (dolostone) 725 km in length and is classified as a UNESCO World Biosphere Reserve.

The forests in the area I live in are part of the northern most reaches of the Carolinian forest zone. This is also the area where Cliff Ecology was first pioneered by Dr. Doug W. Larsen and his colleagues at the University of Guelph.

(The Last Stand: A Journey Through the Ancient Cliff-Face Forest of the Niagara Escarpment, by Peter E. Kelly and Douglas W. Larson, publisher, Natural Heritage Books. 2007.)

Dr. Larson and his team studied the Eastern White Cedar trees growing along the faces of the cliffs of the Niagara Escarpment. By analyzing core samples from the trees' trunks, Larson's team established that the cedars ranged in age up to 1316 years, which is the oldest one found. [(www.ancientforest.org/ontarios-oldest-trees/,) attributed to Kelly and Larson]

To the naked eye these gnarled and dry looking cedars, clinging to the cliffs in extended communities seem short-lived in a hostile environment, yet they have now been recognized as one of the old-growth forests in the world. I wonder how they manage to communicate in such a challenged environment, many of them isolated among vast, dense blocks of dolostone. Yet we do now understand that they indeed communicate and support one another… By extension I considered this ancient forest an acoustic community related to the countless other acoustic communities globally.

All of this recent research has altered my awareness and my own approach and attitude when I move through forested areas wherever I go. It has changed how I pay attention, how I listen and when I engage in listening I think about the Deep Listening training developed by Pauline Oliveros which has had an enormous influence on my capacity to listen more thoroughly and infused my listening with more focused intention. One of her Sonic Meditations asks people to walk outdoors at night, stepping so softly that our feet become our ears as we listen through skin and bones to vibration beyond our hearing.

I would like to recount a personal experience of intense significance to me. My life, my work and my research were profoundly influenced after having met an Anishnabe (Ojibway) elder some years ago in 1987. I first encountered Dan Pine while I was preparing for a large-scale outdoor installation in Sault Ste. Marie, Ontario. I was invited to a land claim hearing Dan was to have with Federal authorities. I entered the hearing a bit late, having driven for ten hours to get there. Upon entering I was met by the words of Dan Pine addressing the Federal authorities, "I gave you my arm and now I want my land back." Dan was a small, thin man of 88 years with one arm and his chest full of military medals from the First World War. He lost one arm during that war. He was in effect saying that he was not separate from the land, that the land was an extension of his body and by association the bodies of his people. These words imprinted on me deeply and altered my perceptions of what I saw around me in a way I could never have imagined.

When Dan and I began finding sites for my project he showed me a series of places to think about. Some were places charged with tragic histories such as an abandoned lot within the city limits of Sault Saint Marie, with unmarked graves of children who were victims of the Residential schools. Some sites were covered with wild plants and herbs he taught me about and pointed out their use in healing and cooking. We settled on a site in the middle of the St. Mary's River, a small artificial island with a land bridge…making it a peninsula. It was perfectly positioned within the bounds of the lands he was laying claim to: many thousands of acres now underwater that had been flooded to facilitate the canal and lock system between Lake Superior and Lake Huron. His claim addressed the lack of any agreement prior to the building of the lock system that flooded tribal lands along the river. My project was aimed at drawing attention to these claims and consisted of a circle of eight inverted trees. I had been given access to mature conifer trees growing in an area of the city that was soon going to be deforested for development. The trees were to be brought to the site and placed upside down in a circle on the island. The circle was sixty feet in diameter and each tree stuck out of the ground thirty feet, their naked root systems stretching toward the sky. The trunks were cleared of branches and peeled… their flesh exposed.

Dan Pine never once referred to them as trees. He instructed me that the first step in the process was to speak to those 'people' and to tell them what was going to happen to them. I was further instructed to camp beside them to spend time with those 'people' and to bring

them gifts, offerings of traditional tobacco and to give my apologies for taking them out of the ground and separating them from their community.

The circle when completed stood like something primordial, timeless and extremely powerful. When it came time to dedicate the project many officials from Ontario and Quebec attended. I recall vividly that when I walked toward the circle with the culture ministers they stopped suddenly once inside the periphery of the circle and the minister from Quebec looked at me and asked, "it is so silent inside here, how is that possible? It is so unexpected, so peaceful." I was surprised to hear these remarks especially from government officials. But it was indeed true and I had experienced that silence first hand upon completion of the project when I was alone with it at sunset the first evening. It was truly as enchanting as it was disturbing. The title of the project was, "No Title", referring to the titling/ownership of land.

So there it was... the traditional indigenous world-view already understood trees as communities. I was transformed and deeply humbled. All that I have done in my work and life was changed by this experience. Finally science is catching up. The rational mind is being transformed by changing perceptions and ever more sophisticated tools for measuring and bringing our attention to more focused listening.

In conclusion I want to also say that the experience of talking to those trees, communicating with them as people, is echoed these many years later in the drawings made of the names of trees...the conversation just seems to get ever more intimate and lively.

Mapping, scoring and Activating Urban Sonic Space – *Ljud vid Nissan / Sound at Nissan*

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ABSTRACT: This paper explores how maps were used as an important interface for the analysis of public urban spaces, artistic development, public engagement and sonic activation in *Sound at Nissan*, a sound art festival staged in Halmstad, Sweden, in September 2016. In the festival, various kinds of maps – what we might call sound maps or listening maps – were used not as *results* but starting points. These maps were used to characterize sound spaces in the city, to help participating artists plan their works and to engage with residents of Halmstad as participants and audiences. In this paper, I consider the festival programme as a "score", before discussing the approaches used by the artists in their works and the knowledge they generated. I will make suggestions for how the approach used and knowledge generated by the festival could inform planning, by rethinking urban space in terms of "sonic spatial intelligence".

KEYWORDS: festivals, mapping, planning, sound art, sound space, soundwalks, spatial intelligence, urbanism.

1. Introduction

Sound at Nissan (*Ljud vid Nissan*) was a sound art festival hosted by Harp Art Lab in Halmstad, Sweden, in September 2016. *Sound at Nissan* drew together a wide range of ideas and practices: as well as showcasing artistic experimentation in sound installation and improvisatory performance, the festival demonstrated a hybrid model for collecting and harnessing urban "spatial intelligence" relating to sound, from multiple perspectives. The artworks in the festival offered useful, albeit informal, investigations of sound in public space – across physical, social and sonic dimensions – that are not feasible in normal planning and development situations. Soundwalks conducted with public participation encouraged engagement in urban sound space among residents through artistic practices of listening.

In the paper, I will discuss what I consider as a "score" or "meta-composition", which the curators established for the festival. I will examine some of the approaches used by the artists in their works. Finally, I will explore how the knowledge generated through the festival could inform planning from a sonic perspective.

2. Context

Halmstad is a port city of some 50,000 inhabitants on the west coast of Sweden. The city has a strong industrial heritage, but the city centre is now mainly marked by a proliferation of leisure activities and apartments overlooking the river. Boats moor on the river docks in the city centre and in a marina in the harbour; road traffic and pedestrians cross the river on its many road- and foot-bridges. The city's busy port facility forms part of the Ports of Halland county.

Figure 1. View of the Nissan River flowing through Halmstad, looking towards the south. Photograph: Mikael Ericsson.

Around 15 kilometres northwest of Halmstad, in the village of Harplinge, stands the Harplinge "smock"-type windmill, an 1895 construction that produced flour by grinding corn until the late 1960s. The husband and wife team Mikael and Julie Ericsson, both artists, took over the mill in 2010, establishing Harp Art Lab there the following year; since then, as curators, they have been inviting artists to take up residencies at the venue, especially during the annual *Bzzz! Festival*, to create and perform (sound) art and experimental music.[1]

In *Sound at Nissan*, the Ericssons wanted to apply the curatorial approach they had been developing at the Harp Art Lab. They began to think of the city as a kind of "canvas" for artistic intervention.[2] The four-kilometre stretch of the Nissan river flowing from north to south, through the centre of Halmstad and out to the harbour, formed an extensive, varied and interconnected series of sites, where invited artists could experiment with sound art installations and performances.

Sound art festivals have proliferated internationally in recent years, and some of them have focused on their given urban context as the primary subject for plural artistic investigations. Festivals like *Tuned City*, which has been held in multiple cities since 2008, and *Bonn Hoeren*, which appoints a city sound artist every year for the city of Bonn, Germany, are two recent examples that have now built up several years' worth of sonic urban practice and research.[3] In developing *Sound at Nissan*, the Ericssons had a similar interest in engaging with the built environment and urban development processes in the city of Halmstad. In the initial call for proposals, the curators referred to current developments in the city, and through the festival they have established a body of knowledge about the city from a unique perspective.

One of the key outcomes of *Sound at Nissan*, I will argue, was the generation of what I would call "sonic spatial intelligence" which was driven by the curators' sense of interconnections in the city at both a large scale and in detailed knowledge of specific sites. For the media and urbanism scholar Shannon Mattern, "spatial intelligence" relating to urban systems stretches beyond readily measurable forms of urban data (noise and air quality levels, pedestrian footfall and transport passenger numbers, for example) to encompass more nuanced epistemologies of cities. Such approaches, she argues, are culturally and historically aware, open to the wide spectrums of sensory experience and appreciative of the "wisdom" to be found in resident communities (Mattern 2017). The landscape architect James Corner, with a similarly nuanced understanding of urban intelligence, cautions against the "...indiscriminate, blinkered accumulation and endless array of data" (Corner 1999, p. 251) to be found in many mapping practices, instead seeking connections between observable (or, perhaps, audible?) material facts and their tactical (re)presentation – what Corner calls the

1. See http://harpartlab.se/.
2. Mikael Ericsson, email correspondence, February 2017.
3. See Ouzounian and Lappin 2015 for further discussion of this development in sound art practice.

"relational reasoning" of mapping (Ibid.). In this activist mode of cartography, maps can actively *create* fields for practice, the geographer Denis Cosgrove notes, going beyond their "narrowly scientific duties of survey, record and plan" (Cosgrove 1999, p. 22).

In what follows, I want to examine how the Ericssons curated artworks as part of what I consider to be a tactical "score", how the participating artists developed their works to engage with the established context and how publics were purposefully engaged in the analysis of sound spaces in the city. I hope to show how this meta-composition and its realization points to some key considerations for the creative use of sound in urban planning.

3. Scoring sound spaces in Halmstad

3.1. Identifying distinctive sound spaces

Sound at Nissan was held in September 2016, but it entailed preparations that went on for at least a year before the festival proper, involving the curators, funders and city officials, artists and members of the public. To establish the context for the festival, Mikael and Julie Ericsson conducted an analysis of the existing acoustic conditions of sites along the river. They wanted, Mikael Ericsson says, "to understand the canvas we [had] to deal with"[4]. The Ericssons gathered sound recordings, videos and photographs and used this material to publicize the festival. In a call for artistic proposals posted on the Harp Art Lab website, the Ericssons shared the materials they had gathered from each site to help artists develop their proposals.

From over one hundred applications, the Ericssons invited five individual artists and one duo to participate in the festival.[5] Both Mikael and Julie Ericsson also contributed works themselves. The Ericssons' engagement with the artists began with this selection process but continued through the conceptual development of artworks and the sequencing of the works in the festival. The curators stressed that this developmental approach to the artworks, and the fostering of a sense of community among the participants, was as important for them as the original conceptual proposals. The participating artists developed their work for the festival over the summer of 2016, in some cases visiting Halmstad to explore different sites.

While the artists developed their projects, the Ericssons continued to map the river, making recordings and videos of the artists' visits and mapping out "listening points" along the river; this map identified sixty-four sites, serving as a kind of listening map, which the artists and organisers could use to reference the acoustic characteristics of locations in the city.

4. Mikael Ericsson, email correspondence, February 2017.
5. The artists were Klara Andersson (Sweden), Johannes Bergmark (Sweden), Ann-Louise Liljedahl (Sweden), Aga Jarzabowa, Maciej Baczyk and Maciek Polak (Poland), Kajsa Magnarsson (Sweden) and Laurie Tompkins (U.K.).

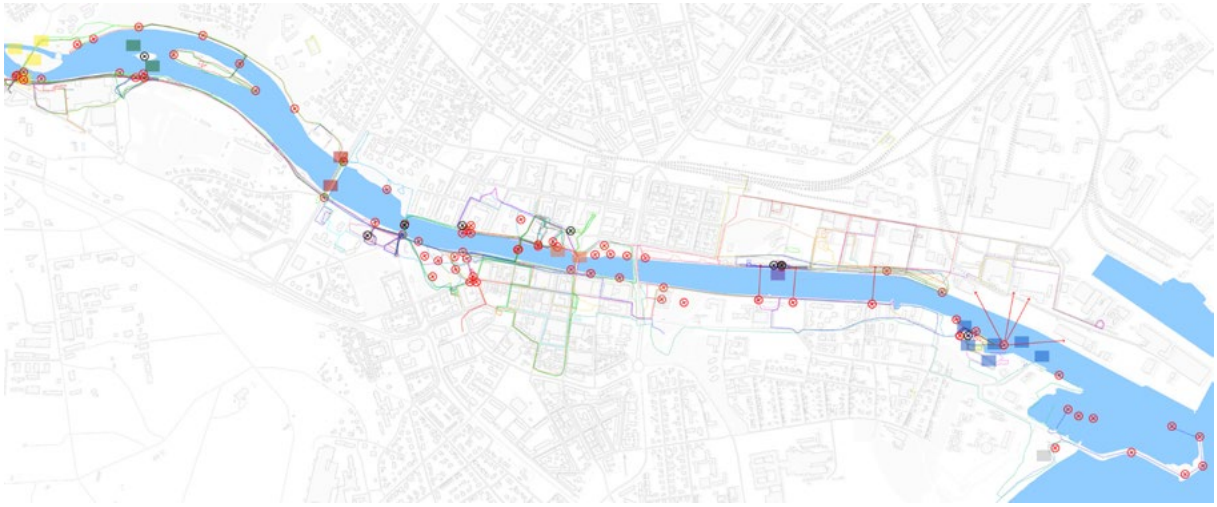

Figure 2. Listening points along the Nissan, identified during research for the festival. East is at the top of the image. Courtesy Harp Art Lab.

In their own research, the Ericssons found themselves drawn more to the sound environment in the southern section of the river at the harbour, and the northern section at Slottsmöllan, than they were to the city centre. To help them characterise the sound environment of this busier central area, they planned a series of seven soundwalks, inviting different groups to participate during the summer months: one session with a group of art students; one with politicians, planners, architects and civil servants; and four open-invite sessions with the public. The Ericssons limited the time of each walk to 30 minutes, with a 30-minute introduction beforehand and a one-hour discussion afterwards.

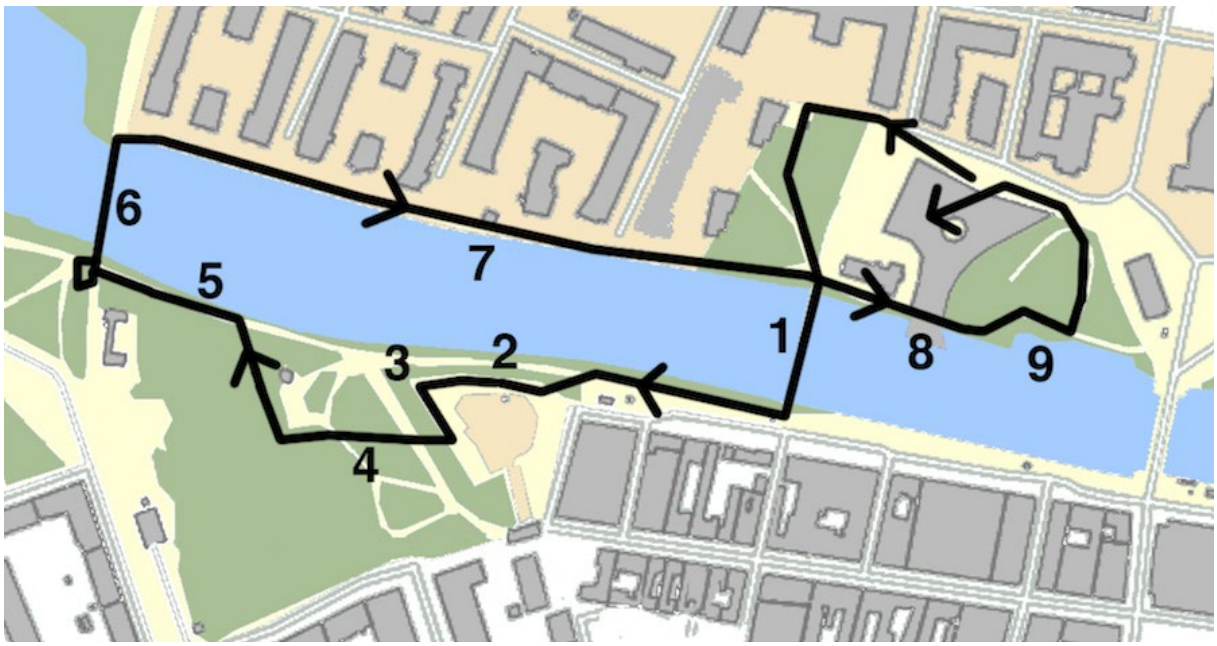

Figure 3. Route of the soundwalk in Halmstad city centre. Point 1 is the pedestrian bridge beside the library and point 6 is the railway bridge. Courtesy Harp Art Lab.

Participants were led by Mikael and Julie Ericsson, following a route planned by them in advance; as the group reached each stop on the map, they took freeform notes, recording their impressions of the area and things they heard. The participants were also equipped with handheld sound recorders, which they were free to use if they wished. (Mikael Ericsson later repurposed these recordings as material in *Soundtrack Nissan*, his sound installation in the festival.) Each walk was held in silence, encouraging people to pay close attention to what they heard.

Mikael Ericsson told me that they wanted to engage participants on a direct experiential level, by giving them a shared task to complete, based on their own listening experience, as well as an intellectual level, by encouraging them to reflect on their experience in discussion afterwards:

> The discussions… became very spontaneous after a half hour of silence. The participants' [auditory] experiences raised topics about how urban design, buildings and parks along the river affect the sound of the city. Participants noted silent places, sound pollution and how different materials such as wood, gravel and stone and buildings amplify or block the sounds.[6]

The organisers saw value in the creative and aesthetic use of listening and recording by people of diverse backgrounds in the soundwalks, but they also emphasised the need for a critical discourse, such that ideas and perceptions could be explored and qualified in group discussion. These carefully planned soundwalks were a tactical intervention by the Ericsssons to help fill a gap in their knowledge; they saw the soundwalks as an opportunity to design a distributed task of creative analysis. The results were detailed and diverse layers of knowledge, emerging from, and reinforcing, shared understandings of the city's sound environment.

6. Mikael Ericsson, email correspondence, February 2017.

3.2. Spatial and temporal sequencing and blending

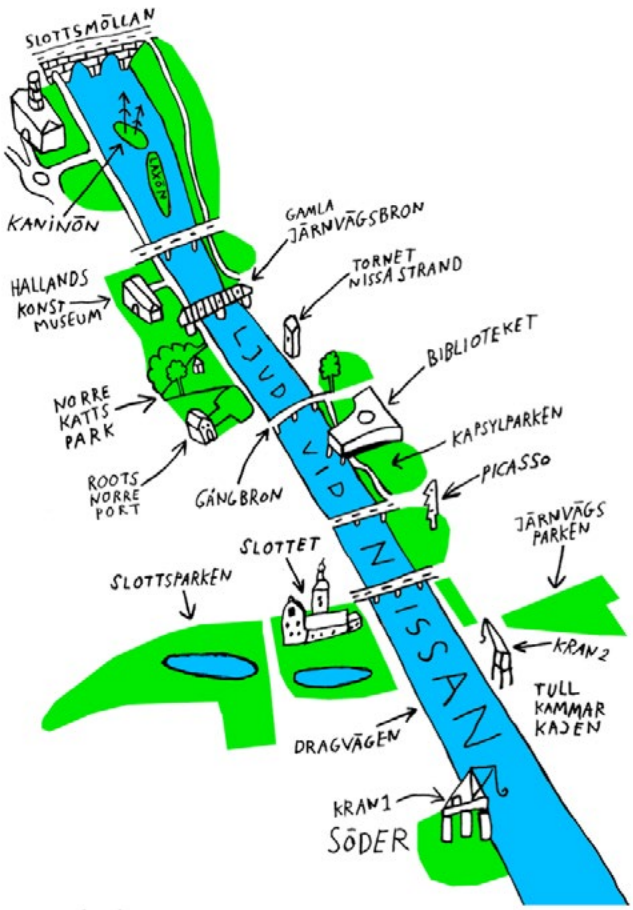

Fig.ure 4. This cartoon map drawn by Mikael Ericsson shows festival sites and landmarks along the length of the Nissan River through the city centre of Halmstad. Courtesy Harp Art Lab.

Participating artists took up residencies in Halmstad in September 2016, when the works were realized. In the final festival programme, Mikael Ericsson's hand-drawn map of the river highlights points of interest that are relevant to the festival and important for way-finding: iconic buildings and sites of festival events and installations. Each of the works offered an alternative use of its location; along the 4-kilometre length of the Nissan, artists could take advantage of a greatly varying set of spaces:

Table 1. The range of sites used in the festival, held from 9th–11th September 2016.

	Site	Artwork(s)	Type of Space
1	Slottsmöllan	Bergmark, 'Sound Fishing' (Fri 9th) Tompkins, '600 Halmstad Songs' (Fri 9th)	River / natural greenspace Road bridge / natural greenspace
2	Kaninön	Magnarsson, 'Rabbit Island Rave' and 'Rabbit Island Rave (Aftermath)' (Fri 9th and Sat 10th)	Sound installation: Island Performance: Green corridor / natural greenspace
3	Hallands Konstmuseum	Jarzabowa and Baczyk, 'Deep in the Image' (Sat 10th and Sun 11th)	Public museum (interior)

	Site	Artwork(s)	Type of Space
4	Gamla Järnvägsbron	Andersson, 'Expedition' (starting point) (Fri 9th and Sun 11th)	Pedestrian bridge and underpass
		J. Ericsson, 'Ferrovie dello Stato' (Fri 9th and Sun 11th)	Green corridor (peripatetic route)
5	Tornet Nissastrand	M. Ericsson, 'Soundtrack Nissan' (Sun 11th)	Semi-private multi-purpose meeting venue
6	Norre Katts Park	Andersson, 'Brandtal' (Sat 10th)	Public park
7	Roots Norreport	Andersson, 'Brandtal' (Sat 10th) Jarzabowa and Baczyk, 'Deep in the Image' live performance with Pinpark (Sat 10th) Magnarsson, 'Rabbit Island Rave' (performance) (Sat 10th)	Nightclub interior City walls
8	Gångbron	Bergmark, 'Play the Bridge for the Fish!' (Fri 9th and Sat 10th)	Pedestrian bridge River
9	Stadsbiblioteket	McCafferty, 'Workshop – Tullkammarkajen' (Fri 9th and Sat 10th)	Public library – interior
10	Kapsylparken	Andersson, 'Brandtal' (Sat 10th) Bergmark, 'Sound Fishing' (Sun 11th)	Public park
11	Kran 2 / Tullkammarkajen	M. Ericsson, 'Soundtrack Nissan' (Fri 9th, Sat 10th and Sun 11th) Tompkins, '600 Halmstad Songs' (Fri 9th, Sat 10th and Sun 11th)	Industrial heritage structure (crane) / civic space / industrial space (dock)
12	Kran 1 / Söder	Liljedahl, 'Echo of Iron' (Sat 10th and Sun 11th) Liljedahl, Bergmark, M. Ericsson, Closing concert (Sun 11th)	Industrial heritage structure (crane) / industrial space (fishing quay)

The programming of the festival highlighted the different characteristics of these public spaces and buildings. Each site, with its own physical, acoustic and social characteristics, played an important role in the development of the artworks presented there. The festival did not suggest long-term changes to the spaces used, instead emphasizing potentialities through its ephemeral interventions. In the following section I will describe some of the strategies that artists used to engage with their sites and the kinds of spatial intelligence their interventions generated.

4. Activating the "score" through performance and installation

While most of the artworks presented at *Sound at Nissan* could be called site-specific, dealing with one site or structure, some used a broader or fuzzier scale, encompassing the length of the river or sections of it. One work was peripatetic, moving along the river between different sites; one used the edges and interstices of spaces; one was based on several different sites along the length of the river and one drew its materials from the entire length of the river.

Here, I will focus on how each of these projects generated new knowledge about their urban context, in terms of physical space, sonic space and social space (with the understanding that these categories are not necessarily separate). After discussing each of the works in turn, I suggest how they generate new knowledge about urban sound space.[7]

4.1. Artworks engaging with individual sites and structures

Johannes Bergmark – *Play the Bridge for the Fish!*

Figure 5. Johannes Bergmark installs his work *Play the Bridge for the Fish!* on the Gångbron. Photograph: Mikael Ericsson.

Johannes Bergmark uses custom-built instruments to enact playful and theatrical conceptual ideas and improvisational performances. On the Gångbron, the pedestrian bridge by the library, he staged *Play the Bridge for the Fish!* The bridge is a key route in the city's network of pedestrianised streets and a means of crossing from the civic and residential area on the east into the commercial city centre.

Bergmark used hardware elements – contact microphones, an amplifier powered by a car battery and a loudspeaker sealed in waterproof tape, which was suspended from the bridge and submerged in the river using piano wire – to create an extended instrument using the suspension cords and other elements of the bridge. Strumming and striking the metallic cords, the wooden handrail and metal supports of the bridge, people passing by could activate the contact microphones, and the resulting sounds were played back through the loudspeaker to any passing river life below, and to the public through a second loudspeaker located on the bridge.

7. See https://vimeo.com/203572202 for a short video showcasing each of the works presented in the festival.

Bergmark's invitation to "play the bridge" reconfigured the everyday pedestrian connection. The idea that sounds produced on the bridge could be heard by the fish required a suspension of disbelief and a willingness to play along with Bergmark's straight-faced joke, reimagining a piece of urban infrastructure as a large-scale instrument, and the fish below as a receptive audience.

Julie Ericsson – *Ferrovie dello Stato*

Figure 6. People listen as Julie Ericsson's work is played at the old railway bridge. Photograph: Mikael Ericsson.

Julie Ericsson's *Ferrovie dello Stato* drew on the uncanny possibilities of sound reproduction. Her work, mounted at the old railway bridge (now a busy pedestrian and cycle route connecting a key green corridor in the city centre) reminded the listener of the physicality, materiality and even tactility of trains passing over the river, a phenomenon that has long since disappeared.

Ericsson's work was based on recordings of trains she made in Italy (the title refers to the Italian state railway system). Played back into the underpass using a simple mobile loudspeaker, these sounds had the psychoacoustic effect of creating a sense of movement along the bridge above, and could be heard for several hundred metres in both directions on either side of the river. The dramatic, almost reckless sense of speed conveyed in the recordings was dizzying. The effect was impressive, thanks to the sudden onset of the powerful sounds between longer quiet intervals. The work also played on the lack of an obvious visual cue to match the sounds: as the spectral sound- image of the train barrelled past, there was a curious sight of pedestrians, joggers and cyclists moving leisurely across the bridge, or looking around to try to source and identify the sounds.

This work drew an audience on the bridge, underneath in passing boats and on the river banks. It prompted discussions on site between the artist and the spectators, some

of whom, Mikael Ericsson says, felt "provoked [by the work], some fascinated". These conversations about the work, and about the meaning and value of "sound art" in general, spilled over from the site into social media and the local newspaper.

Ann-Louise Liljedahl – *Echo of Iron*

Figure 7. Part of the audience that gathered to observe the closing concert of the festival, which was based on *Echo of Iron* by Ann-Louise Liljedahl, and which featured Liljedahl, Mikael Ericsson and Johannes Bergmark in performance. Courtesy Harp Art Lab.

Ann-Louise Liljedahl's *Echo of Iron* was the most straightforwardly "electroacoustic" composition in the festival, but all the source material came from her chosen site, the fishing quay at Söder, and its disused crane, and was presented there, in the open air, rather than an acoustically-treated concert hall. Her composition, a fixed media piece, was based on a collection of recordings of the metallic sounds of the crane which she manipulated and sequenced; as an installation, the work was played back through loudspeakers attached around the crane itself. Hearing the metallic sounds of the installation for the first time, the fishermen who still work at the quay asked Liljedahl if she had somehow switched the crane on again.

As well as being mounted as a sound installation throughout the festival, Liljedahl's piece also served as the basis of the closing concert of the festival, which she, Mikael Ericsson and Johannes Bergmark performed. Invited guests and interested members of the public stood or sat on the quayside on a pleasant September Sunday evening while the local fishermen sat outside their huts, at a slight remove but still watching. In a dramatic, at times comical, performance, Ericsson and Liljedahl both stood on top of the crane, coaxing a rich palette of sounds from the crane by striking it with hammers and mallets. In the arch of the crane below, Johannes Bergmark – suspended in stirrups by piano wire – performed along with them using another of his custom-built instruments – this one consisting of a

sounding board, piano wire and contact microphones, amplified by contact microphones. Using bows and wooden blocks, Bergmark played a wide range of stringed sounds to complement the Liljedahl's piece.

As the sun set on a calm Sunday evening, birds and planes flew in the distance into the darkening sky, and the drama of this "found" outdoor concert stage and venue came into focus. Sounds of the performance – one moment delicate and haunting, the next thunderous – echoed out into the stillness of the evening. Across the water, the cranes of the port were still at work late into the evening and the occasional boat puttered past, heading up the river. On board, people turned their heads to the strange sight and sound, as a dormant structure on the Halmstad quays seemed to come back to life.

Kajsa Magnarsson – *Rabbit Island Rave* and *Aftermath*

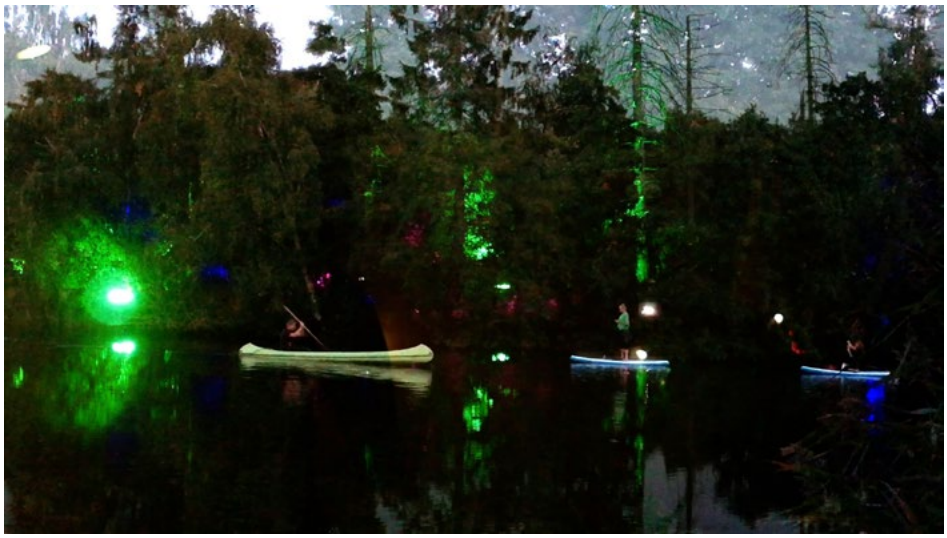

Figure 8. Canoeists try to get closer to the *Rabbit Island Rave* installation by Kajsa Magnarsson. Courtesy Harp Art Lab.

Kajsa Magnarsson's *Rabbit Island Rave* was a playful invite to passers-by, inventing a mythical narrative and populating Kaninön – the Rabbit Island – with characters who were responsible for a sound and lightshow that erupted out of the darkness of the quieter northern section of the river. The work brought together strands of ancient and contemporary Scandinavian culture, informed by the Fossegrim or Strömkarlen, a Norse mythological character who lured people with his fiddle playing, as much as by Gothenburg rave culture. "I love that feeling of going to an outdoor party on a late summer's evening, when you start to hear the music in the distance," Magnarsson told me.

Inaccessible except by boat, the tree-covered island provided cover for an installation of loudspeakers and lights powered by a generator. *Rabbit Island Rave* consisted of a loud 4/4 techno beat that underpinned different synthesised sections in a 20-minute loop. As darkness fell, the work began to overwhelm an otherwise tranquil locale, the sound clearly

audible clearly a kilometre downriver. The work attracted a small crowd of revellers, some of whom knew about it advance, and others who simply stumbled upon it while out along the river. At one point, three figures dressed in rabbit masks appeared amidst the audience with flares, dancing to the music coming from the island.

During the day, in a work called *Aftermath*, at the same location, there were sparse echoes of the fictional party from the night before: shorter, abstract excerpts of synthesised sound emerged from the island from time to time. People went about their day, canoeing upriver, or walking their dogs or running along the embankment while, in the world of the *Rabbit Island Rave*, unseen creatures caused mischief.

4.2. Artworks engaging with the Nissan on a broader scale

Johannes Bergmark – *Sound Fishing*

Figure 9. Johannes Bergmark performs with his sound fishing contraption. Photograph: Mikael Ericsson.

In a second work for the festival, *Sound Fishing*, Johannes Bergmark took on the role of a wandering fisherman, with an amplified fishing rod made from found objects collected along the river and a loudspeaker strapped to his back. Bergmark playfully explored the edges of the river, relying on his sense of physical balance to navigate the rocky and grassy edges of the river banks, and his musical sense of improvisatory timing – and adventure – to attempt to generate sounds from the water and rocks using his contraption.

For the curators, this work served a useful link between sites, since Bergmark had more mobilility and flexibility than the other site-specific works. Mikael Ericsson thought of Bergmark's work as a "walking sound sculpture."[8] Playing an unassuming character,

8. Mikael Ericsson, email correspondence, February 2017.

Bergmark would emerge from the everyday environment and crowds of people to suddenly generate a confusing array of sounds when he dropped his bright yellow propeller into the water. As he walked around the edges of the river, Ericsson says, Bergmark was "a fusion between man and machine – activating the space between the human body and the surrounding environment".[9]

Laurie Tompkins – *600 Halmstad Songs*

Figure 10. Laurie Tompkins vocalising at the Slottsmöllan. Photograph: Mikael Ericsson.

Laurie Tompkins, like Bergmark, works in an improvisatory tradition – the title of his *600 Halmstad Songs* alludes to the new dwellings to be built at Tullkammarkajen and lends significance to the most fleeting, apparently throwaway ideas. In both conception and performance, Tompkins made use of the delaying, reverberant effects to be heard at several points along the river.

Singing and shouting, with cupped hands or a horn for amplification, he revealed acoustic effects, materials and spatial dimensions and used long reverberation times to sing in duet with himself and some of the wildlife. The songs varied but tended to consist of an array of howls, shrieks, grunts and heavy breathing, with occasional harmonica.

Tompkins was not present at the festival, so Mikael Ericsson played a selection of the songs from the Slottsmöllan bridge while Bergmark wandered on the rocks below with his sound fishing gear. As well as the gathered audience on the banks, there was an incidental audience of people out for a Friday evening walk or run along the river or over the bridge, several of whom stopped to listen. For Ericsson, Tompkins' work invoked a highly personal and enjoyable memory of making recordings with Tompkins earlier in the summer –

9. Ibid.

Ericsson knew the pieces intimately. On the opening night of the festival, it was Tompkins' voice that howled downriver to start the show.

Klara Andersson – *Expedition*

Figure 11. Klara Andersson leads a group on her *Expedition*. Photograph: Mikael Ericsson.

Klara Andersson's *Expedition* sounded the multitudes of personal experience to be encountered along a sequence of shared public spaces. In advance of the festival, Andersson invited local people to send her stories or memories relating to locations on a specific route along the Nissan. She collected and read these stories aloud through a narrowband megaphone, at the location where the events had happened.

As Andersson weaved her sonic path, her silent audience could only follow, listen and imagine. *Expedition* rendered stories as a kind of official pronouncement, delivered in monotone. The personal became public and the intimate was widely shared. An ordinary walk in the city was transformed. As Andersson's audience eavesdropped on personal stories they formed new shared memories of otherwise neutral spaces.

Mikael Ericsson – *Soundtrack Nissan*

Figure 12. Mikael Ericsson's *Soundtrack Nissan* was played from horn speakers mounted on both sides of the crane at Tullkammarkajen. Photograph: Conor McCafferty.

Mikael Ericsson, in *Soundtrack Nissan*, brings together field recordings from Halmstad and excerpts of soundtracks drawn from classic films with waterfront settings. The field recordings were made by participants in the soundwalks that the Ericssons led before the festival.

The crane provided a useful visual focal point and a natural stand for mounting two large horn speakers high above ground. This area, slated for redevelopment in the coming years, is marked by more sparse, open brownfield space than the green corridor and commercial city centre to the north across the road bridge, which forms a boundary between the city centre and the southern area. Though it is well used by local industries and people docking and servicing their boats, the area does not attract the kind of heavy footfall to be seen further north. The river opens out to the harbour just south of here, where the site seems to blend into the industrial zone of the port.

Soundtrack Nissan engaged with this open public arena for listeners, offering a subtle intervention without a clear beginning or end. Ericsson's work was the most heterogeneous in terms of sound content, with long pauses between field recordings, passages of song and music, and evocative fragments of dialogue that retained the shuffling and crackling of film foley sound effects found on the original soundtracks. The playback of the piece through the horn speakers created a wider performative space than most of the other works in the festival and allowed listeners a sense of drifting in the open space as strangely familiar sonic elements mingled with everyday sounds.

Aga Jarzabowa and Maciej Baczyk – *Deep in the Image*

Figure 13. Aga Jarzabowa and Maciej Baczyk collecting organic materials from the Nissan during their residency in Halmstad. Photograph: Mikael Ericsson.

For the Polish artists Aga Jarzabowa and Maciej Baczyk, the route of the river through the city represented an opportunity to engage in a detailed quasi-scientific survey. Their project, *Deep in the Image*, was an outlier among the works in the festival, in several ways: it had a broader spatial scope than most of the other works, based on a mapping process they conducted over several consecutive days. Moreover, *Deep in the Image* was not manifestly a "sound art" work, nor was it site-specific in the sense of being either from, or presented at, a single site.

After spending a week in the run-up to the festival intensively shooting film and collecting samples of materials found in the river, Jarzabowa and Baczyk presented their work in an exhibition in the Halland Art Museum on the Saturday afternoon of the festival. *Deep in the Image* consisted of a short, silent film, using the narrative form of a travelogue around various sites in Halmstad. The artists used a combination of techniques to create the final work, using both stop motion animation and the transformation of the film negatives and organic materials with various chemicals. The artists juxtaposed and layered their filmed material with the various organic samples found in the river, placed directly on a platform they used to produce the animation. In the exhibition, the film was presented alongside some material fragments that had been used in its production, with a map and colour-coordinated key showing where film fragments had been shot or samples had been found. In a second iteration of the work during the festival, they also performed a concert at the Roots Norre Port nightclub with their colleague Maciek Polak, accompanying their film with live electronic music.

In their detailed excavation and mapping of sites along the Nissan, Jarzabowa and Baczyk uncovered visual patterns and rhythms of endless variety and sublime detail. *Deep*

in the Image reflected a concern with the material life of the Nissan, casting it not simply as a static object to be captured or represented, but as an organic system that is much more complex than first meets the eye, or ear.

4.3. What knowledge was generated by the festival?

First, the festival highlighted the range of "listening points" in the city, and engaged the public in cataloguing the qualities of some of these sites through a series of soundwalks. The Ericssons gathered the responses from these soundwalks for future analysis. Mikael Ericsson has also developed a new artwork based on this material (figure 14 below).

Figure 14. The sounds of the railway bridge (left) and Norre Katts Park (right) – work-in-progress. The text (in Swedish) in this drawn "sound map" by Mikael Ericsson is based on the responses from participants in the sound walks. The completed work will take the form of the river's route through the city, with sections corresponding to each site along its length. Courtesy Mikael Ericsson.

Secondly, each of the artworks in the festival offered artistic research into the context, history and materiality of the sites used, proposing alternative, albeit temporary uses for them. The artworks demonstrated how sound art interventions can activate sound in urban space, and potentially transform the perception of those spaces, in several ways:

- **Investigating acoustic qualities of outdoor spaces:** ranging from recordings of Tompkins' voice in *600 Halmstad Songs* amplified and projected downriver, to Liljedahl sounding out different components of the crane in *Echo of Iron*.
- **Drawing attention to existing physical features:** literally, by inviting people to seek the source of sounds emerging from an uninhabited island (Magnarsson's *Rabbit Island Rave*), or by acoustically activating a disused piece of industrial infrastructure (as in Liljedahl's *Echo of Iron*).
- **Instrumentalising/gamifying the built environment:** as in the soundwalks, where participants "scavenged" urban sites for interesting sounds; Bergmark's surreal attempts to "fish" for interesting sounds using contact microphones; and Tompkins' use of urban space for its reverberant qualities to form the basis of his songs.

- **Playing between acoustic and visual experience:** as in Jarzabowa and Baczyk's *Deep in the Image*, which offered a silent, but visually rhythmic exploration of the city's atmosphere, or Mikael Ericsson's *Soundtrack Nissan*, which drew material from films including snatches of songs, foley effects and ambient sound.
- **Investigating new uses for spaces:** such as performance, public gathering, or alternative routes – including both used and unused space – some, such as Andersson's *Expedition* invited the public to reimagine familiar spaces from the perspectives of other people.
- **Generating public reaction:** the public responded, both positively and negatively, and sometimes intensely, to some of the artworks presented. The artists and curators engaged people in conversation about their works in person at the installation/performance sites, on social media and in the letters pages of the *Hallandsposten*, the local newspaper.

5. Festival knowledge informing urban planning

The creation of this kind of sonic spatial intelligence is only a first step, however: there is no guarantee that it will be used in any meaningful way, not least because the festival operated outside traditional planning and urban development processes. However, I would argue that the creative approaches seen in *Sound at Nissan* are instructive for those with responsibility for planning and designing new urban spaces, to encourage an urbanism that is informed by sonic experience:

- Analysis and mapping carried out in advance of the festival enabled the curators to "score" **what would happen, where and when**.
- Through soundwalks and the presence of sound art interventions in the city, people can be supported to build their **sonic literacy**, and to express what they like, or don't, about a given sound or sonic experience – and why.
- The festival entailed ***purposeful* public engagement** relating to sound. The participants had a role that went beyond spectatorship and beyond superficial box-ticking. The creative task encouraged a focussed attention on everyday sound and the discussions afterwards led to something that went beyond binary understandings (good/bad, noise/quiet) of sound in urban space. Organised on a regular basis, these soundwalks could start to form a new archive of sonic spatial intelligence, reflecting changes in the sound environment of Halmstad over time.
- As well as using maps in planning and designing the festival, maps for the public – the soundwalk maps and the festival programme – provided **immediate, visual cues** for engaging with sound space in Halmstad, and a guide for attentive listening in the city.

- Engaging artists in exploring urban sound space is important in another way: it allows **complex ideas and phenomena to be brought to light and transformed**, sometimes complicating and challenging received ideas and perceptions.
- *Sound at Nissan*, as an urban-scale "score", did not attempt to "pin down" single sounds to single sites but instead presented a range of possibilities. First, in an analytical and pedagogical mode, it took account of atmospheric conditions, acoustic spaces and horizons, and the range of sounding materials one might encounter. Secondly, in an artistic-activist mode, it introduced new sonic materials, to suggest possibilities, to provoke a response and to share site-specific artistic experiences.

Sound at Nissan mobilised a collaborative sonic interpretation of the city, curating new strata of sonic spatial intelligence; instead of relying on existing data sets, the festival fostered its own collection of knowledge that lays the groundwork for the discussion, analysis, design and usage of urban sonic space in the future.

ACKNOWLEDGEMENTS. Thank you to all the artists who gave their time so generously to be interviewed during this research. Thanks to Matilde Meireles and Elen Flügge for lending a critical ear, and to my supervisors, Dr. Gascia Ouzounian and Dr. Sarah Lappin, for sharing their wisdom and support. And a special thank you to Mikael and Julie Ericsson for their kindness and hospitality.

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Hush City –
A Novel Mobile Application to Crowdsource and Access "Everyday Quiet Areas" in Cities.

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ABSTRACT: This paper presents the Hush City app: a novel mobile application to crowdsource and evaluate quietness in cities. Hush City app has been developed in the framework of the "Beyond the Noise: Open Source Soundscapes" project, grounded on the soundscape approach and citizen science. This paper firstly outlines the project's theoretical framework; secondly it describes the Hush City app's concept, its technology and advancement on the state of the art; lastly it discusses initial results and introduces future work.

> The soundscape is a huge musical composition, unfolding around us ceaselessly [where] we are simultaneously its audience, its performers and its composers. (Schafer, 1977)

KEYWORDS: END 49/2002, quiet areas, soundscape research, noise pollution, citizen science, open source, mobile applications, mapping, planning.

1. Introduction

Today, cities are becoming increasingly noisier: only in Europe, according to the European Environment Agency, over 125 million people are affected by noise pollution from traffic every year (EEA 2014), which represents the second environmental stressor in Europe, behind air pollution (WHO 2011). The harmful effects of noise arise mainly from the stress reaction it causes in the human body, which can also occur during sleep. These can potentially lead to premature death, cardiovascular disease, cognitive impairment, sleep disturbance, hypertension and annoyance (EEA 2017). To take action against noise pollution is therefore imperative. At the European policy level, in 2002 the *Environmental Noise Directive* 2002/49/EC [hereafter indicated as END] was adopted with the aim of establishing a common approach to avoid, prevent, and reduce the harmful effects of noise pollution among the Member States. The END provides a quantitative methodology based upon acoustical indicators (e.g. "L_{aeq}" and "L_{den}") to calculate noise pollution from major noise sources (e.g. roads with more than 3 million car passages per year), "noise maps" to represent it, and action plans based upon noise-mapping results to reduce it.

The END also stresses the importance of protecting and planning urban quiet areas as a valid measure to reduce noise pollution; and it provides a definition of a "quiet area in agglomeration" as "an area, delimited by the competent authority, for instance, which is not exposed to a value of L_{den} or of another appropriate noise indicator greater than a certain value set by the Member States, from any noise source" (END, art. 3). However, the Directive does not provide any common methodology for protecting and planning urban quiet areas.

As a result, in recent years different criteria for identifying quiet areas have been developed by the Member States and by means of European funded research projects as reported in (Alves et al. 2016; EEA 2014; Licitra et al. 2011). Main criteria so far applied are: 1) acoustical criteria; 2) distance-based criteria; 3) mixed criteria, such as the combination of acoustical, size-based and land use-based criteria (Berlin Senate 2008), the adoption of acoustical criteria combined with accessibility-based criteria (Licitra et al. 2011) - to name only a few.

Despite numerous projects have been conducted, the European Environment Agency has encouraged scholars to do in-depth research in the field and to experiment with mixed methodologies, integrating qualitative approaches such as the soundscape one (EEA 2014).

The "Beyond the Noise: Open Source Soundscapes" project aims to contribute to filling this gap of knowledge: it experiments with a novel mixed methodology for to identifying, assessing and planning "everyday quiet areas" in cities, by implementing the soundscape approach, the citizen science paradigm and a novel mobile application: the Hush City app.

1.1. The soundscape approach: "quietness as a commons"

From the early definition of soundscapes provided by Murray Schafer (Schafer 1977) to the latest one released by the ISO norm, a soundscape can be defined as the "acoustic environment as perceived, experienced, and/or understood by people, in context" (ISO 2014). Accordingly, the soundscape approach is grounded on three main assumptions:

1. the soundscape can be understood as a "pool of resources" (Schulte-Fortkamp 2013) than merely noise;
2. soundscape analyses and evaluation processes are placed in context (Kang et al. 2016);
3. people's preferences as well as their perceptual and physical evaluations are combined towards a holistic study of the (sonic) environment (Brooks and Schulte-Fortkamp 2016).

Inspecting the issue of urban quiet areas through the lens of soundscape allows for the formulation of the research's hypothesis: accordingly, quietness is considered as a commons: as "the cultural and natural resources accessible to all members of a society [...]" (Wikipedia[1]) which "[should be] co-governed by its user community, according to the rules and norms of that community." (Bauwens et al. 2017).

Departing from this theoretical assumption, a novel operative definition of "everyday quiet area" is proposed as "a small, public, quiet spot embedded in the city fabric, at a walking distance from the places we work and live, where social interaction and spoken communication are not only undisturbed, but even favored" (Radicchi 2017). Following this definition, a set of criteria are proposed for the identification and evaluation of small, quiet areas in cities. They are: people's preferences, accessibility, small size (< 1ha), neighbourhood scale (< 30 ha, in the case of Berlin), the walking distance paradigm (Welle et al. 2015), and the "human voice scale" concept (Radicchi 2017). These hypotheses have to be validated through the citizen-driven pilot study, implemented in Berlin in the framework of the "Beyond the Noise: Open Source Soundscapes" project.

1.2. Citizen science applied to research in urban quiet areas

In its formulation, the END also calls for informing and involving the public in preparing noise maps and action plans (END 2002, art. 8, 9), however it does not suggest any strategy to achieve this goal. On the other hand, the soundscape paradigm has become an important tool in facilitating people's involvement in soundscape evaluations and decision processes about the sonic environment (Brooks and Schulte-Fortkamp 2016). However, in the framework of research in quiet areas, public participation is still at the very beginning, with few examples available (Matsinos et al. 2017).

Taking inspiration from citizen science trends towards the use of GPS-equipped smartphones as sensors in data collection and evaluations in the field of environmental noise

1. https://en.wikipedia.org/wiki/Commons (accessed on May 20, 2017).

(e.g. WideNoise, NoiseWatch, see 2.1.), the idea of using a mobile app seemed to be the most appropriate one[2], as it can be used by people in their everyday life, independently by the researchers.

2. The Hush City app

The Hush City app has been therefore developed in order to achieve a set of ambitious goals and, actually, to positively impact on science, environment, society, policy and economic.

1. To increase civic awareness towards the importance of safeguarding urban quiet areas in cities.
2. To facilitate access to existing quiet areas, by allowing people to identify quiets areas shared by the community, where they can find relief from the hectic life experienced in big cities.
3. To boost public participation in quiet areas evaluation, protection and planning processes, by providing people with a free and participative tool to crowdsource mixed data related to their favourite quiet spots.
4. To exploit data collected through he Hush City app in integrated city planning processes, in order to develop policies and planning guidelines grounded on people preferences, and therefore filling a gap in literature (Heinrichs et al. 2015; Hintzsche and Heinrichs 2017).
5. To favour the building of a bridge between the noise level-oriented approach practiced by acoustic planning and a qualitative and people-oriented one, applied in soundscape research. The Hush City app indeed allows for the collection of mixed data – such as field recordings, noise level measurements, pictures and user feedback – which can be used to develop interdisciplinary and more proper evaluations of the sonic environment (Brooks and Schulte-Fortkamp 2016).

2. Today, the average smartphone has enough sophisticated technology: on-board microphones, GPS, time stamping to make it an extraordinary mobile monitoring device. Moreover, smartphones have become increasingly used by people, as urban life style trends show. According to the 2016 Ericsson Mobility report, as of May 2016, the total number of mobile subscriptions was around 7.4 billion, including 63 million new subscriptions, and 80% of all mobile subscribers use smartphones. LTE subscriptions grew at a high rate as well during the first quarter of 2016: 150 million new subscriptions, reaching a total of 1.2 billion worldwide. Subscriptions associated with smartphones also continue to increase.

Figure 1. Hush City app's icon. © Antonella Radicchi 2017

2.1. Advancement on the state of the art of mobile applications for crowdsourced noise & sound maps

In order to explore the possibility to re-use an existing app, a screen of mobile apps available on the market was conducted[3] in-between June 2016 and October 2016 through literature and market review.

Then, the state of the art outlined in (Figure 2) was built, by selecting only:

1. Mobile applications for the collection of qualitative and quantitative data related to the sonic environment, such as noise pressure levels and/or audio recordings and/or user feedback and/or pictures;
2. Mobile applications for representing the crowdsourced data by means of web-based maps, such as noise maps and/or sound maps.

Social media mobile applications – such as Facebook, Instagram *et similaria* – were not included in this review. Furthermore, only the mobile applications covered by research publications (e.g. Ear-Phone) or implemented in the framework of research projects (e.g. CITI-SENSE) have been included in the survey, even if they are not yet or not more available) on the market.

The result of this survey reports that twenty-eight mobile applications have been developed in the course of the past nine years: Noise Tube app has been the first one launched in 2008. After that, twenty-seven apps were launched in the following years, with a peak in 2014; they are (in alphabetical order): AirCasting, Ambiciti (improvement of SoundCity) Audio Spook, CART-ASUR (linked to Noise Tube), Citi-Sense, CITY SOUNDSCAPE, Ear-Phone, Geluidenjager - Sound of the Netherlands, I-SAY, MoSart, NoiseDroid, Noisemap, NoiseSpy, Noise Watch, Noise Tube, NoTours, Radio Aporee, Recho, Record the Earth, Sound City,

3. I would like to thank very much the scholars and the members of the Acoustic Ecology's and the Soundscape UK's mailing lists for their feedback. Especially (in alphabetical order): Ernesto Accolti, Alessandro Altavilla, Pierre Aumond, Raquel Castro, Pınar Çevikayak Yelmi, Adam Craig, Peter Cusack, Milena Droumeva, Felicity Ford, Joaquín Gutiérrez Hadid, Per Hedfors, Christina Higgins, Eiman Kanjo, Josh Kopecek, Barry Truax, Jacqueline Waldock.

Soundscape Characterization Tool, SoundOfTheCity, Stereopublic, The Quiet Walk, The Noise App, Think About Sound, UrbanRemix, WideNoise

Out of the twenty-eight, seventeen are noise meter-based applications and eleven are audio recorder-based ones. Some of them also allow for the collection of mixed data, such as noise levels and user feedback (e.g. Noise Tube, CART-ASUR), audio recordings and user feedback collection (e.g. Think About Sound).

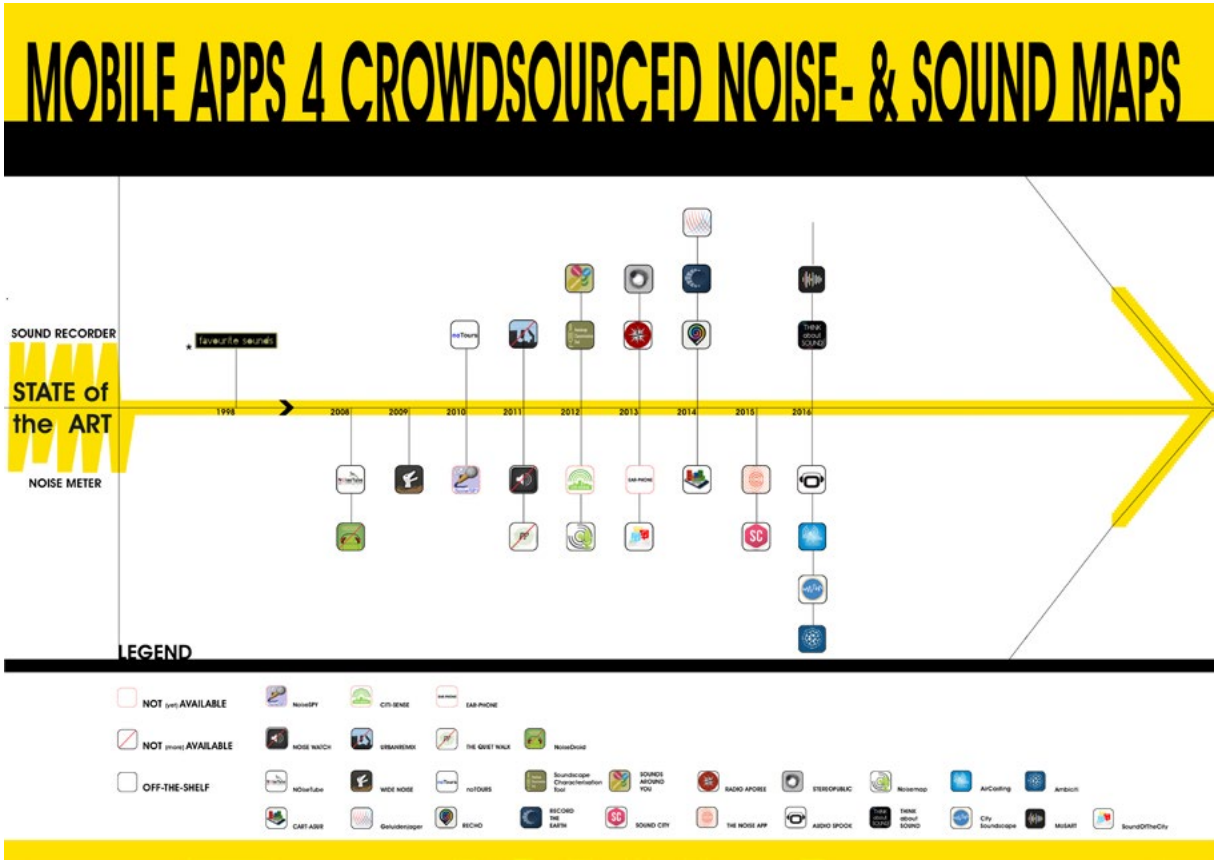

Figure 2. The Infographic depicts mobile applications for crowdsourced noise and sound maps. © Antonella Radicchi 2017

The result has been represented by means of this infographic (Figure 2) where applications are displayed according to the following criteria: 1) date of release; 2) main function (noise meter or audio recorder); 3) availability on the market.

How to read the infographic: the timeline goes from the left to the right and it shows at a glance when the applications were released. Audio recorder-based applications are placed above the timeline; and noise meter-based applications are located below the time line. The applications' logos were slightly modified in order to represent the apps' availability on the market: applications not yet available on the market, applications no longer available on the market, and off-the-shelf applications. The infographic also displays the exceptional *Favourite Sounds* project, curated by Peter Cusack: despite not having a related mobile app,

it represents the very first participative sound map launched on the web in 1998[4] and for this reason it has been included in the state of the art.

2.2. The Hush City App: innovative aspects and concept

After reviewing the state of the art, the option to re-use an existing app was discarded, due to the lack of an app that enables the simultaneous and sequential actions: recording sounds and calculating their noise pressure levels; taking pictures of the place where the sounds are recorded; collecting user feedback on the sounds recorded by means of a predefined questionnaire. Consequently the Hush City app was developed from scratch[5].

The most innovative aspects of the Hush City mobile application regard both the data collection and the data consultation processes.

In regard to innovation in data collection, the Hush City app allows the sequential collection on the same location and by the same user of a complex set of mixed data in a limited timeframe (approximately 3 minutes). The mixed data collectable consist of: audio recordings and related noise pressure levels; pictures of the place where the sounds are recorded; user feedback on the location where the sounds are recorded. User feedback are collected by means of a predefined questionnaire, structured in three section: soundscape; general issue and behavioural issue. Questions are designed to explore the correlation between the soundscape and the following topics: emotional responses, semantic descriptors, perceived quietness, positive and negative sounds, level of oral interaction and social communication, sense of the place, landscape quality, level of maintenance and cleanliness, sense of security, accessibility to the location. Additional information collected through the questionnaire regards: major sound sources, user status, weather conditions, number of people in the areas and major activities performed in the area. The importance of collecting and evaluating both qualitative and quantitative data is also conveyed through the design of the app's icon, in which the profile of an ear is placed on a heart to represent this ideal combination. The hearth also refers to the impact of the sonic environment on our mental and physical health (Figure 1).

The Hush City app offers also the possibility to collect multiple datasets on the same location by the same user or by different users, therefore allowing for further comparative evaluation according to time variation (e.g. seasonal and/or day/night variations).

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4. The *Favourite Sounds* project started verbally, on paper and as a collection of sound recordings in 1998 by the sound artist and researcher Peter Cusack (UK) with "the aim to discover, and celebrate, what people value about the soundscapes of the cities, towns and neighborhoods where they live and work". The online map appeared in 2009 in its prototype version and it was created during the Positive *Soundscapes Project* (2006–2009). The current version first appeared in 2010.

5. The possibility of using a web-based platform was also explored, thanks to the collaboration offered by Cristian Tapus. However, this option was later discarded due to technical problems, mainly related to the impossibility to record audio from iOS devices and to get accurate noise level measurements.
See <http://hushcityweb.azurewebsites.net/> developed by Cristian Tapus. I want to express my gratitude and thank Cristian very much for his generous and genuine interest in this project.

Concept

By accessing the Hush City app's home page, users are offered two main options through two buttons, displayed on the screen: "Map the quietness around you" and "Quiet Areas". In addition to these features, a menu allows the users to: return to home page; consult and eventually delete users's surveys; give feedback on the app; manage users account settings (e.g. change the password). Finally the Search button allows for consulting quiet areas in specific cities, by typing the name of the desired city in the blank space (See Figure 3, 5).

"Map the quietness around you"

By clicking on the button "Map the quietness around you", users are guided through data collection of their favorite "everyday quiet areas". The first action required is to record the sound of the chosen area: by clicking on the button "Record", the app starts recording and after 30 seconds it automatically stops. Secondly, users are asked to click on the button "Analyse" and the app calculates and displays the sound pressure levels of the sound recorded. Thirdly, users are asked to take a picture of the place where the sound was recorded, and finally they are invited to evaluate the soundscape and the surroundings by replying to a pre-defined questionnaire.

By using the Hush City app, data collection sequence starts with the recording of a 30-second long audio recording: this process was designed on purpose in the building of the app to make the users pause and listen to the sonic environment, therefore contributing to the improvement of their listening abilities.

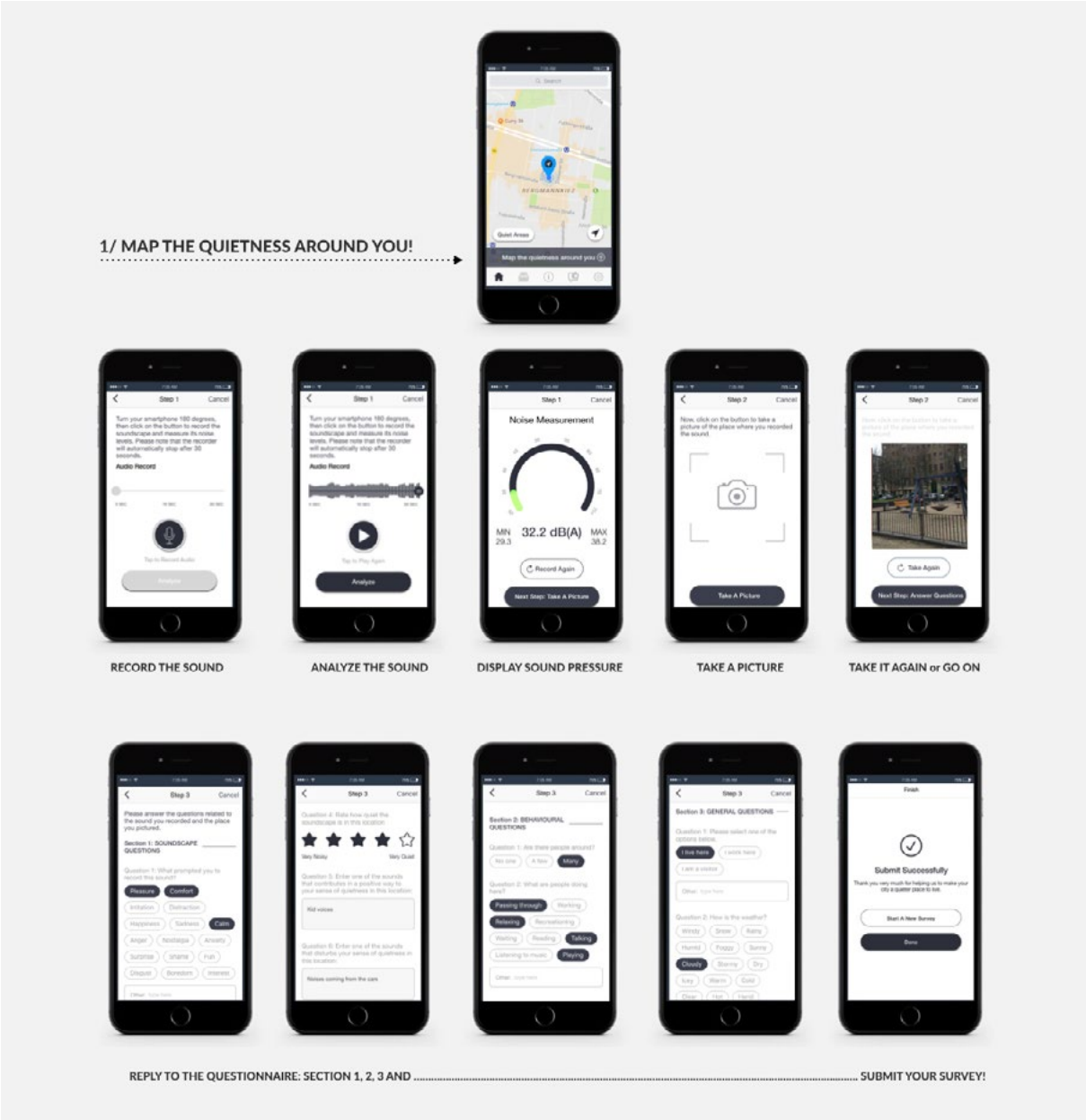

Figure 3. Hush City app: "Map the quietness around you" interface.

The questionnaire

Data collection's final step consists in replying to a pre-defined questionnaire, which is articulated in three sections revolving around soundscape issues, behavioral and general issues, such as the location quality, main uses of the location, sense of security, accessibility, weather conditions etc.. Replies can be given by means of: multiple choice, linear scale and free text rating methods.

"Quiet Areas"

By clicking on the button "Quiet Areas", users are guided through the exploration of datasets related to "everyday quiet areas" nearby - or in other cities worldwide - shared by other users. When the "Quiet Areas" button is active, the background map turns into dark and users are offered two view mode options to explore the quiet areas: the map view mode and the list view mode.

Map view mode

When the map view mode is active, colored markers are displayed on the dark background map. Colors are automatically assigned to the markers by the Hush City application, according to the sound pressure levels of each sound recorded. For example, light green markers indicate that in these spots sound pressure levels were approximately between 35–40 dB(A)[6] (see Figure 4). The color scale reference is taken from the strategic Noise Map of Florence[7].

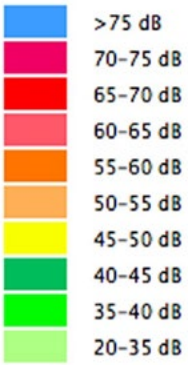

Figure 4. Colour scale and related L_{den} in dB(A).

By clicking on each marker, a window pops up displaying data collected on that spot, such as: date and time, address, sound recordings, pictures, sound pressure levels, and user feedback.

List view mode

When map view mode is active, users are given the possibility to explore datasets by means of list view mode. By clicking on the button located on the top-right angle of the display (in case of iPhone), datasets related to quiet areas collected by the community are listed. Again, by clicking on each item of the list, data collected on that spot are visualized, such as: date and time, address, sound recordings, pictures, sound pressure levels, user feedback.

6. Noise levels calculated by the Hush City app may not be entirely accurate, depending on which smartphones are used, weather conditions and other factors.
7. http://www.arpat.toscana.it/datiemappe/mappe/mappa-del-rumore-stradale-firenze (accessed on May 20, 2017).

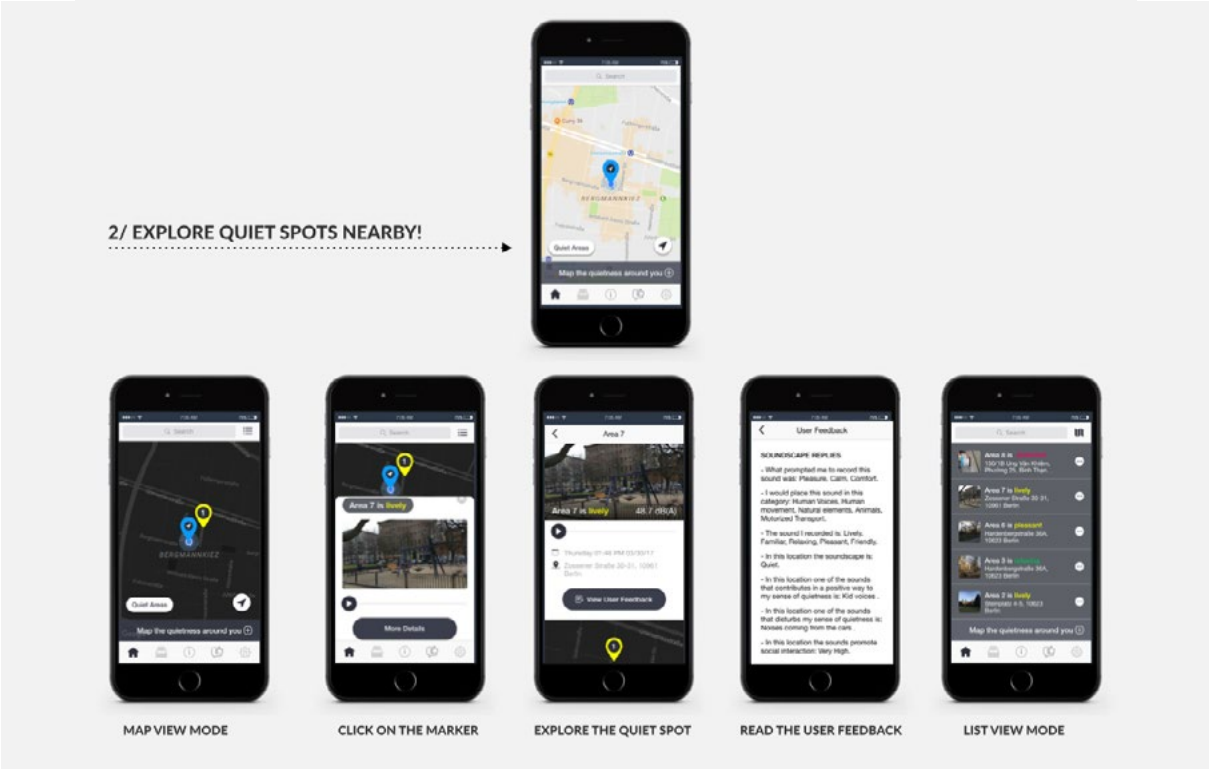

Figure 5. Hush City app: "Quiet Areas" interface.

2.3. Hush City App: technology

Hush City app is a free, native mobile application, which runs on both iOS and Android operating systems: iOS 9.0 and higher (iPhones 5/5C/5S/SE/6/6Plus/7/7Plus) and Android 5 and higher (any Android based smartphone). A Titanium platform is used as a framework to record and store the data and a LAMP stack is used as a repository. Audio data are sampled at 44.100Hz, with a resolution of 16bit. The maximum length of the audio file is 30 seconds. Respective sound pressure levels are calculated as numeric scale values and they are A-weighted (i.e. 45 dB(A)). The A-weight is considered as the most appropriate for assessing environmental noise, due to similarity to human hearing (Thenuis et al. 2017). L_{eq} (equivalent continuous sound level), L_{min} (minum sound level) and L_{max} (maximus sound level) are also calculated and displayed. NoiseTube's app libraries have been consulted to select the most appropriate formulas for sound pressure level calculation and calibration (Maissoneuve et al. 2009)[8]. These formulas have been also double checked by a team of acoustic consultants involved in the project (see credits' list below). Pictures are collected at a maximum resolution of 6MP and 24bit color. Sign-in feature: the users must verify their email before signing in and use the app as usual. If the users realize that they used wrong emails or made typos or mistakes after touching the Sign Up button, the app also allows them to change their email addresses.

8. <http://www.noisetube.net/index.html#&panel1-1> (Accessed on May 20, 2017).

2.4. Hush City App: code & data ownership, data storage and privacy issues

Hush City app's code will be made public and shared on-line under an appropriate license. Datasets, collected by using Hush City app, are accessible at any time by using the app, and they will be made public and open in the final phase of the "Beyond the Noise: Open Source Soundscapes" project (tentatively in Spring 2018).

For the measurements and for compiling the maps on quietness, user precise location is needed. Various technologies are used to determine user location, including IP address, GPS, and other sensors. All and any collected data and personal information are sent anonymously electronically to the database stored in the host provider SERVER4YOU[9] run by Host Europe GmbH, a provider whose servers are based in Germany, where they are stored. Appropriate measures are taken to safeguard against unauthorized disclosures of personally identifiable information and all information is stored using the required industry-standard techniques. The collected surveys are made available strictly anonymously on the Internet and by means of publications in international journals and public presentations at conferences, symposia, and dissemination events in general. The Privacy Policy and Terms and Conditions document is accessible at any time on the Hush City app's webpage[10].

2.5. Hush City App: credits

Hush City's software development was curated by Dr. Martin Memmel - Head of the QUERTEX GmbH, in cooperation with EdgeWorks Software, Ltd. The mock-up was developed by QUERTEX GmbH, in cooperation with EdgeWorks Software, following an initial concept provided by Antonella Radicchi. The app's icon (Figure 1) was designed by Antonella Radicchi. Acoustic consultants: Dipl. Ing. Michael Jäcker-Cüppers (DEGA, Technical University of Berlin), Dipl. Ing. Manuel Frost (Berlin Senate, Senate Department for the Environment, Transport and Climate Protection), Dipl. Ing. Mattia Cobianchi (Bowers & Wilkins, UK).

3. Discussion

Hush City app was launched on the market in the midst of April 2017. Initial communication campaign's measures consisted of disseminating the app by means of emails to personal contacts and posts on public platforms such as Linkedin and Twitter. After the first 30 days, at the end of May 2017, approximately 120 datasets have been shared by users from all around the world: thee most active city is Cambridge (USA), followed by Berlin (GER) and Lisbon (P). Datasets also come from the U.S. (e.g. New York City, Chicago), Italy (e.g. Rome,

9. <https://www.server4you.net> (Accessed on May 20, 2017).
10. <http://www.opensourcesoundscapes.org/hush-city/> (Accessed on May 20 2017)

Florence, Milan, Bologna,), Romania (e.g. Bucarest), U.K. (e.g. London), Belgium (e.g. Ghent) and the Netherlands.

As reported in (Kardous and Shaw 2015), challenges remain with using smartphones to collect and document sound exposure data. Some of the main issues encountered in recent studies are being carefully studied and addressed (Drosatos et al., 2012; Huang et al. 2010). In regard to the Hush City app, the main challenges are related to the following issues.

Data quality

(Murphy and King 2016) proved that the measurements apps did a poorer job of accurately measuring at very low background and high noise levels: the latter is a concern given that environmental noise at higher levels is the key area of concern from a public health perspective.

In order to achieve data quality, NoiseTube's app libraries have been implemented for sound pressure level calculation and calibration (Maissoneuve et al. 2009)[11]. In order to test the ability of the Hush City app to calculate noise at different sound pressure levels (i.e. Background, 40 dB, 50 dB, 60 dB, 70 dB), a calibration procedure was followed[12], as recommended by (Murphy and King 2016). A coherent pink noise signal was played over computer speakers and measurements were simultaneously taken by using the Hush City app installed on a Samsung Galaxy A5 and a calibrated sound meter level (NTI XL2). The microphones of the smartphone and the sound meter level had the same distance in front of the speaker (30 cm).

In the case of the Hush City app on a Samsung Galaxy A5, the measured values differed by an average of -4 to -5 dB (A) at an average level (L_{aeq}) of 45-80 dB(A). Below 45 dB(A), the differences become larger (approximately -10 dB(A)). That means the calculations made with Samsung Galaxy A5 smartphones could be more inaccurate, the quieter the area is. This result does not constitute *per se* a relevant weakness, due to the fact that in cities small, quiet spots with sound pressure levels below of 45 dB(A) are barely found. However, for more credible results, calibration tests should be done with different smartphones. Future work may also imply improving automatically calibration processes.

Production and sharing of knowledge

According to (Brooks and Schulte-Fortkamp 2016), evaluating the sonic environments calls for interdisciplinary measures: integrating sound pressure level measurements with field recordings, psychoacoustic analyses and local experts' feedback, is highly recommended.

Hush City app's originality consists in the multiple facilities which are embedded in a unique tool: by using the Hush City app, users can assess the sonic environment by collecting

11. <http://www.noisetube.net/index.html#&panel1-1> (Accessed on May 20, 2017).
12. I would like to thank Dipl. Ing. Manuel Frost (Berlin Senate, Senate Department for the Environment, Transport and Climate Protection), who kindly took care of the initial calibration tests.

datasets composed of: audio recordings, sound pressure level measurements, pictures and user feedback provided by replying to a predefined questionnaire. This leads to the production of qualitative and quantitative data not only related to quietness, but also to other issues, such as: the visual aspect, quality, accessibility, weather condition, people behavior – aspects that influence the evaluation of the sonic environment (Kang et al. 2016). Future work may imply the Hush City app's implementation with new facilities to investigate psychoacoustics parameters (such as: loudness, roughness, sharpness and tonality) in relation to the sense of quietness.

Using the Hush City app allows for the bottom-up production of informative and descriptive datasets of the way people experience quietness in cities in everyday life. Despite the fact that maps constructed with such datasets may be less statistically relevant, they could still give useful information for investigating specific and context-related issues (Theunis 2017); moreover they could constitute a resource to complement conventional methods for the assessment of urban noise (e.g. noise maps), as proven by previous experiments conducted in the field by (D'Hondt et al. 2013; Stevens 2012).

Civic awareness and bottom-up participation processes

In geography, urban planning and citizen science there has always been the tendency to support public participation (Haklay 2017). Today innovation in sensing technologies leads to the development of miniaturized sensors, creating opportunities for *participatory sensing* (Loreto et al. 2017), data collection and monitoring at a reasonable price (Theunis et al. 2017). This trend is also confirmed by the increasing number of mobile apps developed to monitor noise and air quality, especially in urban environments (see 2.1).

In soundscape research, public participation and civic engagement play a major role in soundscape evaluation and planning processes (Brooks and Schulte-Fortkamp 2016); however sensing technologies applied to research on quiet areas are still at the very beginning, with very few available examples (Matsinos et al. 2017).

Hush City app is aimed to fill this gap of knowledge by: 1) increasing community awareness about the importance of reclaiming and protecting quietness in cities; 2) empowering local communities to map and evaluate quiet spots in their neighbourhoods; 3) impacting on participatory planning processes by training committed citizens in soundscape action research. However sustaining motivation to participate in such studies is always a challenge (Murphy and King 2016): to tackle it, specific measures will be adopted, following trends in citizen science projects[13].

13. For an extensive bibliography in the field, see <https://ecsa.citizen-science.net/blog/collection-citizen-science-guidelines-and-publications>, <http://www.buergerschaffenwissen.de>, <https://povesham.wordpress.com> (Accessed on May 20, 2017).

4. Future Work and Conclusion

The Hush City app constitutes one of the open source tools/outputs of the "Beyond the Noise: Open Source Soundscapes" project along with the "Everyday Quiet Areas Plan" (Radicchi 2017). The latter consists of a participative management plan, which gives indications on how to protect the existing quiet areas, by taking the results obtained at local level and scales them up to the city level, and by taking into consideration city policies and plans, such as the mobility plan, the green areas plan, the land use plan, and public housing policies.

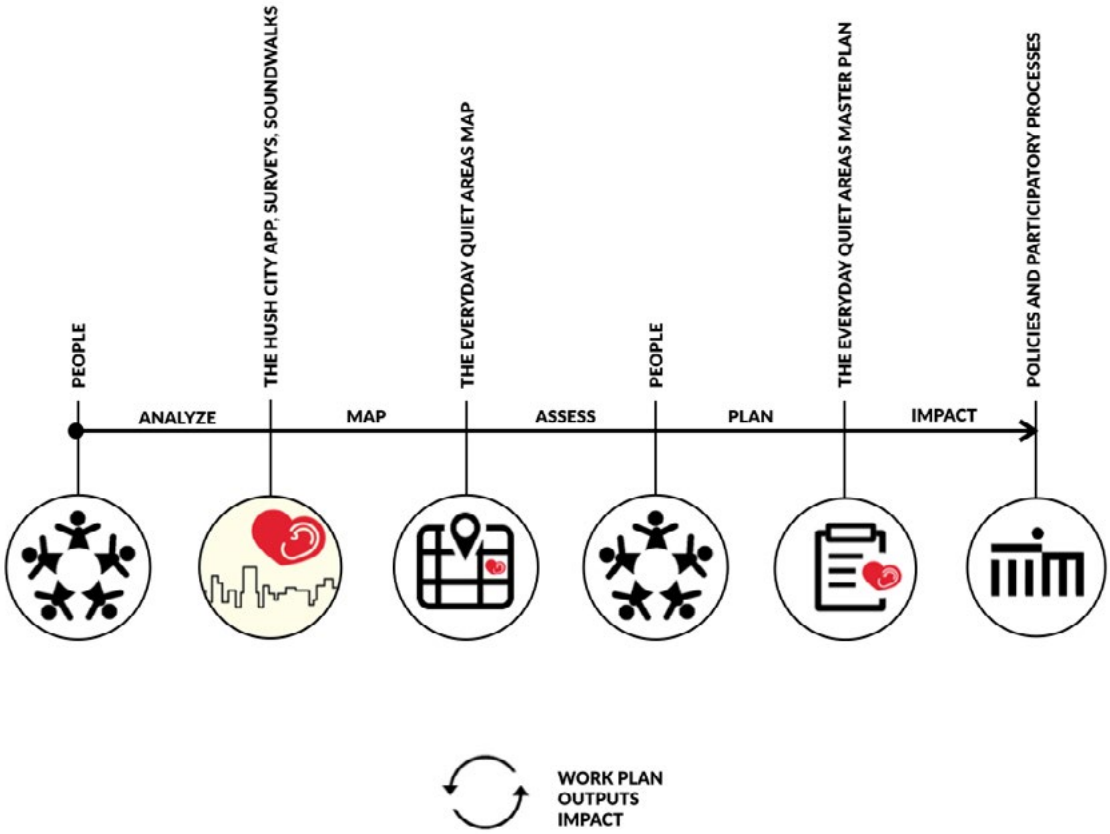

Figure 6. The diagram illustrates the "Open Source Soundscapes" approach's workflow, the outputs and impact.

This "open source soundscapes" methodology is currently under validation through a pilot study in the Reuterkiez, a Berlin neighborhood affected by noise pollution and high levels of environmental injustice. However, it could be applied to other Berlin neighborhoods and potentially to other cities, affected by noise pollution and environmental injustice, leading to meaningful comparative studies.

Grounded on the concept of "quietness as a commons", the methodology's theoretical, methodological and political impact could be measured on different levels.

- In relation to the scientific debate on the theories, tools and regulations of acoustic planning at the EU level: this novel mixed methodology can contribute to plan urban

quiet areas starting from public participation and embedding people's preferences into open source planning processes.

- In relation to the knowledge generated by the project, it could be embedded into civic participation management, spatial planning networks and policy processes through the collaboration with local authorities.

According to the workflow illustrated in Figure 6, the planning phase is expected to start by the midst of December 2017. Future work may imply: the implementation of new features in the Hush City app; a further investigation of the quiet spots identified by the participants, by means of psychoacoustic analyses; comparative studies with other cities worldwide.

Nowadays, to take action against noise pollution is imperative. Based on empirical evidence, the Hush City app and the "open source soundscapes" methodology have the potential to tackle this challenge and to address environmentally just and participatory urban planning processes in the city of Berlin and beyond.

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The "Beyond the Noise: Open Source Soundscapes" project was envisioned and it has been conducted by Dr. Antonella Radicchi (Technical University of Berlin). Project Supervisors: Prof. Dr. Dietrich Henckel (Technical University of Berlin), M.A. Jörg Kaptain (Berlin Senate, Senate Department for the Environment, Transport and Climate Protection). The pilot study in the Reuterkiez (Berlin) has been conducted in collaboration with Rabea and Dominik of the Stadtteilbüro Reuterkiez.

The Hush City app's software development was curated by Dr. Martin Memmel, Head of the QUERTEX GmbH, in cooperation with EdgeWorks Software, Ltd.

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Sounding the Unheard City – An Approach to the Soundscapes of Urban Vacant Lands in Lisbon

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ABSTRACT: In this paper, we will present preliminary results of our ongoing study on the soundscapes of vacant lands in Lisbon Eastern Zone (LEZ). Our methodology comprised two stages. Firstly, all the vacant lands of Lisbon municipality were identified and geo-referenced using remote sensing methods and high-resolution aerial photography. In the second stage, a field survey with the purpose of characterising the morphology, vegetation, and animal and human occupation of the vacant lands was conducted, along with field recordings of their soundscapes. The results of our study include the classification of vacant lands and of their soundscapes. We argue that listening to the sounds of urban vacant lands defies traditional notions of the urban soundscape as dominated by anthrophonies.

KEYWORDS: soundscapes, field recording, vacant lands, urban space.

1. Introduction

Proliferation of vacant lands has been a common phenomenon in cities undergoing shrinking processes (Deng and Ma 2015). Recent research on urban shrinkage has focused not only on the economic consequences of such processes (Fol and Cunningham-Sabot 2010), but also on the potential social and ecological benefits of the ecosystem services that vacant lands can provide when covered by vegetation (Burkholder 2012; Nassauer and Raskin 2014). However, the use and appropriation of these spaces by humans and animals has not been sufficiently explored. In project *NoVOID – Ruins and vacant lands in the Portuguese cities: exploring hidden life in urban derelicts and alternative planning proposals for the perforated city* (PTDC/ATP-EUR/1180/2014), we are exploring the sounds of urban vacant lands in Lisbon as a means to approach what we call 'the hidden life' of urban derelicts, meaning the human and non-humans appropriations of these spaces. While doing so, we are also listening to and recording an often unheard urban soundscape, dominated by geophonies and biophonies.

Our ongoing study aims at recording, classifying and mapping the soundscapes of vacant lands in Lisbon Eastern Zone (LEZ). In this paper, some preliminary results of our ongoing study will be presented, which include the identification of vacant lots and the classification of their soundscapes. The paper is divided in four sections. Firstly, we will approach the production of urban vacant lands and the issues related to listening to its soundscapes. Afterwards, we will present our methodology. Thirdly, we will present the preliminary results of our study, which include the classification of vacant lands in LEZ, and the classification of their soundscapes. Lastly, we will present some brief conclusions and the future steps of our research.

2. Learning from listening to urban vacant lands

In the last decades, the combination of processes of urban shrinkage and urban sprawl has produced a porous urban form in which occupied and abandoned spaces are scattered throughout the urban landscape (Florentin 2010; Deng and Ma 2015). Thereby, urban vacant lands, as well as ruins and empty buildings, have become recurring elements of the urban landscape. In economically dynamic regions, these spaces tend to be quickly reoccupied and regenerated; in peripheral or economically depressed regions, they tend to remain unused during greater periods of time (Brito-Henriques 2017). Yet, vacant lands are often thought of as spaces in transition that are merely waiting for human intervention, and their life is often unnoticed; not seen or not heard.

However, urban vacant lands are important for a number of reasons. They are important for vegetation growth, and it has been pointed out that "lawn grass, shrubs, trees and

woods on vacant land provides a variety of critical ecosystem services", such as preventing soil erosion, improving water quality, preventing floods, or storing carbon (Deng and Ma 2015, 89; see also Kim, Miller and Nowak 2015). On the other hand, social ties can also be enhanced when these spaces become valuable public spaces where activities such as urban vegetable gardening take place (Burkholder 2012; Morckel 2015). Furthermore, these spaces are important for arthropods, birds, small reptiles and mammals that are searching for food, or for spaces to mate and to nest in (Gardiner, Burkman and Prajzner 2013).

Urban vacant lands also have particular soundscapes that are often unnoticed by urban dwellers. The sounds of urban vacant lands defy our common sense understanding of the urban soundscape. The sounds of the city are usually associated with the sounds of humans and human technologies. Most studies on urban soundscapes or listening in urban environments are in a way a by-product of such associations as they focus mostly on human-related sounds, such as communities of communication in public space (LaBelle 2010), personal stereos and radio (Bull 2007, McCormack 2013), cars (Bijsterveld, Cleophas, Krebs and Mom 2012), artistic performances (Simpson 2016, Doughty and Lagerqvist 2016), or church bells (Hernandéz 2004, Belgiojoso 2014). As places with myriads of simultaneous sound sources, urban soundscapes have also been traditionally defined by scholars as lo-fi (see Schafer 1994). As Wissmann argues,

> The lo-fi environment of the city is often linked to electro acoustic sounds of the city. Traffic noise, electronic devices, and loudspeakers add to a cacophony that early soundscape researchers evaluated negatively. (2014, 87–88)

The lo-fi urban soundscape is often contrasted with the hi-fi soundscape of natural places where sound signals are clearer. This understanding of the sounds of the city tends to reduce the urban soundscape to anthrophonies, defined by Krause (2008) as human-induced noise which can be either electromechanical or physiological, and leave out the non-human – and nature-produced sounds (Matless 2005).

Listening to the sounds of vacant lands defies this definition of the urban soundscape. It unfolds a seemingly not-heard and not-seen space within the urban realm, one that illustrates that vacant spaces, like ruins, are the place we humans have left behind (Beasley-Murray 2010, Brito-Henriques 2017). In result, despite the fact that images of vacancy and ruination are a recognized part of the contemporary urban landscape, although often associated with marginality and postapocalyptic scenarios (Gandy 2013, Brito-Henriques 2017), the soundscapes of these spaces have been somewhat silenced.

Since derelict and vacant lands are places that, for a period of time, "exist outside the city's effective circuits and productive structures" (Solà-Morales 1995, 120), others soundscapes that are not actively engaged in the human everyday life are more prominent. One

may argue that instead of anthrophonies, these places are filled with biophonies and geophonies – the other two basic active acoustic sources that Krause (2008) identifies – that signal the natural life that appropriates them. Biophonies can be defined as "emerging nonhuman sound produced by living organisms in a given biome", and geophonies encompass "all the sounds produced by nonbiological natural agents such as winds, volcanoes, sea waves, running water, rain, thunderstorms, lightning, avalanches, earthquakes, and floods" (Farina 2014, 8).

The soundscapes of urban vacant lands are filled with such sounds, but these are often unheard, for two reasons. First, the sounds of vacant lands often have less volume than consolidated urban areas where anthrophonies dominate the soundscape. On the other hand, as vacant lands are often inaccessible for or not frequented by city dwellers, these low volume sounds do not usually reach human ears. As a result, the sounds of these spaces are left out of the recognizable soundscape of the city and urban vacant lands are often thought of as silent.

Yet, urban vacant land soundscapes have very distinct, quiet and soothing tonalities that could be valued by city dwellers, mainly as spaces that have been appropriated by nature. Natural spaces are often associated with certain types of sound that must be preserved for its harmony, musicality, and "complex but rich aesthetic (...) where not only birds but plants might sing" (Matless 2005, 750). The sounds of natural spaces within the city are also associated with slower life rhythms and a greater aesthetic appreciation (Wunderlich 2013). Vacant lands therefore provide interesting resources for a better quality of life (Rupprecht, Byrne, Ueda, and Lo 2015) especially given that direct contact with nature tends to be rare in the everyday life of city dwellers (Cox, Hudson, Shanahan, Fuller, Gaston 2017).

3. Methodology

Our study was conducted in two stages. Firstly, all the vacant lands of Lisbon municipality were identified and georeferenced in a geodatabase using remote sensing methods and high-resolution aerial photography. Lisbon is a city where the urban development model of the last decades has led to a fragmented urban growth that has produced several vacant lands (Brito-Henriques 2017). Lisbon Eastern Zone (LEZ) has a high concentration of vacant lands in its area, and for this reason it was selected as a case study to approach the soundscapes of urban vacant lands. LEZ is defined by Lisbon City Council as one of the five Units of Territorial Intervention (the others being the Historic Core, Central, North, and Occidental zones), and it includes four parishes: Beato, Marvila, Olivais, and Parque das Nações (CML 2017). A total of 142 vacant lands were identified in LEZ, which together amount to 101.6 ha.

In the second stage, a field survey with the purpose of characterising the morphology, vegetation, and animal and human occupation of the vacant lands was conducted. Following Matless (2005), we understand soundscape as consisting of sounds themselves, but also the material objects and subjects which produce them, and the social and cultural circumstances of the listening act. For this reason, we believe it was important to characterize the vacant lands themselves before mapping their soundscapes.

In this field survey 4 vacant lands that were now occupied were eliminated, and 2 new vacant lands were found, so the total number fell down to 140. We then eliminated 81 lots that had an area inferior to 3000 m2, as we considered these too small for our study. Out of remaining 59 vacant lands, we were able to visit 48. We used a set of 9 variables to characterize the vacant lands (see Table 1). With this information, vacant lands of LEZ were classified through a cluster analysis and data was mapped. In this stage, we also conducted exploratory field recordings in selected vacant lands. We conducted 5 minute audio recordings in wav format (24-bit, 96 kHz) using the Zoom H4nsp recorder.

Table 1. Variables used to characterize vacant lands.

Area	Terrain	Relief
3000 – 10000 m2	Waterproof (stone, cement, tar)	Rugged
10001 – 20000 m2	Artificial permeable (cobbled, gravel)	Flat
20001 – 40000 m2	Dirt	Mixed
> 40001 m2	Vegetation	
	Mixed	
Water	**Vegetation**	**Access**
Puddle	Discontinuous herbaceous formations	Open
Brook	Continuous herbaceous formations	Fenced
Mallard	Woody and herbaceous formations	
Other	Predominantly Woody	
Vicinity	**Traces of human occupation**	**Constructions**
Residential Buildings	Utensils	Sheds
Non-residential Buildings	Clothing	Urban Vegetable Garden
Road	Furniture	Walls
Parking Lot	Litter	Small Ruins
Train\Subway\Tram	Graffiti	Other
Park\Garden	Trail	
Ruins	Parking	

4. Sounding the unheard city

The methodology we conducted allowed us to classify the vacant lands in LEZ according to morphology and soundscapes. These results will be summarized in the following two sections. The first section presents the classification of urban vacant lands into five groups according to morphology, vicinity and traces of human appropriation. The second section regroups the vacant lands into three groups that share common traits in terms of soundscapes.

4.1. Classifying Vacant Spaces

Considering the variables listed in Table 1, a hierarchical cluster analysis of the vacant lands was conducted considering the method 'Between Groups Linkage' and the measure 'Square Euclidean distance'. For that, we used the software IBM SPSS Statistics. Thus, 5 vacant lands clusters were identified according to their morphology, occupancy (land cover) and situation (see figure 1).

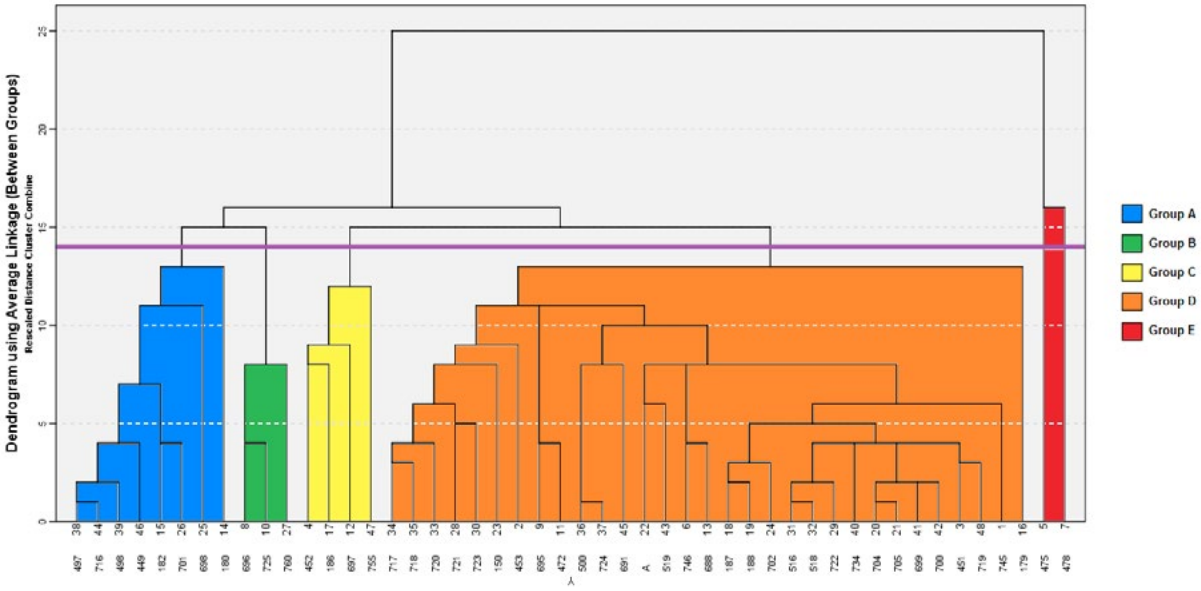

Figure 1. Dendrogram of vacant spaces in LOZ. Source: authors.

Afterwards, we used the vacant lands geodatabase to map the clusters, using ArcGIS 10. Figure 2 shows the spatial distribution of the clusters. The next section describes the main features of each cluster.

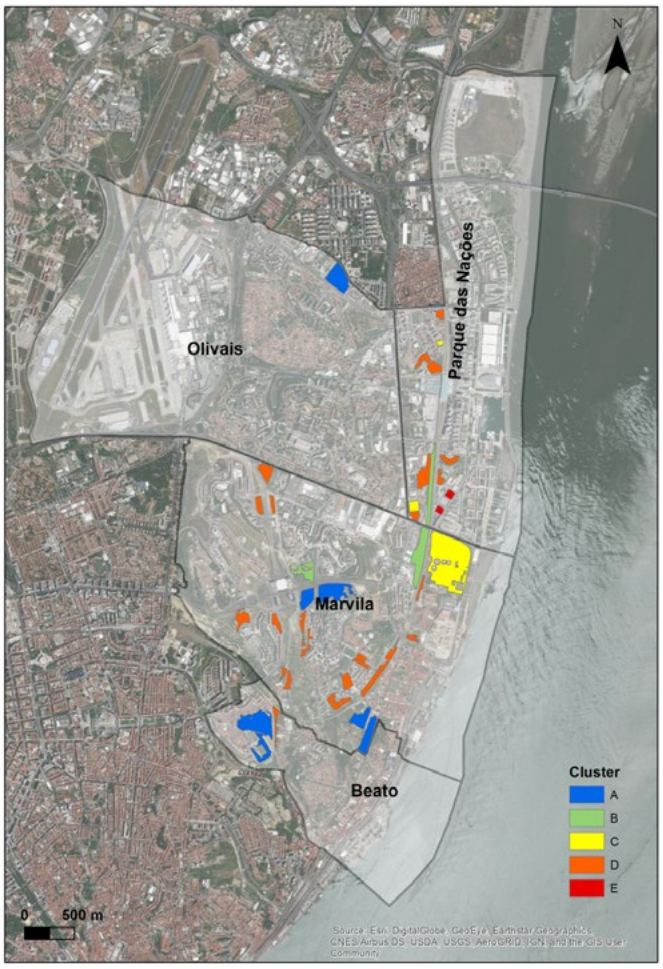

Figure 2. Clusters of vacant spaces in LOZ. Source: authors.

Group A – This group includes large vacant lots (more than 2 ha), which may be fenced or not. The relief of the terrain is usually mixed with some parts rugged and others flat. They usually have trees and the soil is mostly covered with vegetation, except in small parts that are covered with pavement. When these spaces are open, they are sometimes populated with animals belonging to humans. We have witnessed dogs and even horses and goats in some of them. Due to the presence of trees and large open spaces with vegetation, birds are often sighted. The greater part of these spaces, most likely due to the dense vegetation, shows no trace of human regular use. In result, the dominant sounds of the soundscape are birdsong and the wind.

Group B – This small group includes one medium sized (1.4 ha) and two large vacant lots (more than 2 ha) with flat terrain covered with (more than 1 ha) dirt, situated near train tracks or roads. Due to being covered with dirt there are no signs of animal or human appropriation. The soundscape is dominated by the sounds of the train or cars passing by.

Group C – This group includes vacant lots with medium or large dimensions (more than 1 ha) that have mixed types of terrain, i.e. they are covered with pavement in some parts and dirt and vegetation in others. They may be fenced or not. Some of these spaces show

one particular trace of human occupation that is not found in other spaces: graffiti, parking, or they are being used as a depot for a construction site.

Group D – This is the largest group and it comprises 31 of the 49 vacant lots in our sample. These are vacant spaces with a dimension between 0.3 and 2 ha. Most of them are completely covered with vegetation, or at least partially covered with vegetation. They are usually near residential or non-residential buildings, and roads. Most show some sign of human occupation, but they are very diverse. Soundscapes often contain a mix of songbird, wind and anthrophonies from the vicinity.

Group E – This small group includes two small fenced vacant spaces (less than 1 ha) completely covered with pavement in a dense urban zone (Parque das Nações). They show no sign of human utilization neither of non-human appropriation. Their soundscapes are dominated by the sounds of nearby streets: people, cars, construction work, among others.

4.2. Sounding Vacant Spaces

After classifying the vacant spaces according to morphology, vicinity, and traces of human occupation, we proceeded to analyze their soundscapes. We conducted 5 minute audio recordings in 21 vacant lots belonging to different clusters, which in total amount to 105 minutes of recordings. Our analysis consisted in classifying the sounds in the various recordings of each cluster according to the presence and intensity of geophonies, biophonies and anthrophonies. We defined three levels of intensity of sounds related to their temporality: strong, when the sound is persistent throughout the recording; moderate, which means the sound occurs more than once in periods of less than 60 seconds; and weak, which means the type of sound does not occur or only occurs once during a period of less than 30 seconds. Due to the similarities of the soundscapes in some of the groups we identified in the cluster analysis, we reduced them to three groups in terms of soundscapes. Table 2 describes their distribution per cluster and group and Figure 3 shows the spatial distribution of each group.

We summarize the characteristics of each group below.

Table 2. Presence and intensity of geophonies, biophonies and anthrophonies per cluster and group.

Cluster	Geophonies	Biophonies	Anthrophonies	Group
A	Strong	Strong	Weak	1
B	Weak	Weak	Strong	3
C	Moderate	Moderate	Moderate	2
D	Moderate	Moderate	Moderate	2
E	Weak	Weak	Strong	3

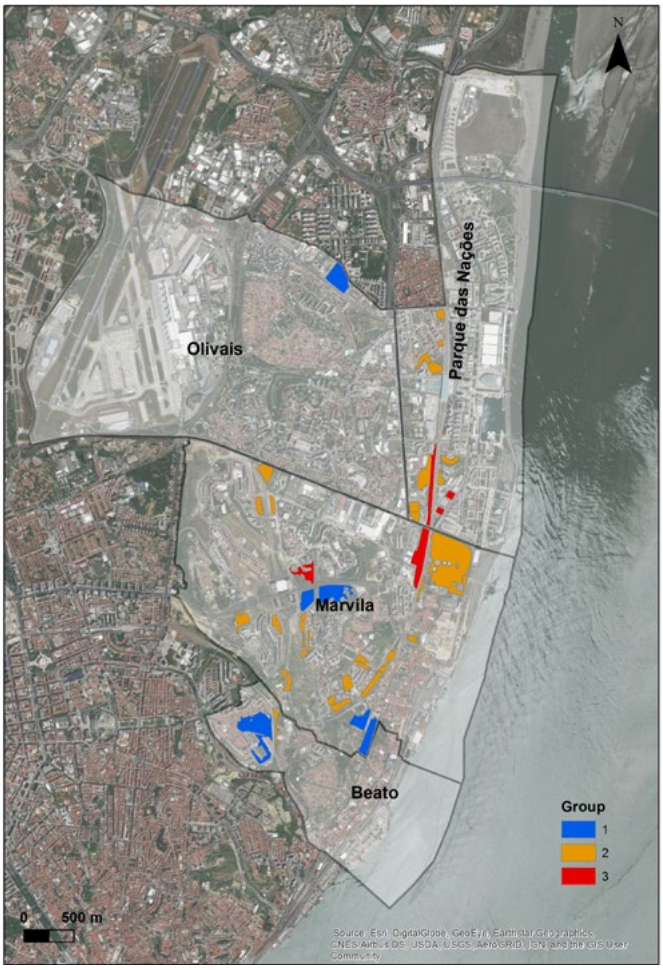

Figure 3. Groups of vacant spaces in LOZ. Source: authors.

Group 1 – Almost natural

This group matches Group A from the morphological and positional cluster analysis. Due to the large size of these lots, which are in some cases fenced, much of their territory is far away from areas of human activity. In addition, these lands often have trees, shrubs, and large fields of herbaceous and gramineous vegetation which cater to birds, mammals and arthropods who find food, shelter or nesting spaces in them. For these reasons, the soundscapes of these vacant lands are filled with biophonies and geophonies. Birdsong dominates the soundscape, but the hi-fi quality of its sounds allows us to hear the wind clearly, as well as our own shoes stepping on the vegetation or the rocks and sand of trails. Although urban vacant lands do not exactly 'return to nature', as Nassauer and Raskin (2014) have argued, these lands are occupied by ecologies of non-human life that make them sound almost natural. The sounds are often low volume, so these soundscape tend to be quiet and soothing.

Group 2 – Mixed

This group unites clusters C and D. They are in general medium sized lands that are close to residential or non-residential buildings, and roads or rail tracks. For this reason, their soundscapes are a mix of geophonies, biophonies and anthrophonies. The field recordings of these spaces contain the most varied sounds, but they are organized differently in terms of acoustical space. Anthrophonies come mostly from the surroundings of vacant lands: the noise from a construction site, tires and horns from cars on the road, people on the streets, children at a school's play yard, ambulance sirens, a plane flying by, or a train passing by. Sometimes, biophonies also come from outside the vacant lot, when urban public or private spaces contain animals. For instance, we can hear a chicken that was in a backyard in Parque das Nações in one of the recordings. More commonly, we can hear songbird that come from nearby trees on the street. From the vacant lands themselves, songbird and the sound of the wind are the mostly audible. As these sound sources are closer, they are also clear in the recordings. As the volume of the sounds that come from the vicinity is sometimes high, they mask most of the sounds that emerge from the contact between our bodies and the space. These soundscapes are either lo-fi or hi-fi, depending on the period of the day because the level of human activity on the vicinity changes. Likewise, the volume of these soundscapes is subject to great changes. Given that this group encompasses most of the vacant lots (35 out of the 48 we visited), this can be said to be the most characteristic soundscape of urban vacant lands in LEZ.

Group 3 – Least Resistance

This group merges clusters B and E. These are lands which, because their ground is covered with dirt or pavement, do have not much vegetation or other resources that cater to humans or animals. For these reasons, these spaces are generally empty and therefore actually somewhat silent. As places with no sound sources and also no elements to provide resonance or acoustic impedance, the sounds we can hear in these lots are the sounds from the vicinity. Thence, these spaces can be seen as a kind of sonic heterotopia, as their soundscapes are a mix of sounds coming from different places: roads, playgrounds, parks, streets, houses. In each of these lands, we can hear a specific ensemble of sounds that originate from two or three very distinct sources, some of each are not often heard together.

5. Final remarks and next steps

The results of our study highlight the agency of non-human elements in the creation of urban soundscapes. As we have seen, vacant lands with different morphologies and situations generate distinct soundscapes in which geophonies, biophonies, and anthrophonies play different roles. Soundscapes from this perspective have a material composition

(Matless 2005): the morphology of vacant lands not only provides geophonies as the wind shakes grass, branches and leaves, but also cater to animals that provide biophonies.

By listening to, classifying, recording, and mapping the sounds of vacant lands in LEZ, we have heard an urban soundscape that defies common conceptions of the urban sonic environment (LaBelle 2010, Wissmann 2014). Biophonies and geophonies make themselves heard as much as, and sometimes more than anthrophonies.

The next step of our investigation is to extend the study to other areas of Lisbon municipality, and Guimarães, a medium sized city with a diffuse urbanization. We will apply the same methodology to these spaces. After this, we will georeference the field recordings to generate a map of the soundscapes of vacant lands in Lisbon and Guimarães. This map will be made available to the scientific community and general public. In addition, we are preparing a public exhibition on vacant lands of Lisbon and Guimarães which will present the soundscapes map, some field recordings, and other studies currently ongoing in project NoVOID on the variegated uses of vacant lands in Lisbon.

ACKNOWLEDGEMENTS. This research is funded by the Fundação para a Ciência e a Tecnologia, under project NoVOID – Ruins and vacant lands in the Portuguese cities (PTDC/ATP-EUR/1180/2014) and project Som Urbano: Territórios, Atmosferas Afetivas e Políticas Públicas (SFRH/BD/108907/2015).

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Empowerment of Gender Voice – Sound Acts in Victoria Square

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Design thesis. Tutor Panos Kouros.
Department of Architecture, University of Patras. July 2015.

ABSTRACT: This paper is about a participatory sound installation and action at Victoria Square in Athens, dealing with the social and gendered space, and specifically with the way that the inhabitants of the square gather around and socialize in certain places. The visitors of the square, mostly male immigrants, seek to create the conditions of a temporary 'home', which confronts the one they left behind. The project seeks to create conditions to empower the presence of women in the square, intensifying thus the social contradictions between public spheres, in a way that can lead to new understandings and appropriations of the space.

KEYWORDS: Sound acts, Empowerment, Gender, Public sphere.

1. Introduction

Square Victoria is an active and dense public space with certain social characteristics that make it different from the other Athenian squares. It includes groups of people with a big variety of nationalities; from Middle East, Afghanistan, Pakistan, Greece, Balkans, Africa and Romani people, who claim strongly their territorial in the square and often conflict with each other. I observed that the same is happening with male, female and transgender presence, with the male gatherings being continuous and dominant. The project focuses on this fragmentation of the square, socially and in terms of gender, which takes the form of various isolated social spaces, where women, mostly immigrants, appear weak and 'powerless'. Their presence is brief in time and manifest itself with a "weakness" in their voice, that is with murmurous, soft and low talking.

1.1. Addressing the problem

Visiting the square for almost one year, I observed that the frequent visitors, mostly immigrants from the Middle East, Afghanistan and Balcans, refugees and old Greek inhabitants, created different and isolated social spaces where the male presence was dominant. My gender was also a reason to realize that the approach of female visitors in the square, who were mostly immigrants, was difficult and powerless. Because of xenophobia, racism and dominant family structures, the isolation of women in the private area of their house was repeated in the space of the square, creating small isolated communication spheres that did not interact with others. Women frequented the square and met with each other, mostly when men were not there. Moreover, I observed that the social spaces intensively formed private soundscapes with a variety of sound sources used by the people, such as mobile phones, radio devices, televisions, speakers, and their voices. Eventually, I chose to work with sound as a tool of intervention, aiming to empower the presence of women in the square by recording their voices, during conversations I initiated with them. Then, at a later stage, I broadcasted them again in the same place, intensifying thus the social contradictions between public spheres, in a way that can lead to new understandings and appropriations of the place. The specific forms of the sound installation intended to produce new small-scale gatherings, encounters and conversations. While the long-range sources, such as speakers, are used to call people in large gatherings for political purposes or spectacles and allow one person to speak or overlap small conversations, short-range sources provide suitable conditions for conversations between few people around them. I discussed about my methodology with anthropologists, architects and sound artists and researched on relevant bibliography.

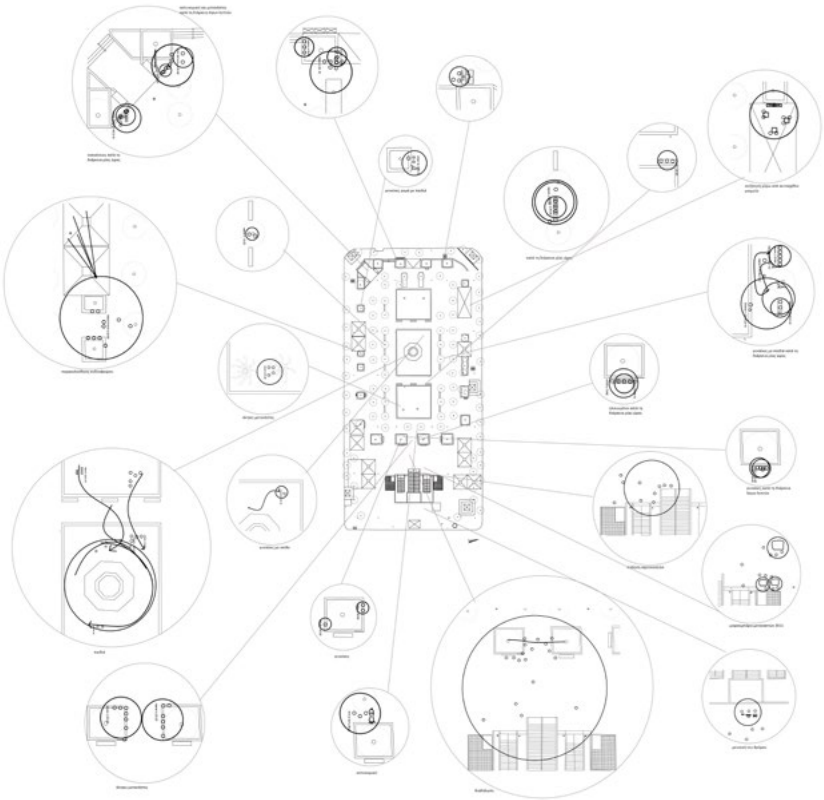


Figure 1. Social spaces in the square. (Graphic design by Angeliki- Marina Diakrousi)

2. Sound acts

The designed sound acts were developed in two phases.

2.1. Relational actions

In the first phase, I realized and recorded actions of conversations, within two months, with women in the square, as well as archived and ordered the collected material. I followed specific methodologies borrowing contemporary practices from the field of social anthropology, but also related to sound, after discussing with the anthropologists Konstantinos Kalantzis and Panos Panopoulos. During this period I provoked a series of conversations with women and recorded them with their permission. Some of them repulsed me, while others were willing to discuss about their presence to the square, and our meetings became more personal. Each meeting was developed depending on the person, the present conditions and chance. The languages used were English, Greek and Farsi and the women, with whom I talked, were: Katerina, Angeliki, Voula and Tonia from Greece, Yagana, Pari, Fatima and Fatima from Afghanistan, Agne and Emese from Letonia, Anna from Moldavia, Emma from USA and Nathalia from Brazil. The recorded talks were edited and categorized according to the different reactions derived from the conversations and topics related to personal experiences in Victoria Square, and in relation to other public spaces in their place of origin, memories of immigration or stories from their daily life.

2.2. Sound installation

The second phase is about the planning and realization of the in-situ broadcasting of the collected sound material and the direction of the new relations and conversations with the public, as a new performance. This performance lasted one afternoon on a Sunday of June 2015. The broadcasting of the sound was placed in specific areas where men were gathering, mostly around trees, and next to the benches where the conversations with women have been previously taken place. The installation was designed according to the sound sources used by the groups of people. It was made of five sound devices, similar to those used by the visitors, which were hacked, with the purpose to become a new sound tool.

Figure 2. Speaker reconstruction. (Photos taken by Angeliki- Marina Diakrousi)

During the action, the audio sources were independent from each other and hanged from five trees, which were part of the studied social spaces, often occupied by groups of male visitors. Each speaker was installed in the tree at the height of the ear. The volume of the sounds, the size and the position of the speaker were designed in such a way, so as to invite the inhabitants of the square to come closer so to listen and be in proximity, facilitating the communication between them. Each installation included different voices and sounds, covering selected segments from all the topics discussed. The set of the voices was played simultaneously and repeatedly, with frequent pauses so to leave space for the new talks.

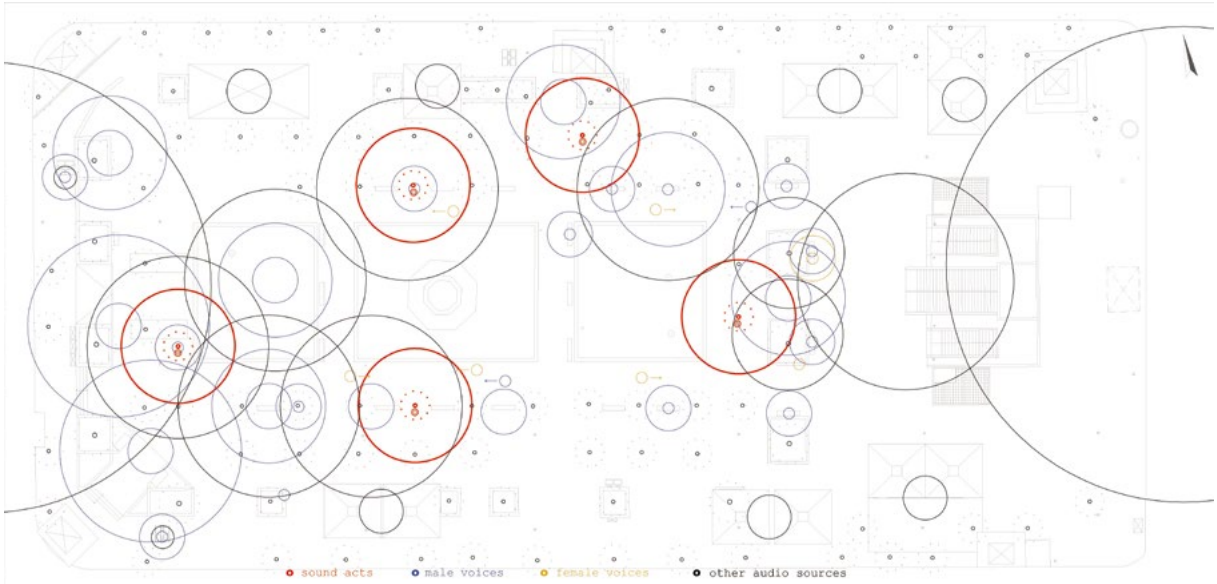


Figure 3. Sound installation points and soundscapes of the square. (Graphic design by Angeliki- Marina Diakrousi)

Figures 4 & 5. Spot of intervention.(Photos taken by Angeliki- Marina Diakrousi)

During the action, I have directed and instructed several persons to act as "facilitators", giving some information on the action and distributing a flyer with a text of my personal experience, written in three languages (English, Greek and Farsi). The broadcasted female voices were abruptly intervening into the existing conversations in the specific places, giving the impression of an non-invited "absent" guest.

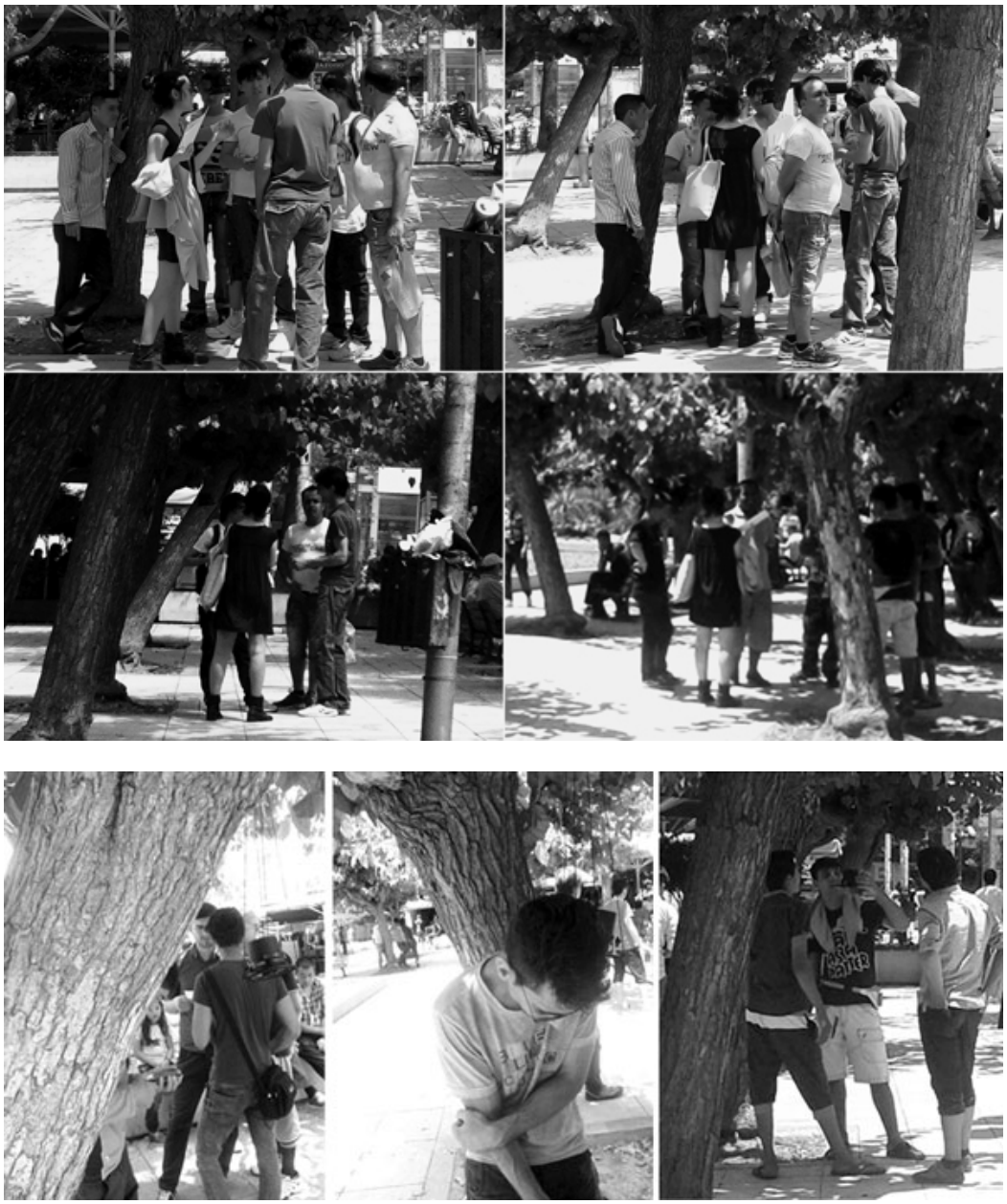


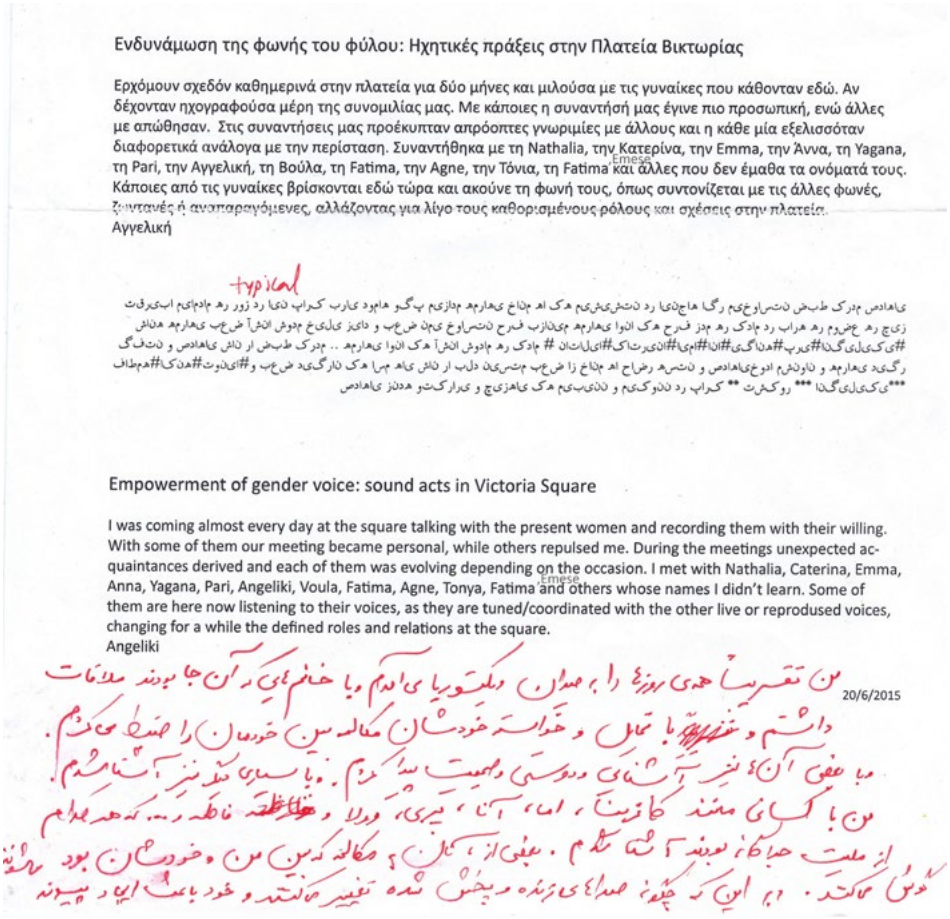
Figure 6 & 7. Sound acts.(Photos taken by Angeliki- Marina Diakrousi)

3. Afterthoughts

During the implementation of the project, several limitations and difficulties appeared, which finally proved useful. Because of the language limitation in the first phase, I could not talk with women coming from Iran and Afghanistan and talking Farsi. But, one Afghan, that I met there, agreed to be the interpreter for my communication with them. During the acts, also, some men from Afghanistan were offered to better translate the text from English to Farsi, writing it by themselves, so to be more understandable.

Overall, the action provoked intense conversations, confrontations and movements between the various groups, although some spots remained deserted or unchanged, as the

visitors were indifferent in interacting or listening to the sounds. The installation repeated the presence of women as voices at the square and together with the facilitators, discreetly and slowly, created conditions for an open space of interaction and conversation. Men were thus encouraged to discuss about their personal life with strangers of different nationality and gender. The topic of gender and the absence of women emerged and several people commented on this or described their personal experiences.



Ενδυνάμωση της φωνής του φύλου: Ηχητικές πράξεις στην Πλατεία Βικτωρίας

Ερχόμουν σχεδόν καθημερινά στην πλατεία για δύο μήνες και μιλούσα με τις γυναίκες που κάθονταν εδώ. Αν δέχονταν ηχογραφούσα μέρη της συνομιλίας μας. Με κάποιες η συναντήσή μας έγινε πιο προσωπική, ενώ άλλες με απώθησαν. Στις συναντήσεις μας προέκυπταν απρόοπτες γνωριμίες με άλλους και η κάθε μία εξελισσόταν διαφορετικά ανάλογα με την περίσταση. Συναντήθηκα με τη Nathalia, την Κατερίνα, την Emma, την Άννα, τη Yagana, τη Pari, την Αγγελική, τη Βούλα, τη Fatima, την Agne, την Τόνια, τη Fatima και άλλες που δεν έμαθα τα ονόματά τους. Κάποιες από τις γυναίκες βρίσκονται εδώ τώρα και ακούνε τη φωνή τους, όπως συντονίζεται με τις άλλες φωνές, ζωντανές ή αναπαραγόμενες, αλλάζοντας για λίγο τους καθορισμένους ρόλους και σχέσεις στην πλατεία.
Αγγελική

typical

Empowerment of gender voice: sound acts in Victoria Square

I was coming almost every day at the square talking with the present women and recording them with their willing. With some of them our meeting became personal, while others repulsed me. During the meetings unexpected acquaintances derived and each of them was evolving depending on the occasion. I met with Nathalia, Caterina, Emma, Anna, Yagana, Pari, Angeliki, Voula, Fatima, Agne, Tonya, Fatima and others whose names I didn't learn. Some of them are here now listening to their voices, as they are tuned/coordinated with the other live or reproduced voices, changing for a while the defined roles and relations at the square.
Angeliki

20/6/2015

Figure 8. Flyer.

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Artist talks

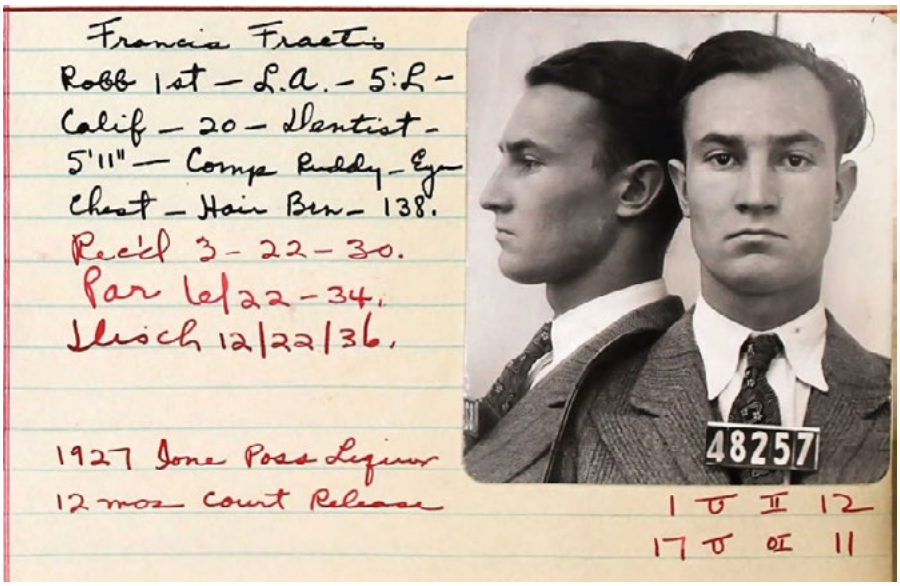
Canções Profundas (Deep Songs)

STEVE PETERS

My residency during Invisible Places involved working with an ensemble of musicians from São Miguel over a workshop period of two weeks to make a concert performance of a recent work called *Canções Profundas*, for field recordings and improvising musicians. This project weaves together the immigrant journey of my Azorean ancestors and my own search for a lost cultural heritage that was nearly forgotten in my family. Here I will discuss how it developed, starting with some personal and family history, followed by a bit of Azores history, and finally some details about the piece itself and the process of making this new version.

My interest in family history was originally driven more by psychological reasons than by a search for ethnic identity. Sometime in my late 30s I made the shocking discovery that, despite my efforts to be completely different from my parents, I had in fact inherited many of their mannerisms, character traits, and attitudes. Confronted with this revelation, I came to realize that they had certainly done the same, inheriting behaviors from their parents, who inherited them from their parents, etc. And so I became curious to learn about all of these other people who apparently inhabit my mind. Who were they? Where did they come from, and what were their lives like? And how do they contribute to what I want to think of as "my Self"? Such questions led me to these islands and ultimately to this project.

This is my mother, Renee Fraetis. When I was 6 or 7 years old, she explained that I was not just "American," but a mix of German, Dutch, British, and Portuguese (1/8 Portuguese, to be more precise). This was rather confusing, but I was intrigued by the Portuguese part because I had no idea what it meant; no one in my family spoke the language, or knew anything about the culture. Yet for some reason it stuck in my head that I was "Portuguese". Later, my mother's sister and her husband became interested in genealogy, and would occasionally send us updated copies of our family tree, which said some of my mother's ancestors on her father's side were from a mysterious place called the Azores. Again, I had no idea what this meant, and assumed it was probably a mountain range in Portugal.



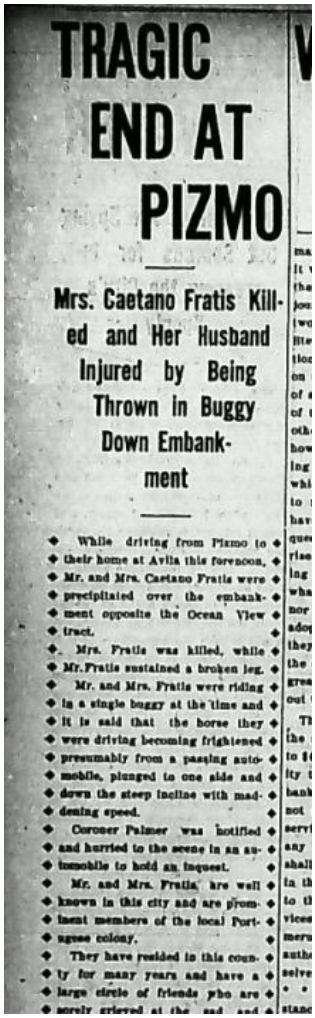
This is my mother's father, Francis Fraetis, entering San Quentin prison in California at age 20, where he was sentenced to five years to life for armed robbery. He got out of prison after four years and married his German-American sweetheart, Evelyn Wohlfarth. They had two daughters, my mother being the youngest. The marriage was unhappy and did not last. Surprisingly, my grandfather – a convicted felon – got custody of the children. He later remarried. But in 1958 he went back to jail for fraud, doing nine months of a one-year sentence and getting out a few months before I was born.

He was also a talented musician who led small dance combos in the 1930s and 40s. I still have his saxophone. I adored my grandfather, and because of my musical interests I think there was some concern in our family that I might take after him in other more problematic ways.

These are his parents, Manuel Fraetis and Elaine van Orman. Elaine was also a musician, a pianist. Her family background was Dutch and British. She first married at age 17, but 12 years later she left her husband and three children, which must certainly have caused a scandal. A few years later she was on a ship that broke down near Avila Beach, California. The family story is that while waiting there for the ship to be repaired she met Manuel, who was ten years younger than her. They married sometime in 1907 and in May of that year had the first of their three children. (You can do the math and draw your own conclusions.) My mother

and aunt remember them as being very kind and having a loving and playful relationship. They later moved to Los Angeles, where Manuel worked in oil fields and lumber yards.

Manuel's parents were Caetano Freitas and Maria Isabel Avellar, both from the island of Flores in the Azores. We believe that Caetano was born in the village of Fajãzinha, and came to the United States on a whaling ship, arriving at age 20 in 1865. We don't know how long he was at sea or where he landed, nor do we know anything about his life in California during the 17 years before he married Maria in 1882. Maria may have been born in Ponta Delgada (Flores, not São Miguel) and came to the US around 1878 at age 23, but sadly we know little else about her. They settled in the Avila Beach area on California's central coast and had seven children. The 1900 census lists him as an illiterate warehouse laborer named "Caton Frates," (one of many bureaucratic misspellings) and her as "Mary." She died in a wagon accident near Pismo Beach in 1908, and Caetano died 11 years later.



TRAGIC END AT PIZMO

Mrs. Caetano Fratis Killed and Her Husband Injured by Being Thrown in Buggy Down Embankment

While driving from Pizmo to their home at Avila this forenoon, Mr. and Mrs. Caetano Fratis were precipitated over the embankment opposite the Ocean View tract.

Mrs. Fratis was killed, while Mr. Fratis sustained a broken leg.

Mr. and Mrs. Fratis were riding in a single buggy at the time and it is said that the horse they were driving becoming frightened presumably from a passing automobile, plunged to one side and down the steep incline with madening speed.

Coroner Palmer was notified and hurried to the scene in an automobile to hold an inquest.

Mr. and Mrs. Fratis are well known in this city and are prominent members of the local Portuguese colony.

They have resided in this county for many years and have a large circle of friends who are sorely grieved at the sad and

But what compelled these people to leave their little island in the mid-Atlantic, their families and all that was familiar, and travel across the world to the far side of an unknown country?

Emigration is a major part of the history of the Azores, and it continues to this day. The current population of the islands is about one fourth the size of the diaspora in North America, where it is estimated that approximately 80% of people of Portuguese descent have their origins in the Azores. In the mid-19th century, life here was extremely difficult and there were compelling reasons to leave: overpopulation, crop blights, high unemployment, and military conscription for boys 14 and older. People were very poor and had difficulty feeding their large families. One source of income and escape was whaling. The Azoreans had become formidable whalers, hunting from small seven-man boats launched from shore. American whaling ships would stop in the islands, taking on local boys and young men as crew. It was hard and dangerous work, and they could be at sea for years before finally coming ashore. Azorean whalers who landed in North America established Portuguese communities in Canada, New England, and California, many of which still maintain their cultural traditions and ties to the islands in spite of the pressures of assimilation and attrition through intermarriage.

In 2011 I went to mainland Portugal for a Binaural artist residency in the tiny mountain village of Nodar.

Since I was more or less in the neighborhood, I took a side trip and spent a few days on the islands of Faial and Pico and became enchanted. Actually, I became obsessed. I made some field recordings and vowed to develop a bigger project so I'd have an excuse to come back. After a few years of additional research, I returned in 2014 and spent a week each on São Miguel, Faial, and Flores, with another short trip to Pico. I went home with many hours of recordings and no clear idea what to do with them.

I had originally intended to make a kind of abstract ethnographic portrait of the islands in the form of a sound installation. But the piece gradually began to take on a narrative form, which I soon realized was the story of my immigrant ancestors. It starts with the natural history of the place, then introduces the human culture, followed by a long journey chasing

whales across the ocean, eventually landing in California to the sound of foghorns and waves near the old whaling station in Avila Beach, where Caetano may have worked. We then hear

how the transplanted culture has survived to the present day at the Festa do Espiritu Santo (Feast of the Holy Spirit) in Sausalito.

The piece ends in the cemetery where Caetano and Maria were laid to rest, the sounds of the local birds mixing with birds from the islands and a traditional melody.

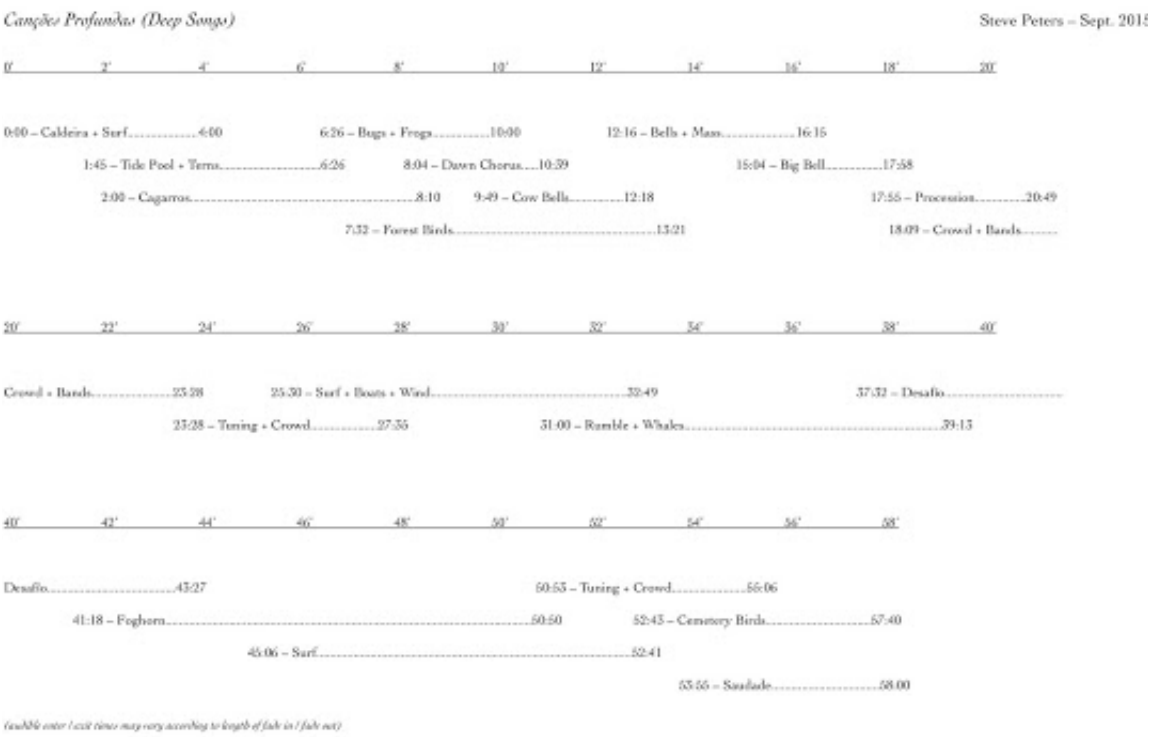
It soon became obvious that this story was too long to work as an installation in a gallery, where listeners would likely drop in for only a few minutes at a time. If I wanted people to follow the whole story it needed to be a concert piece – something I had not done in many years. Much of my work with musicians involves lightly structured improvisation, and it seemed promising to combine that with elements of traditional Azorean music and use the soundscape recordings as a kind of score.

I decided on an ensemble of woodwinds, brass, and percussion, inspired by the ubiquitous *filarmónicas* that play for religious *festas* and in formal concerts. Perhaps the most iconic Azorean folk instrument is the *viola da terra*, a small 12-string guitar, and I was fortunate to meet and record the fantastic young player Rafael Carvalho, who teaches at the Conservatório Regional in Ponta Delgada.

He is featured at the end of the piece, and also in an earlier section playing a part derived from the *cantigas ao desafío* ("challenge songs"), which are still performed in North America as well as in the islands. This is a vocal tradition of musical "duels" in which two singers exchange witty improvised verses over a simple, repetitive instrumental accompaniment. One song can last for an hour or more, requiring intense concentration from the singers. The combination of improvisation within a minimal form and long duration appealed to me

as it corresponds nicely with much of my own work. Finally, there are the *foliões* ("jesters"), groups of men who sing with spare percussion accompaniment in religious processions.

The soundscape recording also features the mysterious, "electronic"-sounding buzzes and clicks of sperm whales. I was unable to make my own whale recordings in the Azores, so these sounds were sourced from online archives. Aside from some editing, mixing, and EQ, I did not process the whale sounds in any way or try to make them overtly "musical." However, I have used electronic processing on some of the other recorded sounds, most notably the large church bell that dissolves into a swirling mass of overtones and glissandi.



There is no written notation for the live musicians. During the rehearsal process they refer to a timeline of the location recordings, and together we determine general ideas for how they will improvise for specific sections. Once that general framework is established, the timeline is abandoned and the piece is performed in darkness, with the musicians surrounding the audience. They are encouraged to play with the recorded sounds in ways that are complimentary but without overtly trying to imitate them, and to integrate themselves with the soundscape rather than treating it as a background to play over.

Canções Profundas was first performed in Seattle on my birthday in 2015, with an ensemble of first-rate improvisers consisting of Lesli Dalaba (trumpet), Beth Fleenor (clarinet, bass clarinet), Paul Kikuchi (percussion), Naomi Siegal (trombone), and Greg Sinibaldi (tenor sax, bass clarinet).

I also played my grandfather's alto saxophone for the first time in nearly 25 years, and had it completely restored for the occasion. We recorded a studio version for CD in 2016. But my fantasy all along has been to present this piece here in the islands with local musicians, and Invisible Places allowed me that opportunity with a three-week residency/workshop and live performance at Arquipélago Center for Contemporary Arts in Ribeira Grande.

On my previous visit to São Miguel I had met the excellent bassist and guitarist Gianna De Toni. Although the piece does not typically include bass, I knew she would add something special to it and was happy that she was interested in participating. She was also very helpful in finding other musicians, and by the end of my first week here we had a band:

Carlos Medeiros Carlos (clarinet), Nuno Carreira (trumpet), Gianna De Toni (contrabass), José Medeiros (trombone), Carlos Miguel Mendes (tenor sax), and Luís Senra (tenor sax). I did not play saxophone this time, but mixed the recorded sound to match the volume of the live instruments. (We could not find the right kind of percussionist, so used Paul Kikuchi's pre-recorded percussion track.)

Some of the musicians had experience with free improvisation and were somewhat familiar with the type of work that I do, while for others it was entirely new musical territory. Over the next two weeks we had four rehearsals in the black box theater at Arquipélago, during which we built a relationship as an ensemble and found our collective way into the work. The first two rehearsals were rather rough, but on the third night something shifted and the piece came together beautifully. In addition to overcoming the challenges of my unusual working methods (and enduring my terrible Portuguese), these musicians made an important contribution by bringing an innate sensitivity to the traditional Azorean aspects of the piece that had simply not been possible with the Seattle group. I was very pleased with the concert, and thankful for the positive audience response. Indeed, I consider this to be the most personally fulfilling and meaningful musical experience I have ever had, and I am grateful to all of the people who helped make it possible.

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Shores

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ABSTRACT: The aural experience *Shores* seeks to value artisanal fishing as an important part of the cultural heritage of São Miguel and the Azores, which has been drastically declining. A boat was converted into an acoustic shell to transmit a sonic memory of the fishing community, on a soundscape travel through places and ecosystems of São Miguel' shores.

Shores intervention resulted from a dynamic of co-creation. A workshop involved fishermen families and students in a process of sound mapping, field recordings, soundscape composition and installation of the acoustic boat. It looked to encourage conscious listening across generations and a sonic connection with the acoustic environment.

Shores' aural architecture spatialised the soundscape with natural acoustic effects, according to its frequencies spectre. Space's resonance magnified environmental sounds to enter into sympathetic vibration with the audience's body and mind. The installation facilitated an experience of affective attunement to self and the surroundings.

KEYWORDS: aural architecture, field recordings, soundscape composition, urban intervention, acoustic ecology.

Figure 1. Shores installation at Ponta Delgada harbour.

1. Exploring Aural Architecture

This project for Invisible Places is part of my ongoing practice-based PhD in Sonic Arts (at the Unit for Sound Practice Research, Music Department, Goldsmiths, University of London). My research's title is *An Exploration of Aural Architecture, for an Ecology of Vibration*. It engages an experimentation of sonic ecologies as urban interventions in public space where my interests converge: field recordings, soundscape composition and the creation of aural architecture experiences. This results as a multidisciplinary praxis, where practice embodies theory and generates new concepts to experiment further.

Trained as an architect and an acoustician, I have always been interested in the experience of space beyond visual, how space is more than what we see, and how things that we do not see affect our experience of space, often unconsciously. As our global culture is mainly influenced by the visual sense, our other senses are usually neglected in the experience, perception and creation of space. Next to that, urban space is increasingly saturated by massive propagation of acoustic and electromagnetic waves of all kinds. I inevitably got concerned by the quality of our acoustic environment and its consequences to all living beings within. So I got closer to acoustic ecology and engaged in a practice of soundwalking, listening, field recording of places with particular acoustics and soundscape composition, as a symbiotic way to integrate place and self. I also got interested in how soundscape composition could be engaged on an activist and political level, as a way to "create a strong oppositional place of conscious listening" (Westerkamp 2002). All this was converged into an exploration of aural architecture. And my practice emerged as sonic ecologies through urban interventions in public space for acoustic sensibilisation, as a way to connect places, to experience self, and to enable a dialogue between inside and outside.

Aural parallels visual and refers to the human experience of a sonic process, and aural architecture refers to the properties of space that can be experienced by listening (Blesser and Salter 2007, 2-5). Any environment, natural or built, generates an aural architecture. Every space has an aural architecture. It is the attributes of a space, such as surfaces, objects, materials and geometries, that will determine its specific acoustic aspects. And it is the human experience of that space that determinates its aural qualities. The acoustic cues orientate our navigation but provide also sensory stimulus which define the space's aural specificity and influence our associations and moods (such as feelings of cold or warm, public or intimate, freedom or insecurity). According to Blesser and Salter, aural architecture can be defined in social, navigational, aesthetic and musical aspects. This means that our auditory spatial awareness manifests itself in at least four different ways: influences social behaviour; allows orientation and navigation through a space; affects our aesthetic sense of place; enhances our experience of music and voice. Moreover the aural experience can be described in terms

of abilities: sensation as detectability; recognition as perceptibility; affect as desirability (Blesser and Salter 2007, 11-13).

My approach emphasises experimentation towards the affective aspects of aural architecture, in its relevance to the experience of life, because this is where we find a lack of practice-based research. My practice links the physical reality, object of study of acoustics, to the personal relevance of that reality (Drever 2013). I am interested in the whole experience of sound in a certain environment, to understand how its spatial attributes determine its acoustics, its atmosphere and by consequence the ways we relate to it. So I am exploring aural architecture as an holistic experience, which relates object to subject, linking sensation, perception and affect, in its enveloping and overwhelming dimensions that scientific methods alone cannot analyse. This kind of holistic experience should unify life sensations: visual, acoustic, tactile, kinetic; and contribute to balance the environment, our inner world with our outer world (Westerkamp 1999). It has been argued that"this sort of interplay creates a dynamic process - being, alive."(Carpenter and McLuhan 1953, 70). An important point to refer is that I am not searching to create a consensual peaceful place or exclude the reality that cities are full of noise. Instead, my aim is to create an experience that awakens our senses from everyday routine, raises awareness of ecological issues, provokes a discussion, incites critical thinking, encourages a quest for an understanding of self, of our relationship to others and the environment, and ecological alternatives to live everyday. If someone stops to listen and to feel its surroundings, I consider that already a great achievement.

2. Collective memory of São Miguel, Azores

Figures 2–4. Photographs at Porto de Abrigo cooperative.

I had never been in Azores before, although this was a travel I dreamt of, but not as a tourist. The Invisible Places' call for residencies was the perfect opportunity to get to know this unique place. Being Portuguese myself, when I thought of Azores I have always imagined boat sailing, fishermen and deep ocean. Of course there is much more than that, but still, it is an important part of Azores' cultural heritage which is disappearing. Arriving to São Miguel I confirmed that artisanal fishing has been drastically declining. One of the main reasons is that as the fishing activity is inevitably industrialised, small scale fishing companies are

disappearing, and so are certain fish species, most of artisanal fishermen and wood boats' builders. Consequently a significant part of the island's sustainability is out of balance. Next to that, I realised that each year, tourism is augmenting exponentially in São Miguel, for its unique attractive ecosystem. And so is the number of planes landing and taking off. Adventure tourism tours are contributing to the infrastructure evolution with motorways. So the acoustic ecology of São Miguel is becoming heavily contaminated by jet airplane motors and tourism buses. Obviously, these changes in such a small territory (736 km^2) have a strong ecological impact. Sea exploration to watch dolphins and whales is also an issue. Locals complain that multinational companies have monopolised the Azores market as they have the capital to invest in high tech all comfort safe boats, captivating tourists. Of course, one may say that this is inevitable, this is the world's global progress. Still, there are ways to balance and work towards local sustainability. But in this panorama, as fishing activities are diminishing, fishermen are left workless and excluded of this emerging sea tourism. The link between traditional sea activities and new sea tourism markets should be a major political, social and cultural concern. But according to locals, there is no education investment in the fishing communities towards new inclusive sea activities. So traditional fishermen are left out of the touristic scenario and small communities by the sea are disappearing, as it has happened over and over in different places around the world. And unfortunately, their ancestral sea knowledge is being quickly forgotten. My question therefore was how could I contribute to valorise this collective memory and cultural heritage, and moreover to promote their aural identity? My idea was that my soundscape work should create and transmit meaning, connect places, renew a collective memory of São Miguel. I wanted to do a sonic intervention in urban space to create embodied and subjective understandings of the island's reality. This sense of place, or essence, could be many different things, according to the one that experiences it. So the idea was not to transmit one meaning, one memory, one understanding, one sense of place. On the contrary, I wanted to create an affective experience to open up different ways of listening to São Miguel's life's diversity, urban and natural, its sea culture and its ecological richness as a small island in the middle of the ocean. This could raise listening awareness and even incite an active engagement with the surrounding soundscapes.

In this context, I wanted to avoid a touristic or superficial approach. Being Portuguese was already an advantage. Still, this place's specificity was foreign to me. At first I could not understand some words because of the strong accent. Here it was very clear how the sounds of an oral language, its rhythms, tones and inflexions, are attuned to the contour and scale of the local landscape (Abram 1996). Curiously though, I felt some kind of immediate resonance I could not explain. Perhaps it was because I lived half of my life near the sea. So I was in residency the longest I could, almost four weeks, to reach a deep experience. Generally, when I get to a place that I do not know, my approach is to follow my intuition and

let my work emerge from within everyday life's experiences, at the rhythm of the place. We may find similarities with an ethnographic approach in the way that it focus "on fieldwork primarily through sensuous experience and the creation of an outward response to that experience from the inside", as John Levack Drever points out. And ethnography may offer practices of soundscape composition ways to move forward in a relevant and social way, with a more critical and reflexive mode of operation (Drever 2002). I wanted to take time to embody the territory, to live and feel its essence, so that the soundscape would reveal itself. And in the same way, it also takes a long time to build up confidence with local communities. Luckily the symposium organiser, Raquel Castro, has engaged a local producer, Diana Diegues, who made my task a lot more easy. By introducing me to Liberato Fernandes, the former president of fishing cooperative Porto de Abrigo, the doors of the fishing reality got opened to me. He has done an impressive amount of political and social work to help the fishermen communities in reclaiming their rights and improving their work conditions. And curiously, he was very enthusiastic with the whole project, as he believed that these cultural interventions are means to reveal the fishing world to people that are normally not aware of it. Liberato Fernandes was the key person that turned this project possible.

3. A soundscape in a boat

My idea was to convert an old boat into an acoustic shell to transmit a sonic memory of the fishing community and ecosystems of São Miguel' shores. This boat would act as a sonic intervention in an urban public space of the main city of Ponta Delgada, in order to reach a bigger audience. For the soundscape composition, my aim and central idea was to get on a fishing hunt and record it; and to go to the harbours of fishing communities and record everyday sounds. I also wanted to develop my work in a dynamic of co-creation, in a collaborative and participative process with local communities. I thought of interviewing fishermen's families, to let their voices be heard about their actual situation and concerns. And besides, I also wanted to engage students on a workshop, in a process of sound mapping, soundwalking and field recordings around the island's shores. My work therefore had several layers to take into consideration. It articulated a social, cultural, educational and ecological intervention; and an artistic, architectural and acoustic creation.

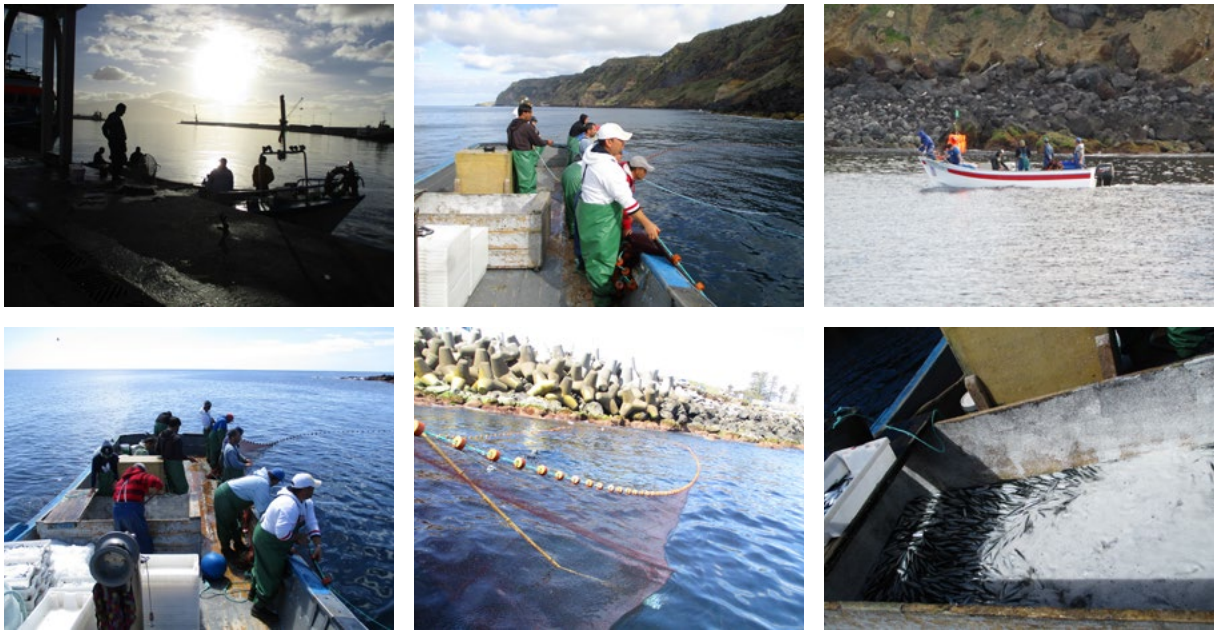
3.1. Rabo de Peixe

Figures 5–7. Rabo de Peixe – views of harbour and village.

On my third day in the island, Liberato Fernandes personally took me to Rabo de Peixe, which is the biggest, poorest and most united fishing community of São Miguel. I became aware of this side of the island reality, which is ignored by most of the people in the main city of Ponta Delgada. Surprisingly, the fishermen were very enthusiastic as well with my project, even though they are not the usual public for this kind of artistic intervention. I was generously offered three old boats that I could use and convert into an acoustic shell. And I also got several possibilities to join fishing companies. I decided to go on board with the companion of master Paulo Sousa, a traditional fishing boat with 13 fishermen.

3.2. The fish hunt

So a couple of days later, my first fieldwork was to get on a boat with these fishermen and go on a fish hunt. I had never been on a fishing boat before, so I had absolutely no idea how this was going to be. I knew that it would last for about 7 hours. We left at 7 am and got back at 2 pm. Normally they would have left at 6 pm and return at 6 am, to fish mackerel during the night. But it was a time of major crisis, there was no mackerel since 3 weeks already. So they had to hunt the little sardines, which is done by day light near the shores, with the traditional technique of purse seine fishery. It is still a challenge for me to describe in detail this overwhelming experience.



Figures 8–13. Fish hunt.

I have retained though a deep feeling of how the experience changed my whole way of understanding the human relationship with the sea and its ecosystem. I felt that the movement of the boat over the sea waves liberated my senses, as some sort of sensorial reset. This was a new soundscape and acoustic reality that I had never listen to before: the fishermen strong powerful voices, echoing as the sea waves against the cliffs, the changing hunting movements of the fishing net, at the quick rhythm of the schools of sardines, with a constant background drone of the motor, with modulating frequencies changing with the speed of the boat. And still we could also clearly hear sounds from the shores coming once in a while with the wind blows, such as church bells, cars, motorcycles, planes, waves crashing against the volcanic stones. For me, this was a whole new relation to the territory and to my self. I felt part of the team, in the same dynamic. Somehow I felt this close relationship between the Azorean human being and the ocean being, as one. I was experiencing this ecosystem reality through the fishermen's oral/aural culture, as native sea hunters, micro-macrocosmos everyday practitioners. The familiarity with the ocean environment and the "instinctive knowledge of the habits of his prey ... provides the hunter with an expanded set of senses, an awareness of events happening beyond his field of vision" (Abram 2015). It has been argued that this sort of interplay between sense perceptions "creates a dynamic process - being, alive. the ritual drama - particularly in primitive societies where the association of elements in such patterns is especially strong" (Carpenter and McLuhan 1953, 70). This senses synergy, and how it engages a peripheral or atmospheric perception, has also been pointed out by some authors as a valuable way of experiencing the environment, of sensing a place (Pallasmaa 1996, Leitner 1998, Thibaud 2011). I understand this state as a mode of attunement, which has been described as an act of tuning-in relationship which

relates to the lived experience of the flow of "inner-time" and its duration (Schütz 1951). In this sense, fishermen engage a tuning-in relationship with the fish school and the sea being, through their sharp senses and their artisanal instruments. It looks incredibly hard to fish the way they do. At the same, it feels like they naturally know the sea forces and how to anticipate their prey's movements. As their ancestors, they surround manually, patiently and precisely the exact species of fish they are hunting for. A very important point is that this is a sustainable and ecological way of fishing. They are not just throwing the net and grabbing whatever comes in, as most of the industrial fishing companies do with trawl nets. Therefore I realised that one of the most valuable things we can learn from oral communities and Azorean native hunters is ecological intimacy, a symbiotic way of experiencing place, of being in tune with their environment, and in this case, an embodied knowledge of the ocean's language. "When we study attunement, we study something that has always been there: ecological intimacy, which is to say, intimacy between humans and nonhumans" (Morton 2014). So this is the collective memory and sense of place that I wanted to share through my work. After this amazing experience in which I learnt so much, I felt an even greater respect for these people.

4. Shores' sources

Back to the ground, it was time for a soundmap and soundwalking with students to record. I could have selected the sources myself, but it seemed to me important to engage participation of the inhabitants in spotting out their island's ecological diversity. This is a way to raise awareness and concern on the acoustic environment. So I enquired the architecture students I was going to work with and different locals I met around. My question was what sounds and places with particular acoustics near the shores they liked. Many people told me about quiet, restful places in the interior of the island. They turned their back to the sea because they found it aggressive, associated with struggle, disgrace and death. But there were some that mentioned the ocean with passion as an amazing living being, and its shores as strong, powerful places that made them feel alive. I realised the ocean is a love-hate relationship for São Miguel's people, as it tends to happen in most of the islands. Some comments significantly resume this relationship:

> I don't particularly like the sea, but I miss it when I'm elsewhere.
>
> I love the ocean, it's such a huge, enormous, living being.
>
> The sea rules it all, you have no idea how it is like to live on a island. Much respect.

In this place I feel myself, I feel alive.

I cannot live elsewhere. I wanted and tried, but I could not.

This enquiry confirmed that the sea is a major element that determinates São Miguel's sense of place and its people identity. Its shores are very rich ecosystems, with amazing acoustics due to its shorelines' topography and surrounding landscape. Many people mentioned the same places so I started to draw a sound map with a few spots to experience.

Figure 14. Map with sources location.

5. Field Recordings

The idea then was to soundwalk, background-atmospheric listening, and recording coastal places with particular natural acoustics. The workshop was proposed as an educational tool to develop conscious listening and acoustic sensibilisation. It was engaged as a way to generate a sonic connection with the surroundings, and as an incentive to care and explore further the acoustic environment. Architecture students were too busy, so I only managed to get a couple of them to come along for a journey in Maia. We basically explored differences modes of listening with the ear and with binaural microphones. "The ear and the microphone are the starting points for the soundscape composer. They are two quite different tools with which we gather our sound materials and our listening experiences", as it transmits different information about the soundscape and often changes recording/listening practice (Westerkamp 2002). In this place, besides fishing, there were people crab hunting and scuba-diving. In

ancient times, women used to wash their clothes in a beautiful volcanic stone construction of water tanks and small cascades, through which a river flows down to the sea. Curiously it also created some sort of amphitheatre where the sea waves resonated with great force, playing with the water falls' sounds. I felt that our senses were clearly washed up with this experience. The students seemed satisfied. After the workshop, I continued fieldwork on my own, and went on recording other places: Rabo de Peixe, Lagoa, Ponta da Ferraria, Nordeste, Ponta do Arnel, Ponta da Madrugada and Ponta Delgada.

Figures 15–26. Places recorded.

6. Soundscape composition

The emergence of a piece is not unlike getting to know a soundscape itself, its rhythms and shapes, its atmosphere. (Westerkamp 2002)

After two weeks of fieldwork, soundwalking and recording, my ears started to adapt to the harsh climate changes and strong winds. I finally got the feeling that I embodied the island and the island embraced me. Still my overall feeling was that this place raised a sense of how small and vulnerable we are. A deep listening experience arose from a powerful soundscape of ocean waves, human voices attuned to their territory, peculiar chanting of endemic birds (such as *cagarros* and *prioulos*), extremely loud airplanes, church bells, cow bells, noisy motorcycles and milking motors; resounding through the wind, fog, low clouds, rain and the reverberating acoustics of volcanic stones, volcanoes' craters, cliffs and harbours. The resulting material was as a mix of dominant frequencies and sonic landmarks; and specific sonic effects generated by particular acoustic qualities of certain places, rather than specific sounds (LaBelle 2010, Auinger and Offenhuber 2013). I felt my soundscape composition was emerging as alive matter and dynamic sonic beings. This was already so intense that I decided to only subtly highlight the essence of this place's life with its own energy and forces at work. So I composed the field recordings into specific frequencies sequences, to reach acoustic and psychoacoustic effects in its spatialisation; fading one into another, with no digital effects processing.

I did also a compilation of fishermen's interviews, to provide a contextual testimony of their current situation. This soundtrack was presented as a separated piece to complement the soundscape composition, which the audience could listen to attentively with headphones.

7. Tuned and modulated ambiance

For the soundscape installation, my question was how to create resonance between audience and composition. I decided to leave the old boat to recycle in the harbour, instead of moving it to a central place in the city. It seemed to me relevant to attract people to the harbour, to get to know the reality of this part of the city. In this way, the urban intervention would extend the acoustic ecology of that place, in a relation of continuity to its context. So the acoustics of the harbour would amplify the whole soundscape experience. The boat was intentionally inclined with the help of fishermen, so that when the audience stepped in would feel slightly unstable, and would had to reach for a different state of equilibrium, in a similar way as when we get on a boat floating above water. I remembered that it was this search for balance and references that switched my senses interplay and produced a sensorial reset. When seated, the whole body would be emerged in the soundscape, facing the water, receiving a fresh sea breeze with a smell of fish. I find that Jean-Paul Thibaud

description of tuned and modulated ambiances fits well my intervention. For him, a tuned ambiance "emerges as the place is brought into tune with the conduct it supports" and therefore engages "an ecology of the lived world". And a modulated ambiance involves slight variations of the sensory context of the place. So what is left fluctuates over time and varies in line with activities. It engages "an ecology of situated perception". In this sense, by tuning and modulating the harbour place's ambiance, I experimented "a form of receptiveness that links up with specific corporeal states" to bring "the senses into synergy", involving the emotional aspect of the situation (Thibaud 2011, 45).

Figures 27-29. The harbour ambiance.

8. Acoustic boat shell

I cleaned the old boat full of holes that was left abandoned and filled with trash. It was brought to life. Recycling an old boat was also a way to valorise traditional wooden boats' heritage, which is disappearing. Even fishermen that passed by ignoring it everyday since four years, started to look at it, stepping inside of it and talking about possible uses to recover "such an old and rare beautiful boat"; "perhaps we could put in a sail to take tourists for a sailing tour", they commented. I was very glad already that this was generating discussion among fishermen. For the purpose of my intervention, the shape of the boat wood structure was perfect to generate a resonant aural architecture, with no need for modification.

Figures 30–38. Installation and public presentation.

As I have initially described, the question of affect in experience is central to my aural architecture research. This acoustic boat shell also aimed to generate a tangible experience of some kind of unified field, through a subtle amplification of material vibration with resonance frequencies. So I spatialised the soundscape composition with natural acoustic effects, in relation to its frequencies spectre and the boat wooden acoustics. Wood is a material "with a strong 'live' quality. Somehow it always seems to respond, to resonate" (Leitner 1998, 299). Space's resonance magnified environmental sound and entered into vibration with the audience's body and mind. Resonance triggers psychoacoustic effects, such as the emergence of affective attunement, or the feeling of being vibration, as a living dynamic relation with another being, through a participative process (Stern 2004, Massumi 2008, Morton 2014). So on one hand I explored how to create an experience of bioresonance and attunement drawing from Martin Heidegger's notion of *Stimmung*, that describes it as a way of relating that "draws up into beings as a whole" (Risser 1999, 43). But on the other hand attunement can also affirm difference and be receptive to non-human "qualities, rhythms, forces, relations and movements" (Stewart 2011). For this reason, I explored the idea of activation of affective attunement through the collective experience, where "difference may

be found in unison" (Massumi 2008). The experience would unfold and modulate affect as microperceptions from the same constructive suspense. All bodies would be attuned but all might be distributed differently, depending on the tendencies and capacities of each of them (natural, cultural).

As a result, the soundscape resonated with the boat's physical structure and the audience, into an aural travel experience, as in the middle of the sea - surrounded by sounds. According to the testimonies transcribed bellow, it seems that this aural architecture set up opened up different degrees of affect and a diverse range of experiences of attunement: with them selves, with others, the fishermen, vibration, the boat, the sea, the harbour's place or the island.

> I loved the feeling of the mixture of the outside sounds with the soundscape composition, there were resonance frequencies happening, I felt quite immersive, a physical experience of sound.
>
> I'm feeling slightly dizzy from this experience. I wonder if it was because of the angle of the boat and the vibrations... When I got back to the ground, I actually feel like I have been at sea.
>
> I felt I was part of a working energy, constantly surrounded by this motor sound, which was interesting, because I think we often forget about that presence. I wonder if the fishermen and the people would also forget about that sound. It is a barrier between us and the water experience. It comes out really clearly here.
>
> I'm still feeling emotional. I wasn't when I was on the boat, but I'm feeling it now.
>
> I listened by getting in the boat and outside the boat by putting my ear to the wood. Quite different experiences of course. It's really nice to hear the water bubbling through the wood... a close idea of what it would be like, to be at sea...
>
> I felt a bit sick, you feel movement, as if the other boats around are moving.
>
> It was like being on a real boat over water, some sounds are really taking you inside the water space.

> I liked the angle of the boat, it turned into a big sound system. And I liked the interaction with other people.
>
> You're just there with the fishermen, in the sea.
>
> I felt I was living your experience at sea. I was inside the vibration, it feels like it is really happening for real.
>
> Peaceful, then violently sick, then peaceful again.
>
> I liked the boat angle, I laid down looking at the sky and felt like I was sailing...
>
> I liked how the work is done with the fishermen, you can feel there is a respect for their work, for what they do. Not like someone that comes from outside, takes things, uses them and goes away. On the opposite, it feels like you were working together and doing something with the community. It seems you tried to learn from them, and for a continuity with it.
>
> We need to have this kind of experiences permanent in public space, its really important to share this longer, to be part of everyday life.
>
> The choice of the boat made all the sense, not just an obvious thing, but for the place where it was placed, the angle, the relation with the water, how it resonated, how you could go on the back and hear how wood resonates sound... I liked the particularity how the boat wood structure resonated the sound of the sea so well and took me on this travel...

As the soundscape composition was composed for a specific aural architecture, the experience is not reproducible through audio documentation, because the acoustic effects could only be heard and felt in that situation. Nevertheless, you may listen to the soundscape composition here: http://spacefrequencies.org/2017/04/07/shores.

9. Continuity

After this wonderful residency, I believe this project was just a beginning of what can be a fruitful collaboration with fishermen communities, and so does Liberato Fernandes from fishing cooperative Porto de Abrigo. I hope I can go back to São Miguel, to do a workshop with children from Rabo de Peixe school for listening and recording their families' fishery

activities. Resulting from this work, I would like to co-create a permanent acoustic boat soundscape installation with a local wooden boat builder, for Rabo de Peixe public space, and for its community's appropriation with their own cultural activities.

ACKNOWLEDGMENTS. The fishing community of Rabo de Peixe, master Paulo Sousa and his companion of the boat *Lisboa*, shipowner of the boat *Sónia Cristina*, Liberato Fernandes and the Cooperative Porto de Abrigo, Lotaçor SA, Portos dos Açores SA, students from the department of Architecture of Azores University, and the Municipality of Ponta Delgada.

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In that place, the air was very different
Report on a Sounding of São Miguel

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How does sound form our experience of place? How do we recall places through sound? How do our activities help create place? These are some of the questions I have been investigating in recent years, by way of phenomenology and human geography, and through my personal practice of field recording, poetics, and composition. I take it as axiomatic that a place is not a passive location awaiting documentation, but an active matrix always in the process of being formed, changed by every attention. We create place as place creates us.

Figure 1. Rain in Terra Nostra Gardens, Furnas.

The word "sound" is often used as a passive term related only to audition. But I use sound as an active principle, by which we can know the world. In my residencies, I *sound place*, not only for the acoustic properties, but for a plenitude of potential resonances across different registers. The normative phenomenological approach to the world in most cultures is

through sight. Vision has had a profound effect on Western language and philosophy, to the point of obscuring other sensory modalities. I wish to foreground sound as *a way into place*. But not because I wish only acoustic results; rather, because soundings reveal characteristics, across all the senses, that sightings might ignore. This approach relies on a principle articulated by Tim Ingold: We do not experience the world as divided by our sensory organs, but rather as an integrated sensorium. The "five senses" of antiquity are a myth, as are any other countable demarcations.

Here follow six encounters with place from my residency.

My skin absorbs salt from the ocean air at Ponta da Ferraria, a promontory at the western tip of São Miguel. The sea has travelled a long way to be here, and seems intent on making its presence felt. The spray is mere excess, the leftover material at the end of a long process of energy transfer. But the feeling of this mist on my skin is important, heightening awareness of the pounding sea, which inexorably struggles to wear down the volcanic rock. What could be a commonplace encounter with the surf is here rendered specific. I notice that in this place the vibrations do not travel horizontally from the waterfront, but instead up through the feet. This earthy rumble is palpable, vibratory, and frightening. The shaking casts into doubt the stability of the very earth. A rare wave cups the air between water and rock in just the right way, splitting the air with a BOOM, a totalising thunder of mythological proportions. The back of my hand is scraped against the sharp, black, volcanic rock. This pain reinforces the sensation, now recognised as fear. This is a dangerous place. It's raw and alchemical, always in the process of becoming something else. Perhaps the real terror is that it reminds us that we too are impermanent.

Figure 2. Surf and black rock, Ponta da Ferraria.

At Lago do Furnas, fumaroles squeak and bubble, utterances of super-heated steam escaping the volcanic realm. One particular patch is inaudible to the naked ear. But putting a microphone close to the soft, heated soil, I am treated to low comic burblings, fit for some cartoon character. Nearby, the hot mud throws itself out of small caldera, intent on bridging the perimeter to the safe viewing path. My sinuses fill with the humid, sulphurous air. This stink discourages close engagement with the materials ejected from the depths. The next day my shoelaces fall apart. The shoes themselves become unwearable; despite attempts at washing, they are forever stamped with the acrid aroma. For the remainder of the residency, everywhere I walk this trace is carried.

For three weeks, I live in Ribeira Grande, a town on the north shore of the island. The community is split by an enormous chasm; even the beach is impassable from one side to the other. Two main roads bridge the river valley. Though it is the namesake of this community, everyone turns their back to Ribeira Grande. Rare exceptions are the teenagers who seek it out precisely because the environs are otherwise ignored. They find private spaces for their intimate encounters, in the shade of disused buildings, alongside paths not taken. In fact, even the teens turn their backs, so that the couplings, if viewed from afar, are anonymous. The beach is also largely ignored. At the American Bar, I notice people take their drinks outside, away from the din of table football and television soaps. They walk across the wide road, to the side of the street that overlooks the ocean from a vantage. But then they sit with their backs to the sea, attention paid instead to those who might enter or emerge from the café.

Figure 3. Source of the Ribeira Grande.

On São Miguel, the fog does not roll in from the sea, it tumbles down from the mountains. Most days, the peaks are hidden in thick mist. Water condenses on the mountain slopes, accumulating to form the Ribeira Grande. The source of this river lies high in the hills, within the crumbling walls of an abandoned bottling factory. A spring irrigates a still pool that floods the building shell. From this source, I taste the carbonated effluent of the misty peaks, tongue tickled by clear, precise bubbles. This sensation makes me aware that this artificial tarn is not static or placid, as it appears to the eye. It is forever alive with micro-movements, as water exchanges content with the surrounding air. I can taste processes that are hidden to the eye. And now, too, I can hear it, a high frequency sizzle, overlaying the thrum of wind that scrubs the mountain cuts and dusts the huddled flora.

It pours rain with an intensity entirely fitting for ancient ferns and tropical groves. At the Terra Nostra Gardens, visitors bathe in thermal pools, coloured a deep orange with primal minerals. Having a contrary impulse, I walk through the botanical park. It's designed for crowds, but is abandoned in this downpour. On my journey, I pause to hear rain under bamboo, rain under eucalyptus, rain on the steaming rivulets that carry run-off from the warm pools. I am soon soaked to the bone, but maintain this activity through force of will. This effort enhances my receptivity. Each rain at every different spot now sounds distinct. I am sure that with time, I could recognise species of vegetation from their sound under precipitation.

Figure 4. Dancing tea, Chá Gorreana plantation.1

The immense thrumming of the drying turbines at the Chá Gorreana plantation powers an integrated resonating instrument, comprised of wooden floorboards, loose frames, wire mesh, and antique machinery. This sound is overwhelming, the drone blotting out other impressions. But then I crush tea leaves between my fingers. The pungent leafy aroma refocuses attention from the general to the particular. I can now notice small leaves dancing in the corner of a wooden slatted tray. Their patterns are delightful; I cannot help laughing out loud. I am also aware that a loose panel fitting is generating a musical rhythm, an ever-changing Euclidean pattern around a fixed motif. The sun creates, from a porthole joining two rooms, a circular frame, an aperture ready-made for a film camera. From the adjacent café, the clink of teacups may just be heard above the more present noises. A hundred such small observations could be catalogued in this domain of the tealeaf.

These examples demonstrate that each encounter with place is facilitated by the intelligence of the body. My experiences are not only due to a thinking mind, but also a thinking arm, thinking skin, and so on. Our tools are also part of this process, extensions of our touch, our sight, our audition. I have learned to see differently after decades looking through a camera lens. And I have learned to hear through my microphones. This is not only because they magnify sounds, changing acoustic scale, but also because they focus attention in particular ways, some amenable to investigation, others less so. But even constraints are useful.

Because sound can evoke an integrated sensorium, I deliberately restrict my installations to sonic material. The physical environs, the topology, and the material cladding of the architectural spaces provide all the necessary cross-stimuli. Once activated by the imaginations of listeners, a plenitude of responses is not only possible, but inevitable. To facilitate this outcome, I tailor the selection of sounds and the diffusion parameters to the specifics of the site.

Figure 5. Installation at Arquipélago, Ribeira Grande.

Arquipélago is a well-appointed arts centre, repurposed from an old factory in Ribeira Grande. My installation was situated in a dark and moist basement storehouse. Archways of stone formed intriguing spatial arrangements within the listening area. The dust from this stone was palpable. With every breath, I was more and more aware of my throat, as though the volcanic deposit was forming a thick layer inside me. Being underground, it recalled numerous encounters from my residency: fumeroles, deep cut riverbeds, dark rumblings through stone, earthy vibrations. I was reminded of the permeability and instability of this island. At the same time, the antique arches and stone floors evoked aspects of sacred spaces: cloisters, cathedrals, mausoleums. This relationship in memory and the imagination encouraged quiet listening.

In that place, the air was very different is formed of sound pools, each a curated collection of recordings made on residencies in Slovenia, Catalonia, and so on. These pools are reproduced by a software application using an aleatoric algorithm, designed to maximise the potential for *accidents of listening*. Different regions of the room contain different admixtures of the sound pools. As a visitor traces a path through these zones, they actively create their own mix. This mirrors my own experience in recording the sounds in the first place. The recordings are not intended to represent any veridical truth, but are rather tokens of an ongoing process of creating place. The installation is inextricably bound to the preceding residency period; it could not exist otherwise.

I credit the success of this work to the many thoughtful listeners who committed to the experience. The positive responses reinforce my belief in the ethos expressed by this project. Though not didactic in its approach, *In that place, the air was very different* encourages us to

consider our embedded situation in a matrix of connections and flows. It proposes that we take responsibility for our impact on the places we inhabit.

São Miguel

We stand on a volcanic crest,
extruded from the sea.
On all sides
a jealous, oceanic mind
desires to reclaim its own.
It sends rip tides and zip waves
to wash us away.

On still nights
the distant thunder
of that ferocious beachhead
averts sleep.
I lie awake as waters roil
up abandoned streets
and echo off the hills,
in ambush.
Reverberation envelops the room
as phantom waves
fill my head.

Sleep comes at dawn's hour.
I dream of dark woods
filled with a wind,
humming through angry trees.
But the forest that's source
for this churning
lies offshore, deep,
drowned on terraces of magma.
The black effluent of volcanic process
is frozen
into this very place.
The mercurial sound
of lost midnight waves
betrays an infinite engine
with which we cannot compete.

If I lived here,
on this small island,
I'd worship a sea god
just in case.

ACKNOWLEDGEMENTS. I wish to thank Raquel Castro and the Invisible Places committee for the residency; the unsurpassed generosity of my host Nuno Malato; the irrepressible Diana Diegues, who coordinated fantastic outings and dinner parties; my housemate Steve Peters, for our many shared encounters with place; the two Andrés for transport and camaraderie; Dalila Couto and Marco Machado at Arquipélago for organisational and technical assistance. Not to be forgotten are my fellow artists-in-residence, for their inspired work and rich company. A special mention goes to Peter Cusack for his generous loan of microphones, after the ocean swallowed mine. And always, Susannah Kelly, for continuing support.

This work is dedicated to Hildegard Westerkamp, for her honesty, intelligence, and imagination, which have inspired me now for three decades. How good it was to finally meet, on a temporary island in a crashing sea.

Photo Novel / Roman Photo / Residency

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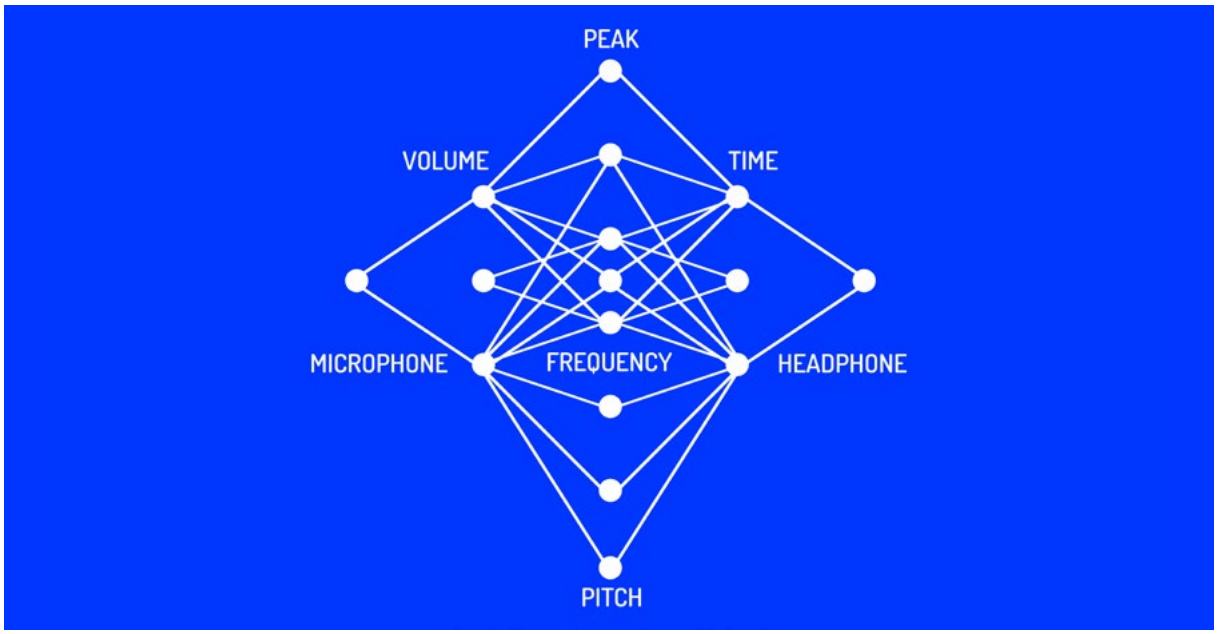
Artist

Map: https://tinyurl.com/spectrum-map Video: https://vimeo.com/yannickgueguen/spectrum

SPECTRUM is an Application which uses the microphone to create a new experience within the user's sound environment. The interface uses the camera and input from the mobile phone's microphone. The program detects ambient sounds around us, analyzing their volume, frequency, peaks, pitch and duration. All we need to do is explore the soundscape to detect sounds and listen to the transformations made by the Application.

Some things to consider while listening:

1. Depending on the volume level, reverberations effects will be applied.
2. Peaks will trigger sounds to play.
3. Higher frequencies will focus listening on a center frequency.
4. Voices will play sounds.
5. The effects applied will depend upon the duration of the sound being analyzed.
6. Headphones are suggested while using the application. (Otherwise there may be feedback).

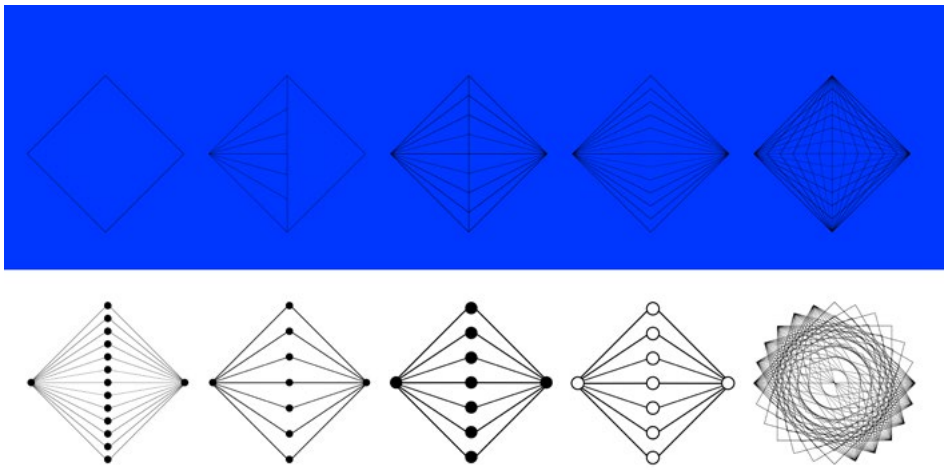


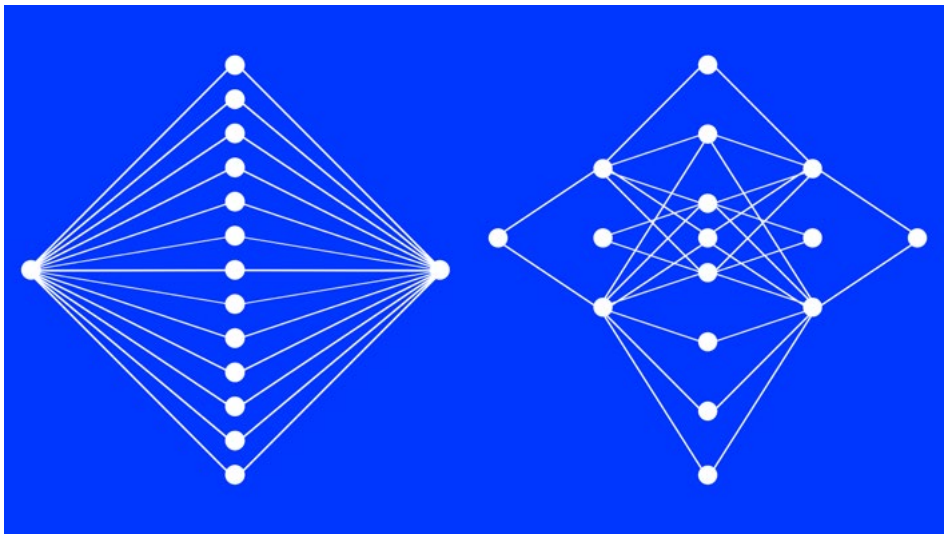
The idea behind SPECTRUM is the effect of sound reverberations specific to the current location. Reverberations modify the feelings which we receive, opposite to the effects of mattness. Reverberations are a sensitive and social sound phenomenon, provoking, astonishing or colouring certain individual or collective interactions and modifying behaviors (Augoyard and Torgue, 1995). Reverberations may come as a surprise, although in general they will be experienced as being normal. Such as expecting that a cathedral will generate strong reverberations. The effects might be experienced within our everyday routines, where the context might be overlooked, there are also situations where people really notice the effects. The apprehension to making noises within a strongly reverberant environment may cause individuals to slow down, paying closer attention to his actions.

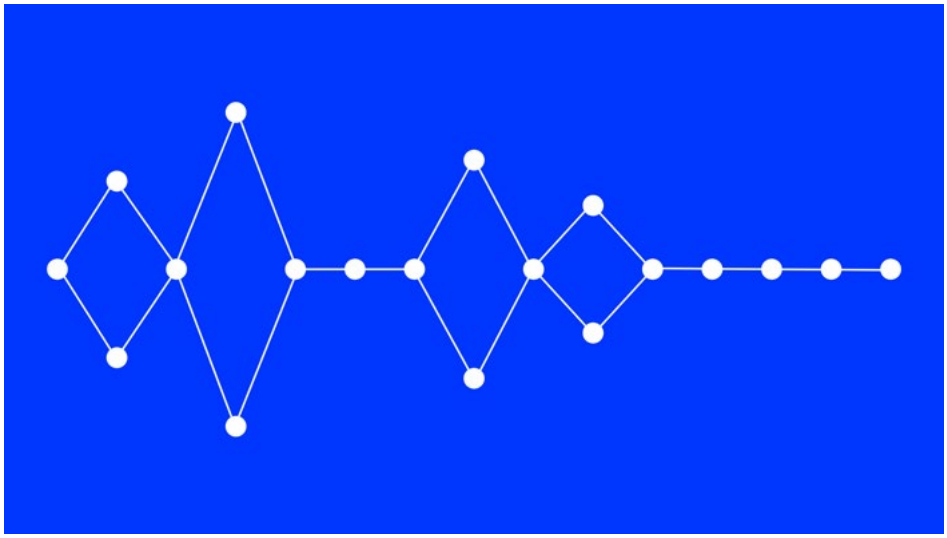
Using an Application such as SPECTRUM modifies the initial experience, engaging the listener in a new way of listening to his environment. The application modifies the reverberations within the user's current location, those which exist in the same time and place, creating a double reality and amounting to a change in the basic experience (Goffman, Erwing, 1991). It is simply not to being within the user's environment, changing the listener's focus and playing with elements of their reality. While living a reality is already a meaningful experience, this new experience has another meaning, only the listener can understand or those who are aware of its function. This duplication of reality amounts to embedding their reality with new information. Such as voices being perceived with delays. Some seemingly insignificant sound details will have a new role within the global listening experience.

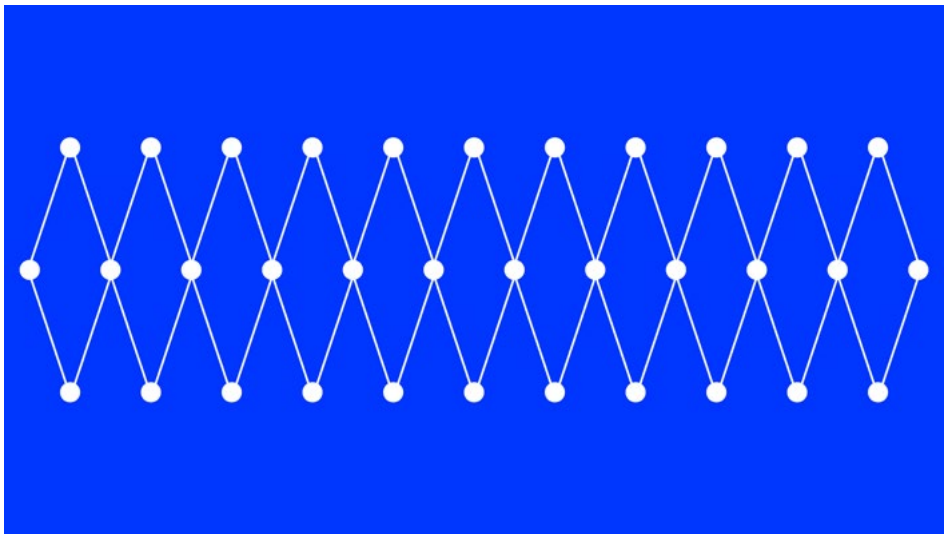
No instructions will be given to the listener, as to what the listener should or may do with the device. On the other hand, very quickly the listener understands he/she must modify the object's properties and the relationship between those properties. New interactions must be created within the environment in order to generate these effects, motivating the user,

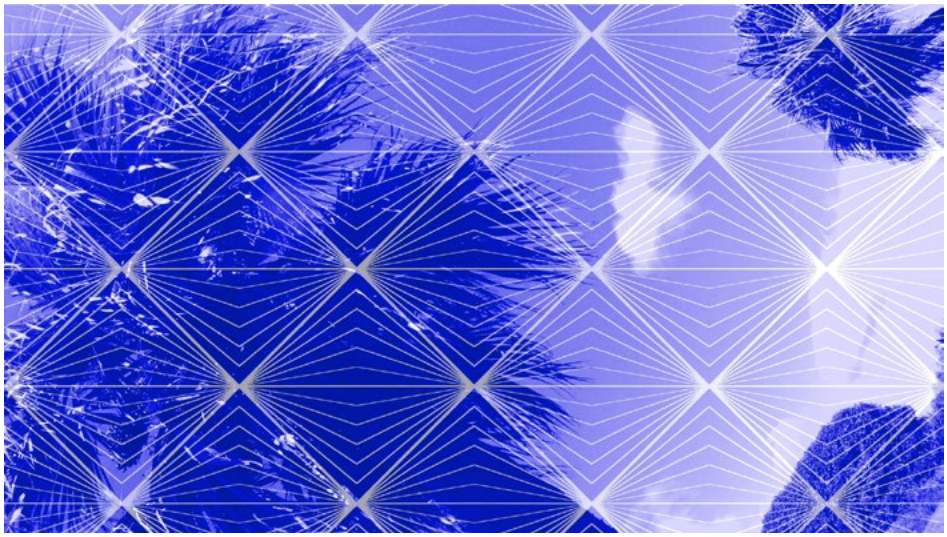
provoking the user. The user must therefore modify his environment, where possible changing the interaction between the world and himself (Gibson, James Jerome, 1982). Not only provoking the user's inventiveness, but also his understanding of the world's physical, psychic and musical properties. In other words, the listener is invited to become aware of not only the sound environment around him, but also the characteristics of objects and social interactions. In this interactive loop, the user's voice and hand clapping will be recognized, adding an element of interaction and sound composition.



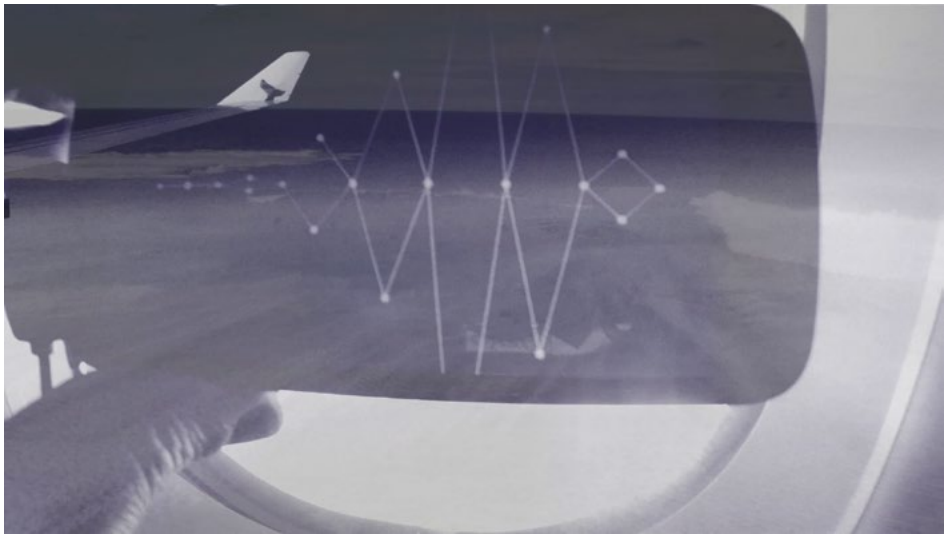




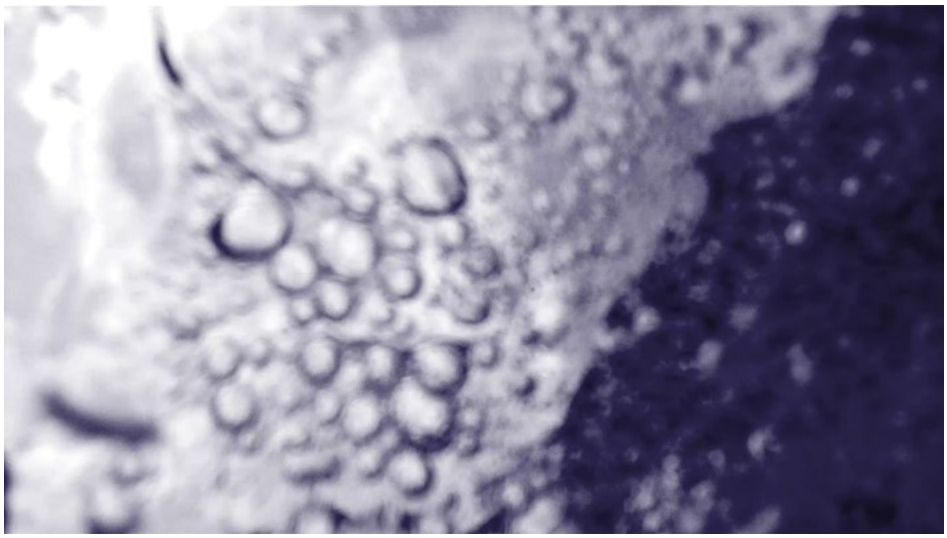




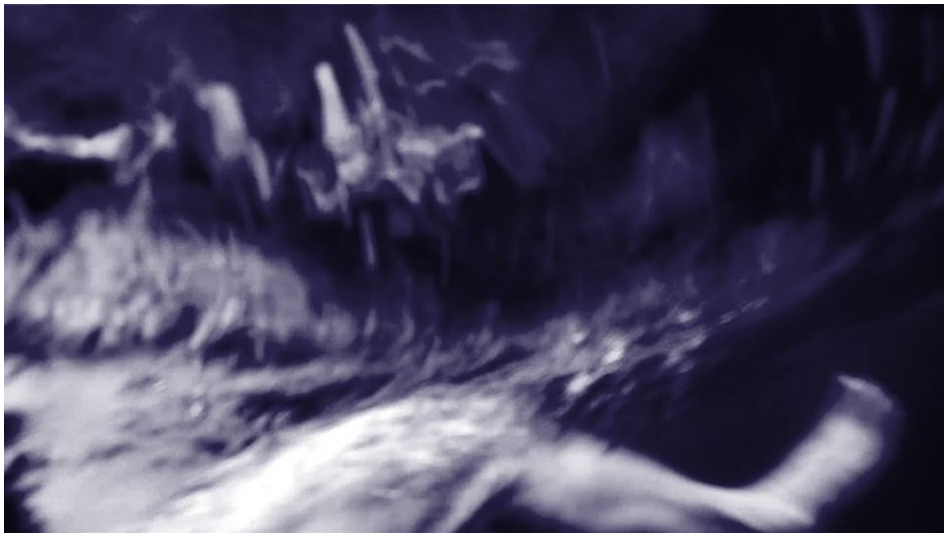
01 : Palm / 37.81268, -25.66391 / S. Vicente Ferreira



02 : Mobile phone / 37.84097, -25.90095 / Azores airlines



03 : Swimming / 37.84215, -25.68635 / Capelas



04 : Swimming / 37.84222, -25.68646 / Capelas

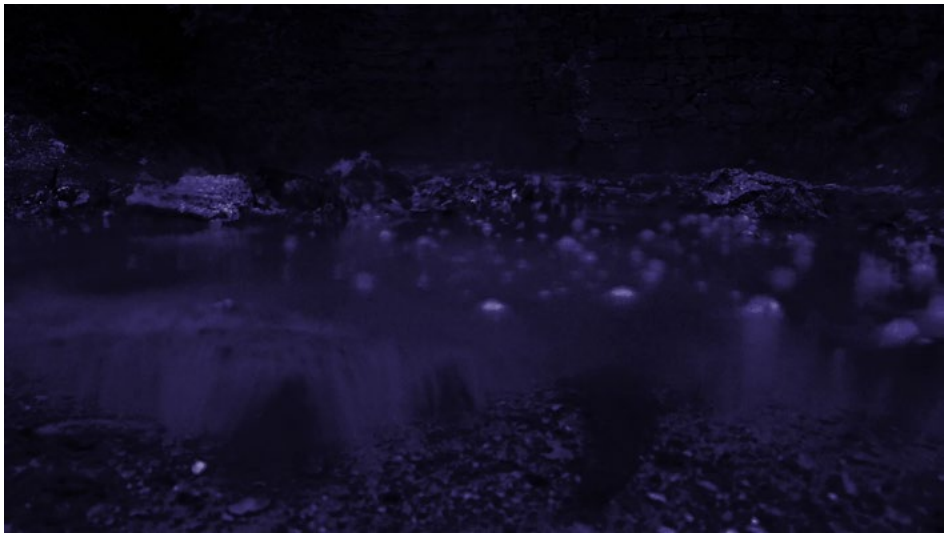
05 : Cow / 37.81026, -25.65706 / S. Vicente Ferreira

06 : Walking / 37.80917, -25.65461 / S. Vicente Ferreira

07 : Bird / 37.80702, -25.6559 / S. Vicente Ferreira

08 : Windstorm / 37.80714, -25.65633 / S. Vicente Ferreira

09 : Viewpoint / 37.80773, -25.65462 / S. Vicente Ferreira

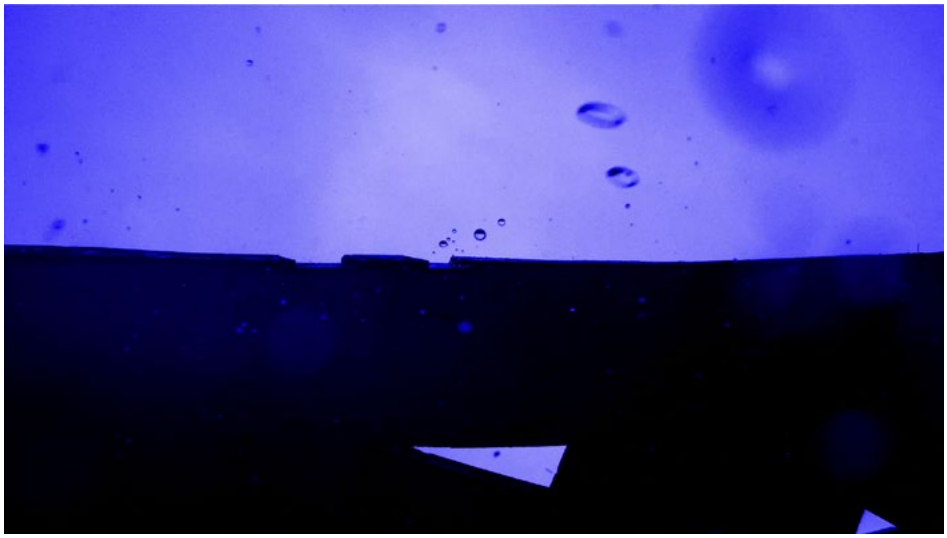


10 : Hot spring / 37.79785, -25.48689 / Caldeiras da Ribeira Grande

11 : Hot spring / 37.76868, -25.3314 / Furnas

12 : Hot spring / 37.76875, -25.33162 / Furnas

13 : Thunderstorm / 37.81241, -25.66379 / S. Vicente Ferreira



14 : Rain / 37.81249, -25.66364 / S. Vicente Ferreira

15 : House / 37.81244, -25.66362 / S. Vicente Ferreira

16 : Duck / 37.74432, -25.67639 / Porta Delgada

17 : Partly cloudy / 37.81118, -25.6624 / S. Vicente Ferreira

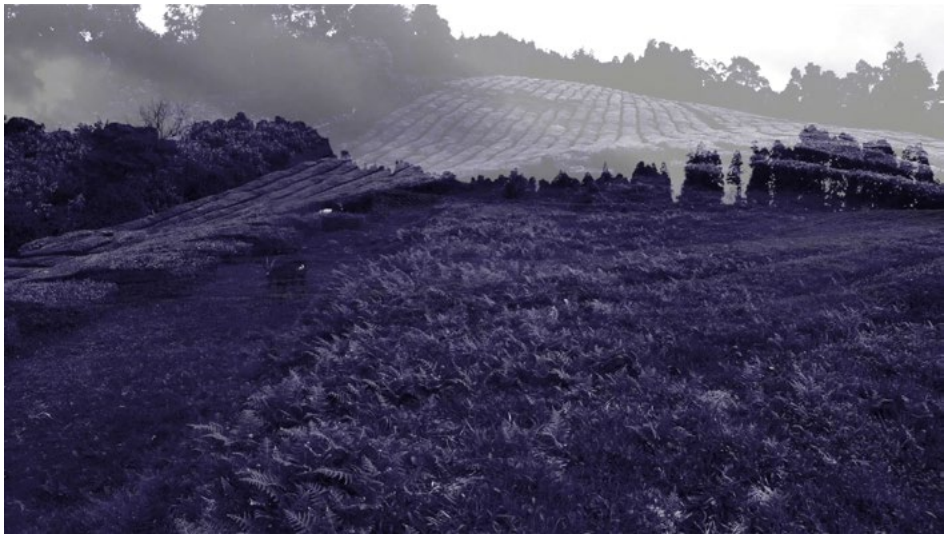
18 : Fish / 37.83243, -25.66331 / S. Vicente Ferreira

19 : Tsunami / 37.8325, -25.66302 / S. Vicente Ferreira

20 : Beach / 37.82203, -25.52877 / Ribeira Grande

21 : Rock collecting / 37.83311, -25.38584 / Maia

22 : Volcano / 37.83941, -25.79477 / Sete Cidades



23 : Tea room / 37.81657, -25.40271 / Soa Bras

24 : Animal / 37.81487, -25.40283 / Soa Bras

25 : Diamond / 37.81417, -25.66985 / S. Vicente Ferreira

26 : Plumbing / 37.81408, -25.66988 / S. Vicente Ferreira

27 : Vista / 37.81414, -25.66968 / S. Vicente Ferreira

28 : Underground / 37.81448, -25.66971 / S. Vicente Ferreira

29 : Airport / 37.7473, -25.73341 / Azores airlines

30 : Cloudy / 37.85208, -25.96824 / Azores airlines

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Sounding the City

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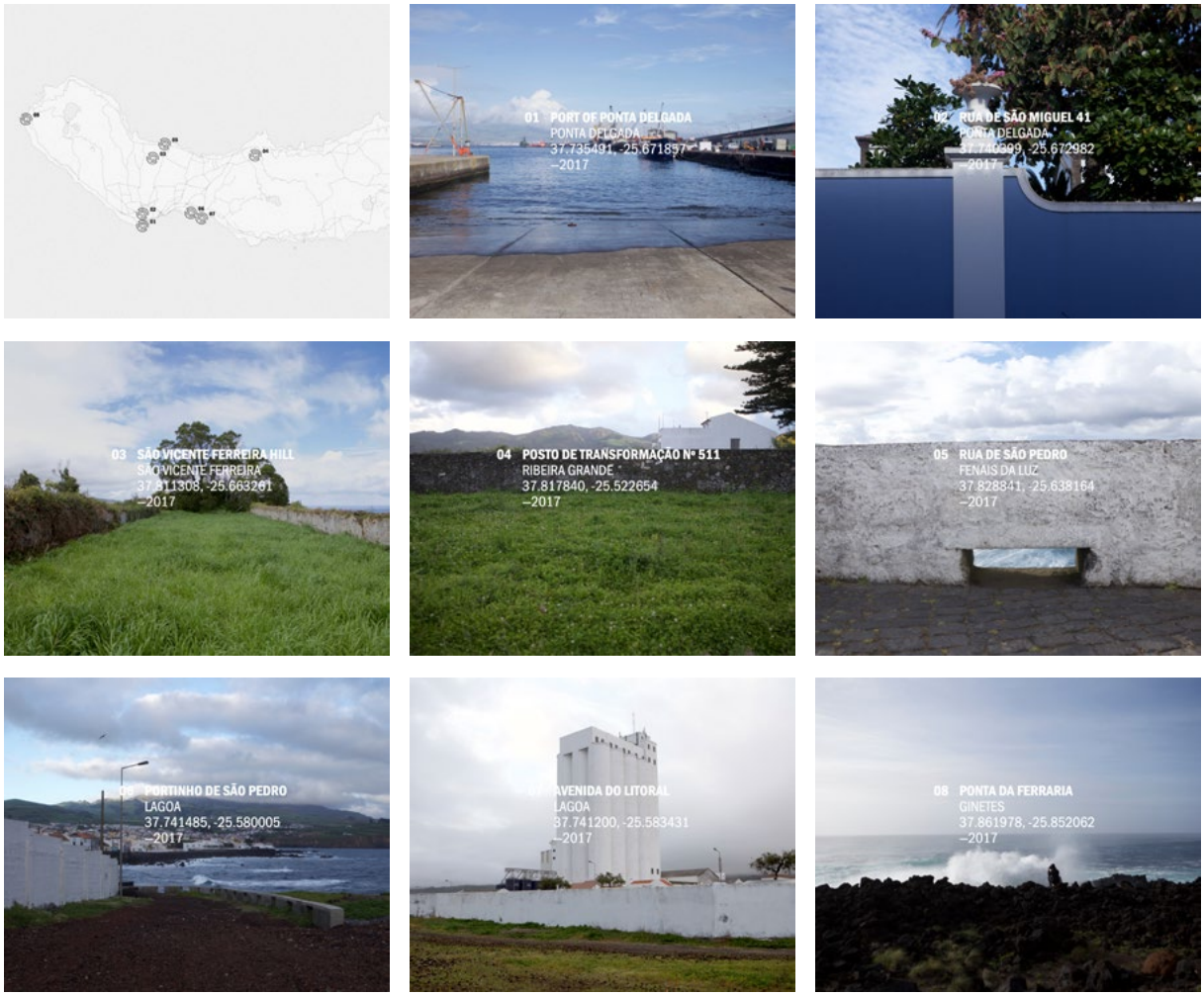
There is a musicality to the sounds of a city: the lingering resonance of a church bell, the subterranean rumble of an approaching train, the cacophony of cyclists, cars, trucks and trains in transit, and the gentle, pulsating drone that emanates from streetlights, power lines and ventilation ducts. These sounds create a meditative counterpoint to the intermittent rhythms of the urban soundscape.

Sounding the City is an online exhibition dedicated to capturing urban environments and re-imagining their soundscapes through site-specific installations and acoustic interventions. These installations emerge from their surroundings and occur in the environments themselves. They invite our ears to focus on the music of the places we find ourselves in, and draw our gaze towards characteristics of urban environments that might otherwise go unnoticed. These interventions aim to transcend our everyday experience of space by blurring the perceptual lines between what is natural and what has been introduced into the environment.

On our walks through the city we discovered places that are undergoing significant change. Most are neglected or in-between spaces, and they may vanish in the near future. As we direct our attention to their uniqueness, their sounds and their resonances with past and future are transformed into memorable experiences. In a sense, our work is a living archive where these spaces can live on in our collective memory, even as they disappear from sight.



During our two-week residency, we created the second instalment of *Sounding the City*. We spent the first week exploring places and sounds within São Miguel and revisiting certain environments. We chose eight locations to capture through field recording, video, and photo. For each location, we created a composition that highlighted on the musical qualities of the soundscape. During the second week, we realized two site-specific installations, which were both active during the *Invisible Places* Symposium.

Since most of our work focuses on the urban soundscape, we were naturally drawn to the larger municipalities of São Miguel: Ponta Delgada, Ribeira Grande and Lagoa. Within these cities, we searched for locations that had distinct sounds and unique acoustics. Some of these sounds included: electrical hums, ventilation, church bells, and the wind and the sea in combination with the urban soundscape. Through field recording and spectral analysis, we searched for harmonies and rhythms within these sounds to create musical accompaniments that blended with the environments.

As we were drawn to more vast and solitary environments along the fringe (shoreline) of these cities, the sound of the sea became a common thread through each of the eight locations. From these places, it was possible to hear the sounds of the city in combination

with the natural soundscape. We often positioned ourselves in between the city and nature to make balanced recordings of these soundscapes. We were particularly inspired by how natural sounds were shaped by the built environment and vis versa.

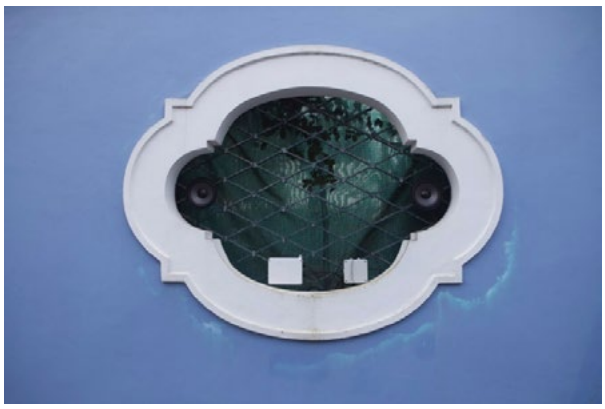
For instance:

> In Ribeira Grande, a steady hum emanated from a nearby power station, while gusts of wind diffused through the surrounding stone walls.
>
> Along Rua de São Pedro, the sound of the sea filtered through the walls and houses that lined the north shore.
>
> On a street corner near the Conceição Palace in Ponta Delgada, an electrical hum resonated in the distance. Water runoff reverberated quietly from within nearby aqueducts.

Installations

Two installations were set up for 24 hours during the Symposium. The first installation *02 Rua de São Miguel 41* took place on a residential street in Ponta Delgada. This street was positioned uphill from the port, and so it was possible hear sounds from a great distance. Two speaker cones fastened to a window amplified the frequencies of an electrical hum and other distant sounds. We were unable to locate the origin of the hum, but it resonated at this location and was audible each time we visited. The sound of running water reverberated within the aqueducts below and offered a nice vantage point for listening to our installation and the distant hum.

The second installation *04 Posto de Transformação No. 511* took place alongside a residual space in Ribeira Grande. An electrical hum emanated from a power station on site. A speaker inside of a plastic pipe revealed the harmonics within the hum. We found it particularly interesting to find a listening point between the power station and the speaker.



The Unthinkable of Nothingness

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ABSTRACT: The Unthinkable of Nothingness is a performance proposal focused on the possible experiences of listening, following the principles of acousmatic as it was conceived by the Greek philosopher Pythagoras who proposed the abolition of his own visual appearance, using a veil while he was teaching to his students. He argued that by the implementation of this process, the concentration on the message would be much stronger and deeper. Following this principle, the piece seeks for promote this practise applied to the fruition of music content in a black box context, deprived of light.

KEYWORDS: acousmatic, performance, deep listening, abstract music, aural concentration, immersion, flow, existentialism.

1. Introduction

In general terms, the title of the piece tries to emphasise the perception or feeling of absence in an individual, whatever associated with tangible circumstances (absence of light, for example, as a phenomenon of physics) or with more abstract domains of inner-perception. While referring to nothingness we tend to fall in paradox: on one side, we think we know what we are talking about and on the other side we experience a process of absence of control on the delimitation of the concept in itself. As Sorensen explains:

> Parmenides maintained that it is self-defeating to say that something does not exist. The linguistic rendering of this insight is the problem of negative existentials: 'Atlantis does not exist' is about Atlantis. A statement can be about something only if that something exists. (Sorensen 2015)

As individuals, while we try to solve the equation of controlling what "nothingness" signifies to us, we tend to find some sort of comfort only when we let our subjectivity occupy part of the vast territory of imprecision, and somehow, we override the possibility of a congruent rationalization. Nevertheless, incapable of control, we give up and surrender to the experience of being incapable to comprehend.

> (...) what is man in nature? A Nothing in comparison with the Infinite, an All in comparison with the Nothing, a mean between nothing and everything. Since he is infinitely removed from comprehending the extremes, the end of things and their beginning are hopelessly hidden from him in an impenetrable secret; he is equally incapable of seeing the Nothing from which he was made, and the Infinite in which he is swallowed up. (Pascal 1669)

2. Towards Acousmatic Procedures

2.1. Black Box: The Absence of Place

Considering the conceptual and technical characteristics of a black box space as a model for public presentation, Francisco López is probably one of the most paradigmatic cases on this type of option.

A fervent supporter of absolute concentration in the process of listening, López imposes on his audience a relation disconnected from any explanation or relationship with the world of causes and "meanings" (irrespective of their origin). In order to operate this relation, the author demands the production of darkness in the performance space and distributes to each listener a black cover to blind the eyes, creating a double reinforcement

in the production of disconnection with any visual stimulus that may occur in the space during the performance.

Gregory Gangemif characterizes Lopez's intentionality and his artistic statement as the result of a long conceptual and aesthetic evolution: "is a deep process of refinement towards an extreme musical purism, with a voluntary and forceful refusal of any visual, procedural, relational, semantic, functional or virtuoso elements". (López & Gregory, 2003)

As Lopez explains in an interview conducted by Gregory, in *Francisco López–Belle Confusion*:

> I'm basically interested in a profound listening, in a listening experience that goes way beyond what is normal in music, I would say. And I tend to get immersed myself into what I consider to be a very profound, deeply touching, deeply transforming experience of listening. This is the way I listen to a lot of stuff and the way that for me is the most intense and the most important. So I try to give this, to promote this in my work. (López & Gregory, 2003)

In this way, Lopez revisits and embraces the causes of acousmatic, bringing back to the center of the discussion the old problematic of causality and modal complementarities or cancellation (sound / image). Other parallel cases can be found in the live works of @c, Kim Cascone, Tim Hecker, Peter Rehberg (Pita), Mark Fell, Helena Cough and Simon Whetham.

2.2. Causality (and the lack of) in acousmatic

In an attempt to better understand the extension of the concept of acousmatic, we underline this fundamental idea clearly identified by Dhomont in 1995, and still very present these days: "we confuse the end with what was once the means: because throughout history, music has had only one way to exist –through performance– it has come to be identified with performance". (Dhomont 1995)

In the text *Defining timbre – Refining timbre*, Denis Smalley states that one of the great interests of electroacoustic music lies precisely in the "adventure of the game of connections"; A game that in its perspective is essentially an "activity of perceptions": "Listeners may share source bondings when they listen to electroacoustic music, but they may equally have different, personalized bondings including those never intended or envisaged by the composer". (Smalley 1994)

Advancing some tens of years in relation to the appearance of acousmatic in French music, we come to the present day with a new possibility: being able to produce and create in real time, from a simple laptop, what 60 years ago it was virtually impossible to do in real time, whatever the medium.

Paradoxically, although they have all the means to compute in real time, the deepest ambitions, today's composers who choose electronics as a way to produce and create music,

find themselves in the grip of the old problem of concrete music, identified and originally coined by the writer Jérôme Peignot:

> In 1955, during the early stages of musique concrète, the writer Jérôme Peignot used the adjective acousmatic to define a sound which is heard and whose source is hidden. (Dhomont 1995)

Thus, concrete music, originally behaving like a role model of a "black box" production inspired on the Pythagorean veil as way to keep causality away from judgments (Schaeffer 1966; Kane 2008; Kane 2014) finds its parallel in the production of electronic live music (specially with a laptop) since both models imply in their essence a disconnection from the logic of causality: "source and cause are unstable, illusory or non-existent". (Smalley 1994)

Helena Gough, an electronic musician which has a great experience as violin player, underlining the acousmatic condition, noted that "focusing on only one sense can be an intense and rich experience, and that when you close your eyes, you 'see' with the mind and the imagination". (Joaquim and Barbosa 2013)

Keiko Uenishi, questioned about the reason to start using a laptop in live performance, argued that the visual boredom was intended, once it could result in advantage to induce people to listen. (Joaquim and Barbosa 2013)

> Similar statements can be found on the words of the following artists:
>
> I'm with Evan Parker, I'm not interested in watching people play, I just want to listen.
> – Frank Bretschneider (Joaquim 2013)
>
> I believe it's the physicality of sound that makes live performance unique and commanding to audiences. Listening can be achieved in the home or on headphones, but listening with you whole body requires something more substantive like a sound system.
> – Laurence English (Joaquim 2013)
>
> I have shifted to a more acousmatic approach to diffusing my work and now sit in the audience in total darkness save for the glow of my laptop screen. (...) If listening is the goal for a laptop musician then I'd suggest shifting to an acousmatic mode of presentation.
> – Kim Cascone (Joaquim 2013)

> [I] tried different methods in which to 'disappear' when performing – because I want people to focus on the sound. I have tried darkened rooms, playing from behind the audience, and even considered the blindfold...
> – Simon Whetham (Joaquim 2013)

2.3. Conclusion/Proposal

Establishing a metaphorical relation through the suppression of visual information derived from the sound production and from the space around, the obscurity, as an acousmatic tool, acts as a parallel of nothingness, allowing the listener to plunge into his own interiority, seeking for questions not answered and eventually unanswered answers.

Evan Parker, an English improviser and saxophonist with a career starting in 1966, makes some disruptive considerations regarding the musical performance. He says that it is possible to see a musician expressing a feeling and hear something that has no emotional correspondence with what is seen. In consequence, he stresses:

> It would be nice to be invisible (on stage). I would like to disappear, and just be the sound. I'm not terrible interested in the way playing looks. In fact, to me sometimes looks like a struggle and the consequent sound doesn't sound like a struggle at all. (...) (long silence) I'm not particularly interested in watching people play, I like to just listen to them play. I know other people feel differently. (Hopkins 2009)

Thus, the space of performance is proposed as an open space of deep listening and auto-analysis, while it can be a place for total abandonment and surrender to the unforeseen in each one of us. The emphasis is concentrated on the experience of listening and immersion.

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Workshops

Clouds of Sounds Over São Miguel – Field Recording and Granulation of Sounds

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My contribution will be short, and will tend to describe my overall experience in São Miguel, and artistic enhancement I had attending this impressive symposium. First off, my workshop, due to time constraint, was reduced from two days to one. But it was indeed a success for participants, because we had to focus on granulation of sounds (other half was meant to be a practical field recording in Ribeira Grande to yield sounds to granulate). People attending the workshop were very keen in Max/msp software, and interested in this sound experiment. My equipment to achieve this was original: a pressure and position sensor (see photos) connected to computer and Max. This gestural access to granulated sounds allows to have instrumental approach to granulation, and thus gives "phrasé" and warmth to the static attitude of the musician with his computer. The result of granulation is extremely variable, but I like to underline the "cloud" image of what we hear, with these tiny slices of sound melted in an almost endless continuum.

My second contribution was my concert for the closing event of Invisible Place 2017, at Arquipélago museum. It was a great experience, thanks to the care of technician Marco Machado, and was divided into two parts: a diffusion of a field recording based composition, made with sea sounds recorded in Madeira island, and Japanese mouth organ Shô.It was on purpose I played this piece, related to Portugal, and linked to all topics of soundscapes, aural perception that were discussed among other in talks at the conference. Then I played on the computer with concrete, electronic sounds, and with metal amplified objects, wit contact mics. The feedback from the audience was warm and satisfied over expectations, people seemed fascinated by the poetic expression of the Madeira piece....(see photos).

And lastly I want say how much I was deeply interested in the other artist's talks, workshop, as Eric Leonardson and Amanda Guttierez soundwalk in Ponta Delgada.

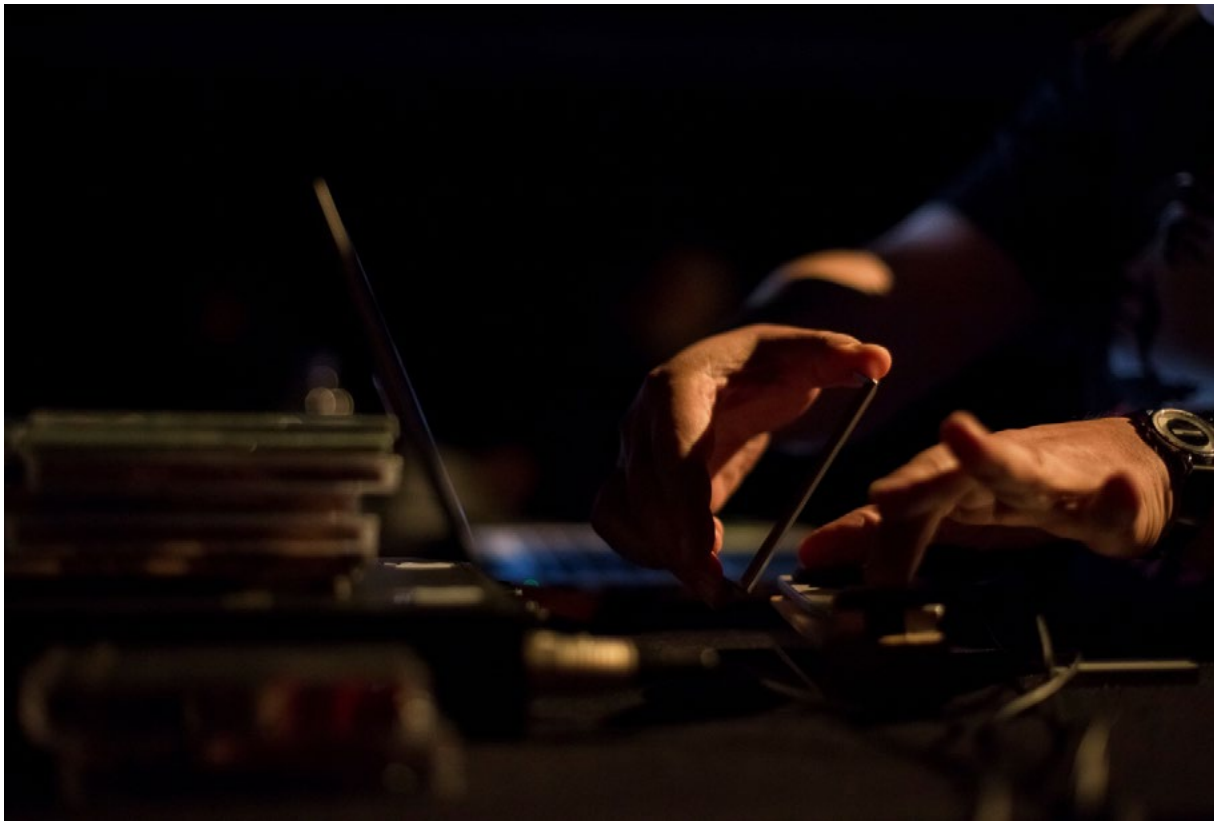
The surprise concert or Peter Cusak in a church on top a hill surrounded by the sea, was stunning, with its mix of field recordings, free improvisation guitar, and poetry.

The Cancões profundas of Steve Peters was a wonder, with six musicians improvising in the dark, and striking field recordings from Portuguese oral traditions in Azores islands.

And I missed so many workshops, as the Jen Reimer/Max Stein exhibition, or Shores boat installation by Claudia Martinho.

The talk by Hugo Branco: Travel and storytelling in sound I also missed, but Hugo was attending my workshop, so it was sort of balanced loss...

In the end it was a fulfilling experience and discovering the Azorean landscapes and sea infinite view was mind blowing.



Ears of Others – Activities in Listening Like Animals

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ABSTRACT: Ears of Others: Activities in Listening Like Animals is a workshop that was delivered at Invisible Places 2017. The workshop explores the hearing of animals through practical activities including soundwalking and field recording. Through these activities, the workshop seeks to increase esteem for animals, the everyday environments in which these animals are encountered and the sound of these environments.

KEYWORDS: acoustic ecology, soundwalking, field recording, soundscape composition, public art, sound art, site-specific, community engagement, animal biology, acoustics and psychoacoustics, science outreach.

1. Introduction

Ears of Others: Activities in Listening Like Animals is a workshop themed around the aural-perceptual abilities of animals. The workshop comprises critical listening, field recording, sound processing, sound modelling and paper mask-making activities. The intension of the workshop is to build regard and empathy towards animals with whom we share our environments, and in turn insight consideration of how we impact these animals. Furthermore, the workshop employs animals and their ways of hearing to encourage a reflection upon our own ways of hearing, and to frame and motivate activities in listening and creatively engaging with sound.

The workshop combines my skills and interest in field recording and soundscape composition, my experience as a lecturer in sound and music technology, and my passion for wildlife and the natural environment. The workshop is also informed by research in to the work of the World Soundscape Project particularly R. Murray Schafer's 'Ear Cleaning' exercises (Schafer 1969) and the practice of soundwalking towards which Hildegard Westerkamp has contributed greatly (Westerkamp 2001). Pauline Oliveros' 'Deep Listening' practices (Oliveros 2005) and Christina Kubisch's 'Electrical Walks'[1] have further informed the workshop. All of these practices similarly seek to insight attentive listening in everyday contexts and in turn greater appreciation of these contexts and their sound. Like Kubisch's walks, each delivery of the Ear of Others workshop is site-specific: the workshop's field recording activity is carried out in local green spaces and animals known to inhabit these spaces and the broader region are investigated in the workshop's opening activity – a presentation upon the hearing of different animals. This presentation and the creative activities that follow it draw extensively upon animal biology research as well as acoustics and psychoacoustics and because of this one may interpret the workshop as science outreach.

The workshop has been delivered twice: On the opening day of Invisible Places 2017 and in May 2015 at the Centre for Contemporary Art (CCA), Derry/Londonderry, UK as part of an arts initiative entitled 'Our Neighbourhood'[2]. Following the delivery of the workshop at the CCA, the workshop was transcribed in to a set of steps for undertaking the activities of the workshop oneself. These are presented in the book "Between a Dog and a Wolf" (Browne 2015), which was an outcome of the aforementioned Our Neighbourhood project. This article provides an overview of the Invisible Places 2017 delivery of the Ears of Others workshop.

1. http://www.christinakubisch.de/en/works/electrical_walks
2. http://cca-derry-londonderry.org/public-programme/sarah-browne-and-aislinn-odonnell-our-neighbourhood/

2. Ears of Others at Invisible Places 2017

The Ear of Others workshop was delivered across a full day on Wednesday 5th April 2017, the opening day of the Invisible Places 2017 conference. The University of the Azores, Ponta Delgada, São Miguel Island hosted the workshop. On this occasion, the workshop group comprised eight people who were a mix of local residents and conference attendants. Whilst the workshop was open to ages fourteen and above, all of the group were adults over the age of eighteen. What follows is an account of each workshop activity as it occurred at Invisible Places 2017.

2.1. The Hearing of the Animals of São Miguel Island

I opened the Invisible Places 2017 delivery of the workshop with a presentation upon the anatomy and processes of hearing of five different animals: dogs, frogs, owls, bats and dolphins. I led my discussion of each animal with species and breeds of this animal that are resident on São Miguel Island. Below is an extract of the information I presented on each animal.

My presentation opened with a discussion of dogs and an image of the Cão Fila de São Miguel, a breed of cattle dog originating on, and common to, São Miguel. Much of my discussion of the hearing of dogs focused upon their pinna, which through their form and flexibility, aid dogs in collecting and localising sound (Evans and de Lahunta 2013, 739). Participants of the workshop living on São Miguel informed me that whilst illegal in Portugal, the ears of the Cão Fila de São Miguel are, sadly, very often cropped.

Following dogs, I focused upon owls. There was once a species of owl endemic to the Azores, the São Miguel scops owl (Rando et al. 2013). This animal is now extinct. Whilst uncommon, the long-eared owl[3] and barn owl are known to inhabit São Miguel. Both the long-eared owl and barn owl have asymmetric ears, one ear is higher than the other (Lynch 2007, 44). This is so that as well as perceiving where to the left and right a sound comes from, these species of owl can also perceive where up or down a sound's source is located.

The Iberian water frog is common to the Azores.[4] Frogs have no pinna; instead they have large exposed circular eardrums on either side of their face. A frog's lungs are also sensitive to sound. This prevents frogs from damaging their own eardrums when they croak, which can be incredibly loud, by equalising the pressure across the eardrum. It is also thought that hearing through their lungs allows frogs to localise sound better (Ehret et al. 1994).

The final two animals discussed, bats and dolphins, are both known for their use of echolocation to navigate and to locate and track prey. Bats create the ultrasonic calls needed for

3. Xeno-Canto, a social media website for sharing bird song recordings, includes (at the time of writing) a recording of a long-eared owl on São Miguel island. http://www.xeno-canto.org/.
4. http://www.azores.gov.pt/Gra/srrn-cets-en/conteudos/livres/Iberian+Frog.htm

echolocation in their larynx. Regarding catching prey, the arrival time of a reflected call and how the amplitude and frequency of the reflected call differs to the bat's original call, tell the bat how far away their prey is, how fast and in what direction its moving, and the size of this prey (Carew 2000, 42). The Azores have an endemic species of bat called the Azores noctule bat, which is one of very few species of bat in the world that is active in the daytime.[5]

The Azores are renowned as one of the best locations in the world to encounter wild whales and dolphins. Certain species of dolphin such as the common bottlenose dolphin reside in the Azores archipelago all year round.[6] Like bats, dolphins[7] use echolocation. Unlike bats, dolphins create the ultrasonic calls necessary for echolocation by passing air through channels behind a part of their foreheads known as the melon, which focuses and projects these calls forwards (Whitlow 2000). The echo of these calls and all other sounds, including the whistles and clicks that dolphins use to communicate, are brought to the dolphin's inner ear through their jaws (Dudzinski and Frohoff 2014, 43).

2.2. Field Recording

Following my presentation on the hearing of animals, I introduced the workshop group to the field recording equipment I had brought with me, which included binaural and contact microphones, hydrophones and a bat detector. The group then split in to pairs and I distributed the field recording equipment amongst these pairs. The group then headed to a nearby park, Jardim Antonio Borges – a botanical gardens comprising plants from across the globe, a number of ponds and a system of artificial passageways and caves over which there are a series of walkways and lookouts (fig 1.). Pairs were invited to walk the park and use the equipment they had been given to record whatever appealed to them. However, I recommend each pair choose an animal, consider the sounds important to this animal and seek out and record these sounds. Halfway through the activity pairs were asked to swap equipment and repeat the exercise with a new animal focus.

Earlier in the day, one of the workshop participants who lived locally shared with the group a photo they had recently taken in Jardim Antonio Borges of bats roosting in the park's passageways and caves, and commented that they were very often there and unflinching to human presence. Unfortunately, on the day of our visit these bats were not present. Very little was heard through the bat detector on this occasion. Related to bats however, I issued each pair with a clicker (usually used to train dogs) and requested they attempt echolocation

5. http://www.azores.gov.pt/Gra/srrn-cets-en/conteudos/livres/Azorean+Noctule+Bat.htm
6. http://www.visitazores.com/en/experience-the-azores/whale
7. The information and materials presented in the workshop regarding dolphins were supplemented by Prof José Azevedo of the University of the Azores who, prior to the workshop, very kindly spent a great deal of time discussing these animals with me as well as more broadly animal life on São Miguel Island and as his own research, which pertains to marine life (http://www.monicet.net/en).

through use of the clicker. This also encouraged the group to explore the phenomenon of reverberation in the park.

Throughout the group's time in the park, frogs could be heard croaking in the park's ponds. In my opening presentation, I shared with the group how frogs will listen to the rhythm of other frogs croaking around them and will adjust the rhythm of their own croaking so that their croaks fit between the croaks of other frogs (Narins 1995). One pair of participants spent much of their time listening to and recording the frogs with the binaural microphones given to them. This pair commented to me that they had found observing the patterns of frog croaking I had spoken of earlier deeply pleasurable.

Whilst most pairs had been relatively unsuccessful in capturing anything with the supplied hydrophone, one individual managed to capture frog croaks with this device. This microphone and the individual's patience and perseverance, enabled them to capture very impressive, clear, isolated croaks containing detail not usually audible to the ear.

Figure 1. Workshop participant field recording in Jardim Antonio Borges.

2.3. Sound Editing, Processing and Modelling

After the field recording activity, participants returned to the workshop base where they had access to laptops and the software Audacity.[8] Participants were given a quick introduction into how to load sounds into Audacity and do some basic editing. Following this, participants were given time to listen back to and edit the recordings they had made in the park. Later in to the activity, I demonstrated how recordings may be processed to simulate the perspective of a particular animal. In simulating the hearing of a barn owl, I used EQ to narrow the frequency range of the recordings from 20–20kHz, which is the frequency range of human hearing, to 200–10kHz, which is the frequency range of barn owl hearing (Konishi 1973). I also used EQ to increase the volume level for frequencies between 500–10kHz. Barn owls are more sensitive to sound in this range than humans (ibid.). My simulation of barn owl hearing also included a Max for Live[9] patch I had built that replicates the barn owl's ability to localise sound vertically.

2.4. Mask-making

The workshop ended with a mask-making activity. Participants were asked to create a barn owl mask that both mimicked the vertical asymmetry of the barn owl's ears but also the barn owl's 'facial ruff', which acts like a satellite dish focusing sound on to either ear (Knudsen et al. 1979). Participants worked in pairs and were provided with a pair of binaural microphones, card and stationary. No indication as to how to construct the mask aside from a scientific image of a barn owl's face were given. This was deliberate as I felt not giving a template would provide more of a challenge for an adult audience, and result in different and inventive solutions. The activity did indeed end with very different and inventive solutions, one of which can be seen in figure 2. After creating their masks, pairs listened to the binaural microphones set within these masks to see how the form of their masks filtered and reflected sound. Pairs then swapped masks, discussed the differences and all together we considered the reasons for these differences.

8. http://www.audacityteam.org/
9. https://www.ableton.com/en/live/max-for-live/

Figure 2. Workshop participants trialling their Barn Owl Masks.

3. Conclusion

In both deliveries of the Ears of Others workshop, it has been clear to me that whilst most people know very little about animal hearing coming in to a workshop, they find this subject very appealing and thus a good stimulus for considering their own hearing and for engaging in listening. It is hoped that this appeal persists beyond the time of the workshop and encourages further engagement with everyday environments, and the sound and animal inhabitants of these environments. The workshop also stands to encourage studying and working with sound, and encourage an interest in physics and biology.

I intend on continuing to research animal hearing and continuing to apply this research in further deliveries of the workshop. I also intend on developing a similar workshop aimed at children as well as refashioning the workshop in to other forms of media such as a mask-making book and a mobile application. The mobile application I intend would be an aural equivalent to Marshmallow Laser Feast's 'In the Eyes of the Animal' (2105)[10], a VR experience in which the viewer can explore a forest environment through the lens of different animals. Building this application would continue my practice-based research in to mobile sound and aural augmented reality (Green 2011).

10. http://iteota.com/

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"SoundExplorers" – A Workshop for the Training in the Exploration and the Documentation of the Sonic Environment

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ABSTRACT: The "exploration" of the sonic environment may reveal rare sounds or highlight special acoustic conditions. Geophysical phenomena, biological functions, human activities and machinery operation are becoming the key (f)actors in a sonic scenery. A field survey, which includes listenings, interviews or conversations with the locals and visitors or by simply referring to archival material (e.g. reports, photographs, video, recordings etc.), results into evidences for the structure of present or past soundscapes. Some of them cannot be heard any more, many are still waiting to "speak out". For all of them, someone could "tell" a story. This is the role of "soundexplorers", who either alone or in small groups are exploring the sonic environment and are transforming their experience in free-form texts, technical reports, visual and sonic compositions or other forms of representations towards the understanding of soundscapes. This paper presents the overview and the guidelines of a workshop for the training in the exploration and the documentation of the sonic environment.

KEYWORDS: listening, surveying, recording, analysis, description, representation.

1. Background

After the formation of the first team for the study of the Greek soundscapes (Mniestris et al 2007), researchers from various disciplines have been involved in the exploration and the recording of qualitative attributes of the sonic environment (Bassiouka et al 2007; Matsinos et al 2008; Papadopoulos et al 2012). For many of them, the participation in field work for such purposes has been their introductory experience for the discovery of this unseen aspect of space. Hence, the need for the preparation of personnel prior the surveying campaigns has initially became the basis of a training session for the development of particular skills (listening, recording, measuring, logging and archiving) for capturing the needed data. The repetition of this training over the subsequent years has structured the outlines of a training workshop, named "Soundexplorers".

The workshop was firstly conducted in 2014, during the third biannual conference of the Hellenic Society for Acoustic Ecology, under the title "Soundexplorers: Soundscape Correspondents" (Papadimitriou 2014) and a few months later was repeated with teachers from the primary education, during a dedicated training session, entitled "Sound and Environment in Education", at the Environmental Education Centre of Kalamata, Greece. Since then, it has been performed, on an annual basis, with students at the School of Rural and Surveying Engineering, Faculty of Engineering, Aristotle University of Thessaloniki, Greece (Papadimitriou and Boutoura 2016).

The aim of this training is the familiarization of participants with an applied methodology, which is based on the cartogrpahic representation of the sonic environment (Papadimitriou et al 2009). The results from such methodology are related to a variety of topics and applications ranging from landscape ecology (Mazaris et al 2009; Farina et al 2014; Sueur et al 2014) and environmental management (Paraskevas et al 2011; Votsi et al 2014) to urban geography (Aletta et al 2016; Liu et al 2013; Wissmann 2014), mobility of individuals (Papadopoulos and Barouti 2015) and soundscape compositions (Stratoudakis and Papadimitriou 2009; YouTube 2011).

2. Overview

The workshop of "Soundexplorers" is addressed to a variety of attendants, with a special interest in the sonic environment (from individuals and students to researchers and educators). Whilst, in most cases, participants may have not previously undertook any related course, through this workshop, they are getting in the fields of acoustic ecology by three ways: primary, during an introductory section, by the presentation of key meanings related to the study of the sonic environment (e.g. background/foreground, origins/categories of sounds, intensity, noise, diversity etc.); sequentially, during a survey section, by developing

basic skills on the field (listening, recording, measuring and data logging); and finally, during a data processing section, by analysing and presenting the results of the survey with descriptive text, data tables and thematic maps.

2.1. Learning Objectives

The workshop concentrates on the procedures for the listening, the documentation and the description of the acoustic conditions or the sonic events at an area of interest.

By the end of this workshop participants are expected to:

- locate and record sounds;
- measure the Sound Pressure Level (SPL);
- recognize and log the origin and the meaning of sounds;
- store sound recordings;
- archive and process recorded attributes in data sheets;
- use text, data tables and visual representations (graphs, maps) for the description of soundscapes; and
- share (upload) their results on the web.

2.2. Structure and Duration

The minimum recommended duration of the workshop is 2:00 hours, excluding additional time for transportations or any delays between sequential sections. The structure and the indicative time allocation is described at Table 1.

Table 1. Structure and time allocation of workshop sections.

Section	Title (duration)	Topics
Introduction	Presentation (00:30')	terms, methodology and equipment
Surveying	Preparation (00:15')	groups formation, tasks delegation and equipment use
	Field Work (00:15')	listening, recording, SPL measurements and data logging
Processing	Analysis (00:20')	data preparation and processing
	Results (00:30')	description, representations
	Discussion (00:10')	workshop review and conclusions

Those sections can be performed on different dates or places but the sequence should stay intact. The duration of each part can be increased based on the judgement of the coordinator by considering the extend of the study area, the number and the relevant experience of the participants, the complexity of the equipment to be demonstrated and used, as well as the depth of analysis that will be performed with the captured data.

2.3. Training Material

The minimum required training material for the performance of the workshop are a pencil with a blank piece of paper. A print-ready worksheet is provided (Papadimitriou 2016a), in order to be used for data logging and basic analysis on the field. Additionally, the relevant set of empty spreadsheets (Papadimitriou 2016b) is also available for digital archiving and processing of data.

Recommended material, which is not provided by the coordinator but facilitates the performance of the workshop is:

- slate or hard-cover folder for writing;
- timer or watch for time tracking;
- sound recorder or smart phone with recording software;
- SPL measurement instrument (soundmeter) or smart phone with recording software;
- fine scale map of the area and GPS device or smart phone;
- computer and software for tabu data processing and sound editing;
- email account and Internet access for data sharing.
- Reading or media material that is related to this workshop includes:
- the article "An Introduction to Acoustic Ecology" (Wrighston 2000);
- the booklet "Basic terms of acoustic ecology for children and adults", available online (Etmektsoglou, 2014);
- the film "Soundscapes, A Documentary about Acoustic Ecology", directed by Constantinos Stratoudakis (2007);
- the track "Secret Coast" composed by Apostolos Loufopoulos" (YouTube 2011); and
- the "Handbook of Acoustic Ecology", available online (Truax 1999).

2.4. Considerations

The maximum recommended ratio for one coordinator is 30 participants per class. This ratio can be increased with one or more coordinator assistants. In any case it is advised to form small classes, up to 30 individuals each and work in small groups. For more participants and without assistants, consider dividing the class.

The workshop is usually conducted at open spaces. Environmental conditions and participants' safety are of primary concern for the performance of the workshop. Taking into account the outdoor conditions or the special interests and needs of the participants, the workshop can be performed in covered spaces as well. Quality sound recordings or descriptive texts (e.g. short stories) with references to geographic locations (e.g. place-names, maps) can either be used for the reconstruction of soundscapes and in order to be studied by the attendants.

The use of sound-recording and sound-meter devices is considered essential for the familiarization of participants with the presented methodology. If this kind of equipment is not available, the use of portable devices (smartphones or tablets) with appropriate software,

can be demonstrated as alternative material, mentioning in advance the impact on the expected data quality. In any case, the coordinator is advised to describe the proper use of a sound-recording system (microphones and logger) and a sound-meter. When using smart phones during field-work, remind the participants to turn on flight mode, in order to avoid biased propagation of sounds.

3. Guidelines

3.1. Introductory Section

During the introductory section, are presented the terms, the methodology and the equipment that relate to the performance of the workshop.

The coordinator describes and gives examples for the interactions between landscape's features (e.g. geomorphology and climate, biological and human activities, operation of infrastructures and technology) that produce sounds, as well as explains the terms of background, foreground and sound-marks for characterizing their meaning. A sound-recording device can be presented and selected recordings may be reproduced, in order to practice sound recognition from the participants.

The categorization of recognizable sounds based on their origin (from geophysical phenomena, biological or human activities and technological-machinery operation) is explained relatively to the mentioned interactions between landscape features. Prior the presentation of the thematic categorization of sounds, the coordinator may ask the participants to propose alternative thematic categories. Participants may practice by categorizing previously mentioned or played-back sounds. The empty worksheet facilitates the process.

Sound intensity is presented primary as a perceived (subjective) value. Participants are using the same worksheet to estimate a value (by assigning one number of a scale from 1 to 3) in order to quantify the perceived (subjective) intensity. Sequentially, the intensity is presented as a measurable (objective) value, by demonstrating the use of a sound-meter device and by comparing the estimated (subjective) and measured (objective) values.

3.2. Surveying Section

The aim of a field survey is the collection of data that describe the attributes of the sonic environment. Those are captured by listening, data logging, sound-recording and sound-metering. The result from a field survey is the documentation material, which will be used for the processing.

Preparation

Although the survey may be short in duration, it requires some preparation for the formation and coordination of field-work teams, the delegation of tasks and the familiarization with

the use of special equipment. Each field-work team can be composed by no more than four individuals: one for the sound-recording device; another for the sound-meter device; one for the logging of data on the worksheet; and one coordinator. In case of less individuals per field-work team, participants have to plan in advance their actions. After the delegation of tasks, participants should check the proper set-up and operation of equipment. Occasionally, the selection of the site(s) to be surveyed may be decided in advance, which requires additional time for planning. The print-ready worksheet may facilitate the organization of the team, as well as the meta-data logging and pre-processing of data (prior digital archiving).

Field Work

The process for the documentation of the sonic environment includes sound-recording, sound-metering, listening and logging data on the worksheet. During a primary investigation of the survey site, the members of the field-work team are able to familiarize with the study area, locate sonic sources and recognize sounds. Often, a field-work team could act as an intruder at a study area and trigger sound-producing interactions. It is recommended to allow some time of stillness from all members before the performance of the survey and in order to avoid biased results. In turn, this provides additional time for the preparation of a survey.

In order to combine the data from the sound-recorder, the sound-meter and the worksheet, there is a need for a common reference in time. This is the role of the team's coordinator, who is in charge to define the allocation of equipment, to keep track of time and to tune the field-work team (as a maestro).

Sound-recording can be performed either with a dedicated system (microphones with data logger), or alternatively with any portable device (tablet or smart-phone) with adequate software for exporting sound data files. The quality of sound-recording depends on the hardware (microphone) and on the exported file format. When using a non-dedicated sound-recording device, it is suggested to set the sampling rate at 22kHz-16bit and use the WAV/PCM format for file export. During recordings, it is essential that team members remain silent and support the microphone at the height of a normal human (e.g. on a tripod).

The logging of qualitative attributes of the sonic environment is facilitated by the use of the worksheet. Before the beginning of logging, sonic sources can be located and prevailing sounds are recognized.

Sound intensity can be measured with a calibrated sound-meter, or alternatively with a mobile device (tablet or smartphone) with an application for SPL logging and data exporting. The silence from the team members and the stability of device are the main concerns towards reliable measurements.

During a logging period the recognized sounds (occurred within every fifteen seconds) are characterized as background or foreground and a value is estimated, ranging from 1 (just

heard) up to 3 (high intensity). Those values, for any recognized sound, are describing the perceived intensity and in conjunction with an abbreviation or a symbol, are assigned to each sound in order to facilitate data logging on the worksheet.

3.3. Processing Section

The processing section includes the analysis of data and the output of results followed by a discussion.

Analysis

The list of recognized sounds represents the diversity of the sonic environment whilst the summaries of values for each recognized sound, during the five minutes logging period, are expressing the impact on gained experience from each one. Moreover the number of occurrences is an index of persistence of recognized sounds.

Lower values represent rare or low impact sounds, wheres higher values indicate prevailing or high impact ones. By combining the scores of all recognized sounds it is produced a profile for the composition of the sonic environment at each site, which describes the overall sense that an individual is getting from the sonic environment at a selected site.

The characterization of recognized sounds, based on their meaning for a listener, allows the calculation of two summaries for the perceived intensity. One for the background and a second for the foreground. The comparison between those two values is describing whether a site is mostly receiving or producing sounds. Additionally, the categorization of recognized sounds based on their origin (geophysical phenomena, biological or human activities and technological-machinery operation), allow the calculation of another set of summaries that describe the formulating factors of the sonic environment.

Qualitative information cannot be measured with an instrument and thus logged data (from a listening) may be considered subjective. On the other hand, this kind of "subjective" data can be evaluated (in comparison to the sound-recordings) and be coupled with the measured data (from a sound-meter), resulting in a data-set that documents the attributes of the sonic environment.

Results

A sonic environment can be described in many ways. Keynote texts, technical reports, graphs or charts are some evident ones, from a mainly "scientific" approach. Story telling, sonic or visual compositions and performances are providing some audience-oriented alternatives, from a more "artistic" approach. Cartography is originating from and targeting to both of those approaches. Thus, thematic mapping is providing a common medium for the representation of qualitative or quantitative attributes of the sonic environment.

Discussion

At the final part of the training, after the processing section and the presentation of results, follows the review of the workshop and a discussion with the participants.

4. Summary

The purpose of the workshop, entitled "Soundexplorers", is the training in the exploration and the documentation of the sonic environment. The presented overview and guidelines of this workshop are addressed to anyone who is engaging in the study of soundscape.

It has mentioned that "long-term monitoring of the sonic environment appears a new and promising approach" for the understanding of "the dynamics of natural and human-modified systems and represents an important tool to create efficient practices to protect and preserve valuable areas" (Farina 2014). In this context "Soundexplorers" are expected to support this monitoring and moreover, advocate the build up of a balanced relation between the environment and humans.

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Dendrophilia (The Love of Trees)

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ABSTRACT: I have proposed to lead a workshop where participants visit a nearby park and I will ask each of them to select one of the trees growing there and take a photo of that tree. The photo will be the starting point for developing a drawing. We will return to the workshop area indoors to begin the drawing. The drawing will be loosely based on my experience of creating the image of a tree using only text to articulate a given tree. The text is simply the name of the tree written in tiny letters over and over again until the image is complete.

Each image is a large tone poem where the name of the tree is intoned each time it is written. During the process of drawing/writing/sounding each image production becomes a personal performance, akin to an incantation that I imagine lends support and strengthens the trees.

I will show examples and offer a demonstration so the process is clear to all.

Paper, pencils and pens will be supplied.

How do Soundwalks Engage Urban Communities in Soundscape Awareness?

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ABSTRACT: This paper summarizes the intent, conduct, and outcomes of an experiential workshop, for conference participants, in soundwalking and public engagement. Through listening, dialogue and responsive exercises workshop participants learned about concepts and strategies for activating communities. Benefits and opportunities in government, civic and cultural partnerships for sustainable professional research and meaningful public engagement are shared in a context of creative social practice in contested urban spaces.

KEYWORDS: listening, urban, soundscapes, wildlife habitat, embodied listening, citizen science, race, segregation, gentrification, community, cultural identity, fundraising, tourism, public art, land use, ethnic, diversity, biodiversity.

1. Introduction

The authors' concern is public engagement in urban soundscape awareness based on our recent collaborative experience in the Night Out In The Parks "Soundwalks In the Parks" series and The 606 Soundscape Project. These soundwalks were funded by the Chicago Park District and the Trust for Public Lands respectively, in partnership with Midwest Society for Acoustic Ecology (MSAE). We also share ideas and experience about our identities as teaching artists with a socially-engaged, transdisciplinary approach to collaborative making.

Following introductions between workshop participants, we, Amanda and Eric, gave an overview of the history and concepts behind our approach. Our colleague and co-author, Norman W. Long, was unable to travel to attend Invisible Places, but is a contributor to the presentation and the soundwalk experiences described in this paper.

A slide presentation and a brief video, "What is a soundwalk?" (2016), prepared participants conceptually for an actual soundwalk outdoors, along a route that Amanda and Eric had designed the previous day. Given that soundwalks are best understood by **doing**, it was important the workshop have an experiential component. Departing from the classroom on the university campus, we led our group to a lovely outdoor garden. The significant spatial and auditory transition from the traditional and surprisingly reverberant classroom space to the open air outdoors, with its large trees, grass, and pools was refreshing acoustically and architecturally.

Eric engaged the group in a few listening exercises drawn from the Deep Listening practice of Pauline Oliveros[1] and R. Murray Schafer's playful approach to "Ear Cleaning"[2] that himself and Norman have employed in the past with students at the School of the Art Institute of Chicago (SAIC) and many events organized by the MSAE. Both approaches aim to "recalibrate" sensitivity to the current soundscape.

1. Oliveros, Pauline (2005). *Deep Listening: A Composer's Sound Practice*. iUniverse.
2. Schafer, R. Murray (1992). *A Sound Education: 100 Exercises In Listening and Sound-Making*. Arcana Editions.

After the listening exercises participants were led on a soundwalk around the periphery of the University. The context of the workshop opened a conversation about the significance of soundwalk practice to acoustic ecology. Our Azores soundwalk took into consideration the significance of sonic awareness in urban planning as the embodiment of our observations as pedestrians and citizens.

After the soundwalk we returned to our start point and participants were prompted to create their own maps. Each person drew a map which depicted their subjective experience of the soundwalk. Sharing these maps facilitated the development of personal narratives, associations, and memories triggered by unique soundscapes at specific points on the walk. Meaning was constructed via sonic metaphors — the experience as an abstract interpretation of the space. These conversations incorporated other subjects and disciplines such as urban planning, critical tourism, and environmental ecology, among others.

In answer to the basic question, "How do soundwalks engage communities?" the workshop began with exposition, followed by an empirical, embodied experience of a soundwalk, thereby balancing and correlating theory and its practical application. Activities that prompted visual and linguistic reflections at the end of the soundwalk addressed specific instances of sounds in relationship to our listening, sense of place, and physical structures, such as streets and buildings, that characterize the signature sounds of Ponta Delgada around and in the campus of Universidade de Açores. Attendees lived these experiences rather than simply hearing about them. This basic sequence parallels the structure the Chicago public park soundwalks series addressed in the second portion of the workshop.

Eric shifted the discussion to the potential impact of artists and others who may use soundwalks in their work. From the standpoint of an artist-run professional practice, community engagement employing soundwalks affords teaching artists an opportunity to provide a beneficial experience to a wide demographic in their own soundscape or others unfamiliar to them. Significantly, soundwalking is a non-exploitive practice that helps local communities tune in to themselves. Various forms of social practice arts are becoming recognized by funders as having valuable impacts on challenged neighborhoods, which in turn helps support and promote the work of professional teaching artists.

Though successful in fundraising for local efforts to activate communities through soundwalking, Eric was surprised that not all funding institutions actively promote the very efforts their sponsorship is meant to support. General lack of knowledge about the value of listening, our human roles in creating global soundscapes, or any notion of what a soundwalk is or its social value, present a "public relations" challenge to marketing departments. This communication work needs to evolve as its impact is significant and can place burdens on teaching artists' limited capacity, while simultaneously allowing the communities these institutions are mandated to serve to miss wonderful opportunities.

Deploying soundwalks along the Chicago Park District's "The 606" and Bloomingdale Trail seemed to be an isolated case of soundwalks being funded because it "sounded good" at a time when various constituents, including longtime and new residents, realtors and community activists, were all feeling unheard by each other. Located along a redeveloped former railway line, the trail traverses a range of gentrifying and working-class Latinx neighborhoods with one endpoint near a major commuter train station in the already transformed, expensive Wicker Park/Bucktown neighborhood on Chicago's northwest side. Its well-maintained pocket parks are designed for visual attraction as a commuting corridor.

The common use of headphones and mobile amplifiers by bikers, runners, walkers and skateboarders alike, indicates a common approach to creating imposed soundscapes or curated, private listening experiences. Rather than inviting ecological listening, the tidy, manicured paths attract high-speed cyclists and calorie-burning joggers, rendering any slow moving group of soundwalkers into physical obstacles to their "progress". This treatment is also observed with large multi-generational families from other cultures, often female and including young children or babies, who may be considered a nuisance if taking a stroll as they might do calmly in a more socially connected space. While it was an honor to be awarded a grant for cultural programming, the lack of collaborative goal setting, planning, promotion or feedback from the Trust was disappointing. This was an isolated case, as will be noted in the later section on work with some of the city's nature preserves and citizen scientist programs. The experience was hugely instructive and included one large event on World Listening Day 2016. An installation of paid musicians and sound artists, some of whom reside or work in neighborhoods along the trail, in the 606 pocket parks at dusk, managed to draw walkers and some youth cyclists off the path to engage, and others to smile as they encountered these unexpected elements in their regular soundscape. Eric, in his role as president of the World Listening Project, broadcast to listeners across the globe from one of the pocket parks to conclude 24 hours of international World Listening Day programming.

In contrast, is the exciting role the Chicago Park District's Park Advisory Boards, comprised of local citizen volunteers, has played in enriching the second year of programming in Chicago public green spaces in 2017, with a third year in the works for 2018. These relationships have created a new network of soundwalkers and attracted new leadership to the Midwest Society for Acoustic Ecology.

Photo by Dan Mohr.

Questions of Inquiry

I. How do soundwalks address and activate a city's more vulnerable and underserved communities?

Soundwalks can be connective and empowering, especially for people of color. Begin by identifying the cultural landscape, history of the community and locus of everyday activity, festivals and actions. Listen to these areas as a way of learning about, and establishing a new entry point to participating in the community. A soundwalk can be a catalyst for activation, engagement and planning by the community. Usually these walks are experienced as touristic site-analysis by outsiders who have plans or designs for a community. If we insist on walks that include the community who are already present, these constituents may acquire a new tool for understanding their own community. Once a community gains a sense of ownership of this knowledge, it can take more control in setting community goals and participating in decision making. The sense of ownership and real authorship is crucial as more black and brown spaces become gentrified and divested.

II. How does knowledge transfer from artists to communities, particularly underserved communities, in soundwalking and soundscape awareness?

- Knowledge is transferred through experience. We and fellow teaching artists *demonstrated* ways to effectively and actively engage people in their unique abilities to listen and make sound.
- Repeated opportunities provided by a series creates the possibility of developing self-generated community practices in acoustic ecology.
- Consistent presence creates the opportunity to identify and mentor emerging local leaders who might begin their own series and to connect them to new networks.

III. To what extent can artists-as-social activists acquire public funding to effectively, ethically, and sustainably support acoustic ecology and soundwalking practices in cultural spheres driven by tourism and real estate industries.

Our experience collaborating on the Night Out In The Parks soundwalk series and The 606 Soundscape Project, funded by the Chicago Park District and Trust for Public Lands, in partnership with Midwest Society for Acoustic Ecology, was an opportunity to explore the relationship between funding, intent and outcomes. Eric observed that local arts, citizen science, and tourism funding can help make soundwalking a sustainable practice and acoustic ecology a publicly recognized field. While meant to activate residents and enhance community benefits, it is necessary to be aware of the potential risk when such efforts are spearheaded by funding organizations or artists who "parachute" into a community, potentially amplifying suspicion and conflict. Funded activities in communities where gentrification puts real

estate development interests at odds with the needs and aspirations of low-income families, including long time homeowners, trying to sustain skyrocketing property taxes or seeking affordable housing, are sometimes used for PR purposes rather than to spark authentic connections through committed and ongoing placemaking. Paradoxically, artist and social activist residents can be, and have been, caught in between and perceived as the "other" in such communities, while they may share the need for affordable housing and already sustain long term ties to a specific neighborhood.

Public Soundwalk Programming In Chicago

I. Soundwalking with communities, Little Village (social spatial awareness)

Amanda's approach to Chicago's Little Village emerged through her experience as a teaching artist. She had been teaching occasionally on the west side of Chicago at a Chicago Public School and two non-profit organizations that serve Latinx youth. In the summer of 2016, Amanda developed an art workshop involving Sound Ecology with the non-profit organization Yollocalli Arts Reach. The teen workshop emphasized the role of sound in the acoustic territories of Little Village, which borders the economically challenged and predominantly African-American neighborhood of North Lawndale, where Amanda had previously taught video classes, also to teens. Though she had lived in Chicago for 15 years, Amanda's experience of North Lawndale remained limited, perhaps due to the pervasive misconceptions and fears about safety in that neighborhood.

In their video documentaries, her previous black teen students had expressed fear, anger, and frustration as individuals who are regularly confronted by police brutality and gang violence. Amanda's knowledge of North Lawndale had been constructed solely through their memories, photographs, and interviews shared in a regulated high school classroom.

Amanda's current research explores the links between oral history, architecture, and memory released or articulated using soundwalks and the *dérive* as research tools. The concept of community is a fundamental topic that brings these key questions of inquiry: *Is it possible to get a sense of historical and cultural immersion through sound? How can the existing soundscape reveal the personal narratives of a space?*

With the young Latinx women from Arts Reach, Amanda touched on some shared challenges faced in Chicago. Walking through its streets and near the border of an expansive Chicago Park District space that encompassed multiple gang lines, Douglas Park raised questions about her own prejudices and racial stereotypes. Soundwalk reflections from teenage youth residing in low-income, racially-segregated neighborhoods, included frequent references to fear and anxiety about crossing the streets that demarcate neighborhood borders. Urban youth are growing up traumatized. Soundwalks allow participants to give voice to aspects of crime and generational poverty not often addressed by public media. Hearing one's own truth, positive and negative, and being able to share and amplify is empowering.

II. Soundwalking in Parks, Washington, West Ridge Nature Preserve, and North Park Village Nature Center (human environments in nature)

Washington Park, on Chicago's south side was designed by American landscape architect Frederick Law Olmsted in the 1870's. Norman's inspiration for this project were black speakers of diverse religious and political persuasions, in particular, Sun Ra and the pamphlets he handed out while he was preaching in the park in the 1950's.[3] The DuSable Museum of African American History, an indispensable resource for Chicagoans, is located in the park, adjacent to the University of Chicago. The park has long been a conduit for creative thought, cultural history, ecological diversity and preservation, and recreation. In 2017 the museum hosted the kick off for the centenary of Pulitzer Prize-winning poet and Chicago icon Gwendolyn Brooks.

Along with 2016 and 2017 walks Norman has recorded a sound map of the park using Radio Aporee http://aporee.org/maps/work/projects.php?project=el_sun_snd_wlk. Norman's are the first professional, mapped sound recordings of a black neighborhood on Chicago's south side. He has used these recordings in a series of compositions.

Norman posits, "To map sounds from the south side is to write black existence into the consciousness of the rest of the world, to expand black subjectivity and to frame our community in a non-essentialist context. Our soundscapes connect our experience to that of a diverse community that goes well beyond "otherness'."[4]

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3. Corbett, John and Anthony Elms (2006), co-editors, *The Wisdom of Sun Ra: Sun Ra's Polemical Broadsheets and Streetcorner Leaflets*, Whitewalls

4. Long, Norman W. (2016) Into_the_breaks: World Listening Day - Soundwalks- Reflections http://intothebreaks.blogspot.com/2016/07/world-listening-day-soundwalks.html

Soundwalks led by Eric in West Ridge Nature Preserve and North Park Village Nature Center, on Chicago's north side, focused on biological diversity and species monitoring by citizen-scientists. Both parks are managed park staff and well-organized volunteer groups to retain their woodland prairies and wetlands within the City of Chicago.

North Park Village Nature Center has a built-in nature education culture, with rich yearlong programming and a beautiful building and outdoor spaces for convening, but is difficult to access without a car. Walking and listening have been part of established activities at the center for many years. Our "Singing Insect Soundwalk", with naturalist Dr. Carl Strang, drew more participants than all of the soundwalks combined on the well-funded and visually spectacular 606 and Bloomingdale Trail.

This success was possible because North Park Village Nature Center and the surrounding park, a managed urban wildlife refuge, has regular offerings of embodied listening, biodiversity and citizen science supported by pre-existing staff infrastructure and strong volunteer capacity. Similarly, the West Ridge Nature Preserve, despite not having an indoor space and being very new, has a dedicated Park Advisory Council that reflects the diverse constituents of the surrounding community. Relationships with both parks led to new opportunities. All of this activity makes for makes great storytelling, attracting students, teachers, local journalists and *funders* who identify with the artistic, scientific, and inherent social justice potential of our soundwalks. Such projects are becoming attractive models for younger soundscape ecologists eager to create public programming and advance the field of acoustic ecology.

2. Conclusion

Participants in the Invisible Places workshop departed with a reiteration of the most practical questions of inquiry: *How can we proceed as artists, social scientists, researchers, naturalists, chroniclers, environmentalists, and critical citizens to actively respond to our soundscape, connecting this phenomenon with global concerns for a better world?*

A soundwalk can be used as a catalyst for activation, engagement and planning by the community. We and fellow teaching artists demonstrated ways and offered examples of how to effectively and actively engage people in their unique abilities to listen and make sound.

After numerous soundwalks in Chicago parks on World Listening Day 2016, Norman poignantly wrote, "As I reflect on World Listening Day, I am also thinking of how soundwalks can be connective and empowering, especially for people of color. When so many of us are angered and/or fearful of what we see and what has been done to us, I feel that finding time to walk, breathe and listen quiets the mind. Along with seeking safe places and supporting communities, these walks empower us to be present and courageous. I am one with the ground on which I stand, the air I breathe and sounds I hear. Making sure I am present when my presence is at best problematic."[5]

Soundwalking and deep listening alone or in company, are democratic and potentially healing practices accessible to anyone willing to enter a soundscape with newly open ears. Norman's reflections remind us how we as artists can empower others through soundscape awareness and the socially shared connection through the listening and understanding that Invisible Places encourages.

5. Long, Norman W. (2016) Into_the_breaks: World Listening Day - Soundwalks- Reflections http://intothebreaks.blogspot.com/2016/07/world-listening-day-soundwalks.html

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3D Audio and Soundscape Composition

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ABSTRACT: Each 3D-audio composition creates a sonic landscape. Understanding 3D-audio as an autonomous means of expression leads deep into the field of acoustic ecology. The significant terminology provides a system of parameters for conceptualizing and composing within 3D-audio environments and therefore clarifies the narrative power of soundscape as a concept. The workshop identifies parameters and outlines an approach to 3D-audio design, including aspects of the practical implementation and production logistics within object-based production systems like the SpatialSound Wave System (SSW) by the Fraunhofer Institute (IDMT). The workshop refers to the observations of an ongoing research project at the Soundscape- and Environmental Media Lab (SEM-Lab) of the UAS Darmstadt in Germany, led by Prof. Sabine Breitsameter, within the frame of the master´s degree program International Media Cultural Work (IMC).

1. 3D-audio as acoustic holography

It has been an artist's wish for centuries to place sounds in acoustic space and create a virtual sonic landscape, in which sounds come across as acoustic holograms. 3D-audio technologies like the SpatialSound Wave System (SSW) allow to locate and treat sounds as three-dimensional, virtual sound sources in space. This enables to simulate tangible soundscapes and bring virtual space-sound-concepts to live. The acoustic space can be experienced in a multi perspective way in 360°, as a three-dimensional space with x, y, and z axis.

2. Object-based production format

The basic technical idea of the SSW relies on Wavefieldsynthesis (WFS). The Fraunhofer IDMT though created algorithms that allow to create virtual soundscapes with a smaller setup than WFS. Another benefit of that approach is the object-based production format. Unlike stereo, surround or other channel-based setups, sounds are not assigned to a certain speaker, but to an object – a virtual sound source object with a concrete position in acoustic space.

3. Acoustic holograms and acoustic topography: virtual soundscapes

The concept of *soundscape* refers to the appearance of all sounds in a room, place or landscape that envelope us up to the quietest and thinnest sound. Based on the term and concept of *soundscape*, as its basic gestalt of listening & figure of concept, 3D-audio constitutes an autonomous aesthetical concept, that necessitates three-dimensional, acoustic design-motifs as genuine means of expression. Referring to the soundscape concept, 3D-audio conceives the occurence of sound in art, everyday life and media as a concrete and sculpturally located, acoustic topography. Thus, the terminology, that is associated to the soundscape concept can be used to increase dramaturgical expressiveness of spatialization. As the spatialization can reduce the masking effect, polyphonic textures and figures acquire a sophisticated manifestation, allowing to suspend a predetermined hierarchy of "signal" and "noise" and to create unheard sonic choreographys. Think of a soundmark, as an unique sound of a place or peoples community, which often has a cultural and historical importance. Or the keynote which is heard, but often ignored, as a constant sound in the background. What if the soundmark surprisingly disappears? What if the keynote slightly changes – or moves? Isn´t this a non-verbal indicator for a change and herefore a powerful element of acoustic communication?

4. Conceptual thoughts & artistic strategies

The core of 3D-thinking, from the technical point of view, as well as from the conceptual perspective: Every sound has a spatial context. Where is the sound source located and how is the sound extending in space? Is it small, is it big, is it moving? What is the spatial relation to the listener and to other sound sources? The virtual sonic landscape is perceived as a 360° and three-dimensional sphere. Therefore, *the role of sound* is not longer reduced to the appearance of its acoustical representation. In fact, each sound must be treated as a 3-dimensional phenomena in acoustic space. From this, it follows, that the *role of the listener*, and the *role of the listening* is altering, too: the frontal stage disappears and the auditory becomes the stage itself. As the focus of attention is not predetermined by a stage, the auditory perception becomes an omnidirectional experience and an interactive process: the listener has to orientate himself acoustically in space and find out, or – decide – which sound(s) he focusses on, like an explorer of the acoustic environment. In order to get familiar with the appearance of sound in spatial context, sound walks are a highly-recommended method to prepare for a 3D-audio composition.

There is no predetermined limitation of application possibilities to a certain genre or aesthetic concept. Indeed, a wide range of artistic strategies are supported through the new way of audio reproduction and the tangibility of sound, that can be achieved with 3D-audio technology. On the one hand, tangible phenomena appear as "real" and "true". Such a naturalism can intensify the illusion of an immersive "reality". On the other hand, 3D-audio is best suited to design disruptive, contrasting, torn and collage-related forms, as opposed to homogeneous-illusionary experiences. 3D-audio also allows simultaneity of contradictions, so that the "sculputural" positioning of sound in space can also be a method of deconstruction, thus a concept, which is diametrically opposed to an illusionary realism.

5. Technology and production format

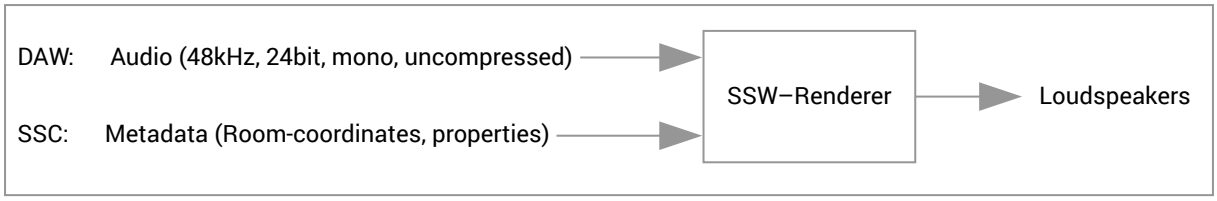
The SSW provides a user-friendly working environment. Each audio signal is assigned to an `object` (analogue: virtual sound source). Objects are graphically visualized and operated with the *SpatialSound Control* (SSC) production app. Stereo files are treated like two mono signals and assigned to two objects. Positions, movements and properties of the objects are applied with the SSC, a web-based production app with a graphic interface for the spatialization, that runs within the google chrome web browser. Objects are featured with certain *properties*, that effect the acoustic appearance of the corresponding sound files:

Point Source (default setting) || Plane Wave: Objects appear punctual at a precise position (Point Source) || Objects appear wider and broader and are roughly locatable (Plane Wave)

3D Source (default setting) || Lower Source: Objects occur further up (3D-Source) || Objects occur at a lower position (Lower Source).

Minimum Delay: Reduces movement artefacts.

Technically, the shift from the channel-based to the object-based environment means, that each object consists of signal (audio file) and meta-data (room-coordinates and other properties). The SSW-renderer gets audio signals from a digital audio workstation (DAW) and room-coordinates from the SSC.



The renderer accepts mono audio signals in 48 kHz and provides 32 objects. The audio signals are assigned by routing the audio-tracks to the outputs of a common MADI – Interface (Output 1 → Object 1; Output 2 → Object 2, (...), Output 32 → Object 32). The SSW-renderer processes the incoming audio files into signals for each speaker of the actual speaker setup, according to the positions and movements (metadata), that are defined with the SSC. Thus, object-based productions can be played back via different speaker setups without losing the intended spatial arrangement impression. The SSW supports a multitude of freely positioned loudspeakers and allows integration of interactive settings.[1]

6. Design approach and material concept

The idea for this research program and the workshop derives from the wish to compose, design and to create new forms: un-heard soundscapes, that never had been able to realize before. To make use of the new possibilities of spatialization in such an extent, the program focusses on the composition of virtual sound-scenarios, consisting of particular sounds. This approach requires a thoughtful *spatial concept* and an elaborated *Material concept*.

From a technical point of view, each audio signal can be played back with the SSW. From an artistic view point, a more differentiated consideration is needed. Therefore, an understanding of the object-based production is crucial: Every sound in an audio file will be synthesized as one virtual sound source. Overlapping sounds of a recording can not be spatially separated – only "isolated" sounds can be positioned individually.[2]

1. Room-coordinates can be delivered from all kinds of devices in the format of a common OSC-protocol.
2. If sounds are not overlapping, they can be seperated with conventional editing.

The microstructure, as the inner structure of a virtual sound source, constitutes its acoustic appearance. If the corresponding signal contains a whole soundscape, the soundscape becomes a sound source as a whole – like a cloud, or a space in a space. Isolated sounds also come along with a specific shape and a particular spatial appearance: small or big, close or far, punctual or broad, directional or unfocused.[3]

The macrostructure refers to the mapping of the objects and therefore their spatial relation to each other. The macrostructural context shapes the material context significantly: Is a sound autarkic, coming from one direction? Or is it part of a complex figure, consisting of a number of distinguished sounds, that even come from different angles? A collapsing tree might be prepared as one sound source, if the tree collapses in some distance to the listener. If the tree collapses right above the listeners head, it might be more appropriate to design the collapse by assembling the details of that acoustic event, such as the cracking and breaking of the brenches.

The characteristics of the audio-material shape the appearance and the degree of freedom to arrange your composition, due to the micro- and macrostructure of the virtual sound sources. Conventional multichannel-recordings can be useful to create a basic atmo, but are not making use of the full potential of the 3D-audio technology. As an example for an object-orientated recording design, microphones could be arranged close to the (real) sound sources. Microphone positions should be carefully adjusted. Close-up recordings tend to act as an acoustic "zoom" – even small events may sound huge, although the volume is adjusted properly. On the other hand, a large distance-recording contains the room-impression of the recording-site, which can be wanted (e.g. as a basic atmo or room tone) or distracting – depending on the intended purpose. Multi-channel recordings are transferred by arranging the corresponding objects according to the positions of the microphones. The de-construction of the positions is an issue of artistic intention. For the use of stereo-material, it must be clear, that two objects cannot `surround` the listener, but the spatial relation (distance, angle, position) between the two objects delivers useful parameter to adjust, how the sound is extending into space.

To substantially design the spatial appearance of a scene, the desired room-impression can be implemented through a dynamic, *object-based room simulation* of the SSW, *conventional room simulations* or *reverb effects* and *multichannel recordings* of a basic atmosphere or room tone.[4] If no such intentional design is implemented, the real room of the 3D-installation, with its particular acoustic properties, strongly affects the spatial appearance of the composition.

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3. E.g.: Prepare isolated sounds, assign them to different virtual sound sources and arrange them, according to the spatial concept of the scene.

4. Conventional room-simulations (surround reverb, stereo reverb), that are processed within the DAW can blur the consistency of spatial impression, since the channel-based room-simulation or reverb software is not dynamically responding to the positions of objects within the simulated room.

A design approach, that seems to be reliable for a number of purposes can be roughly described like this: the production consists of a quiet, basic atmo (e.g. a multichannel-recording of a soundscape) which is complemented with isolated sounds (or specific object-orientated multichannel-recordings) in order to add details and plasticity.

Example: Create a crowded street as basic ambiance by recording a quiet street as a multichannel-recording (Minimum: 3 channels, better: 8) and add sounds of a crowded street separately.

Summarizing, it´s a whole field of artistic exploration to create sound motifs and therefore design specific recording-methods, which take account of the principles of the object-based production.

7. Production logistics and other useful hints and tools

For an efficient and successful 3D-production process, a carefully considered *production logistics* is essential. The first step of the 3D-production is to assign each of them to an object and apply the desired properties. As the number of tracks may exceed the number of available objects (32), the production logistics ensures, that the assignments support the spatial concept of the piece. Sounds, that should occur at the same time at different positions or with different object properties, must never be assigned to the same object.

Therefore, the dramaturgical, aesthetical and spatial properties for each sound must be defined:

What is the dramaturgical function (keynote, soundmark, signal sound)?

How is the spatial appearance:

- punctual (Point Source) or atmospheric (Plane Wave)?
- where is it located? (X/Y and 3D-Source/Lower Source)?
- static or moving? (Minimum Delay)?

Based on that, an *object-structure* can be deduced, that declares dramaturgical functions and properties for each object.

The production logistics clarifies two issues:

- assignment to an object for each sound

  e.g.: Barking dog → Object 1
  Violin 1 → Object 9
  Violin 2 → Object 10 (...) etc.
- attribution of properties for each object

  e.g.: Object 1 – 8 → Plane Wave
  Object 9 – 16 → 3D Point Source
  Object 17 – 20 → 3D Point Source, Minimum Delay
  Object 21 – 28 → Lower Source

Object 21 – 28 → Lower Source, Minimum Delay

The production logistics though comprises the reasonable preparation of the project, by grouping and routing sounds within the DAW.[5]

Another part of the preparation is the notation of the *spatial concept*, which includes positions and movements. It can be useful to sketch *soundmaps* and create *basic figures*, showing the initial positions of the objects for each scene. Those spatial *figures* clarify the perspective and express dramaturgical aspects of the spatial concept. As transitions are spatial phenomena as well, they should be taken into account, too. For complex movements and figures, additional sketches are advisable.

8. Conclusion

3D-audio technologies like the SSW expand the ways of acoustic expression and come along with an artist-friendly and versatile applicable working environment. Its potential is not been exploited by far. Conventional concepts and half-baked implementation approaches are not convincing in light of the unused potential. It´s up to us, the forward-listeners, to offer new, inventive and valuable auditory experiences and thereby strengthen the listeners autonomy.

Central tasks of the workshop:

- Sketch a first outline of a concept for a 3D-composition. In which field is it allocated? Which design-principles are involved?
- Identify major acoustic elements of your composition and relate them to the sound-scape-concept: what´s their dramaturgical function? How do they fulfill that function (acoustic appearance and spatial appearance: position, movement etc.)?

5. It can be useful to create object-tracks as a transit station and collection point for sounds, that are assigned to the same object.

Naked Ears

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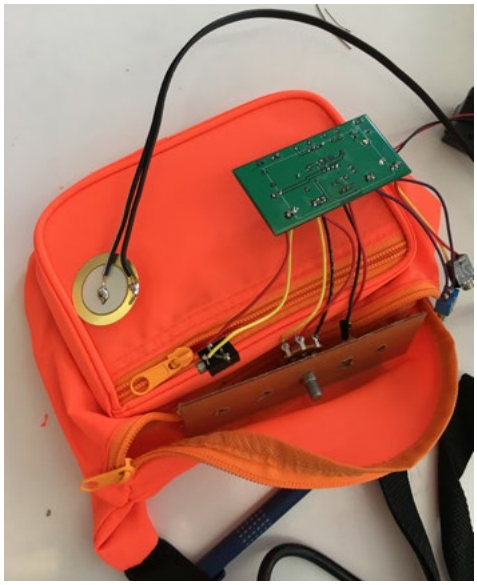
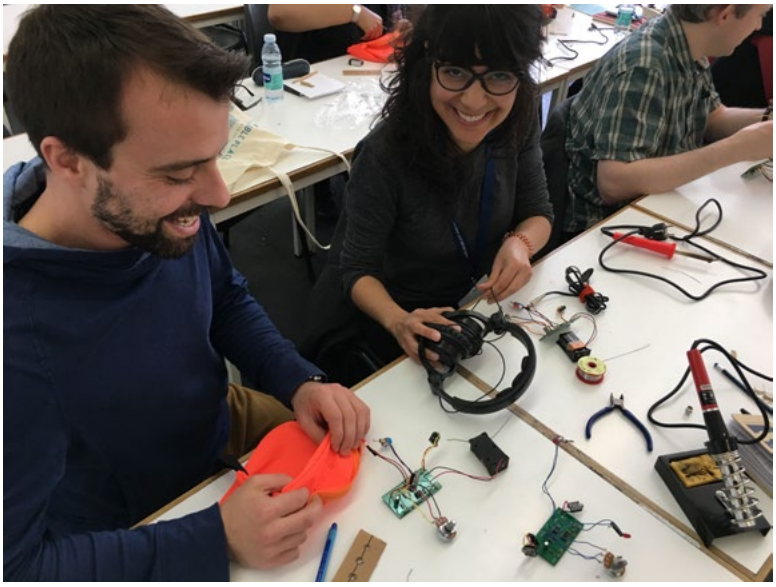
The workshop introduced participants to the world of sound art, while providing techniques for making tools for creating these experiences. This included the fabrication of hand-made microphones and amplifiers for use in installations, performances, and scientific research. The goal of the workshop was to take these tools into the field and use them for artistic investigation and public engagement.





Smart Listening and Craftmanship

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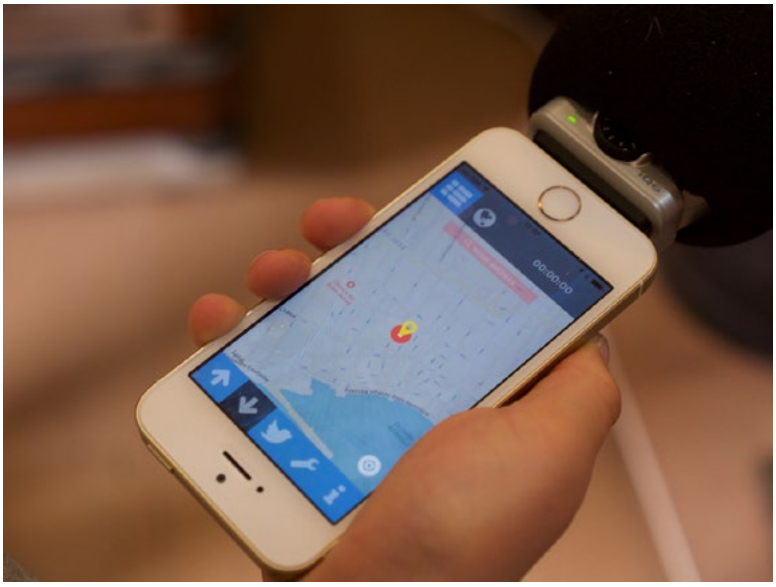
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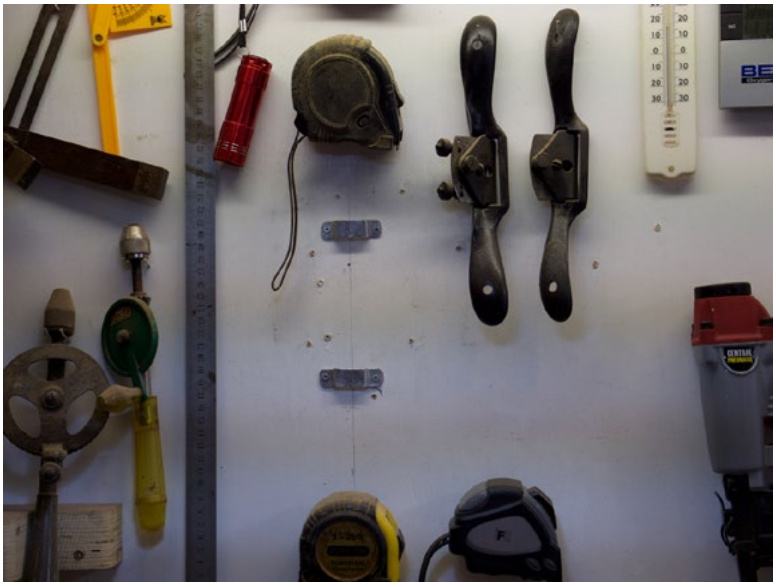

Soundwalks

SOUNDkitchen SOUNDwalk – Ponta Delgada

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1. Introduction

SOUNDkitchen are interested in encouraging people to engage with their sound environment. Since 2013, we have been devising and leading SOUNDwalks that provide unique opportunities for participants to actively listen to the sounds around them.

Guided by the SOUNDkitchen collective, these walks typically involve simple 'ear cleaning' exercises designed to draw attention to different sonic features particular to the location. We are also interested in extending the walker's listening abilities, by augmenting the natural hearing range through the use of audio technology. These 'augmented listening' points may include listening to recorded audio tracks that present recordings from locations at different times of day, night or year. We might transport listeners to visible landmarks such as inside a church or onto the roof of a distant building. We also use carefully placed microphones to allow walkers to hear hidden sounds from locations that are usually inaccessible such as under water, high in the branches of trees, or inside objects.

Previous SOUNDwalks have ranged from 40 – 90 minutes' duration. The maximum group size for our walks is usually set at 12 people. Walkers are sent download links to recorded audio tracks in advance and requested to bring a device and headphones with them to listen to the tracks. We also have a number of MP3 players and headphones, which we lend to those who require them. SOUNDkitchen members own a variety of different microphones including hydrophones, contact microphones, electromagnetic coil pickups and condensers that we deploy on location. The live signal from the microphones is accessed via a portable recording device and a number of battery powered headphone splitter amplifiers, enabling walkers to plug in their headphones and listen simultaneously.

2. Research and Development

The creation of each SOUNDwalk usually involves an extensive period of research and development in and around the area where the walk is located. This typically spans several weeks

and includes exploring and listening to the environment, planning and conducting field recording trips and delving into historical, geographical and cultural aspects of the area.

In developing the Ponta Delgada soundwalk, we both spent a few days prior to the *Invisible Places* conference exploring and making field recordings around the island of São Miguel. Despite this relatively short research period, with the help of the knowledge of local residents, guide books and maps we were able to visit a variety of locations and learn about the geography, geology, wildlife and culture of the island. These field trips took us to Porto Formoso beach on the north coast, Caloura harbour on the south coast, the Calderas Lagoa do Fogo and Lagoa de São Brăs amongst others. Time was also spent in Ponta Delgada, listening and recording in the town centre, the Marina and the area around the University of the Azores.

3. The SOUNDwalk

In response to our research, the conference location and the time constraints of the programme, we devised a route for the walk that led delegates from the grounds of the University of The Azores through the streets of Ponta Delgada to the sea front. The town is located on the south coast of the island and walkers listened to the varied soundscape of narrow cobbled streets, the market, subterranean car parks and the marina. The duration of the walk was 45 minutes; the route is highlighted in Figure 1 and Table 1.

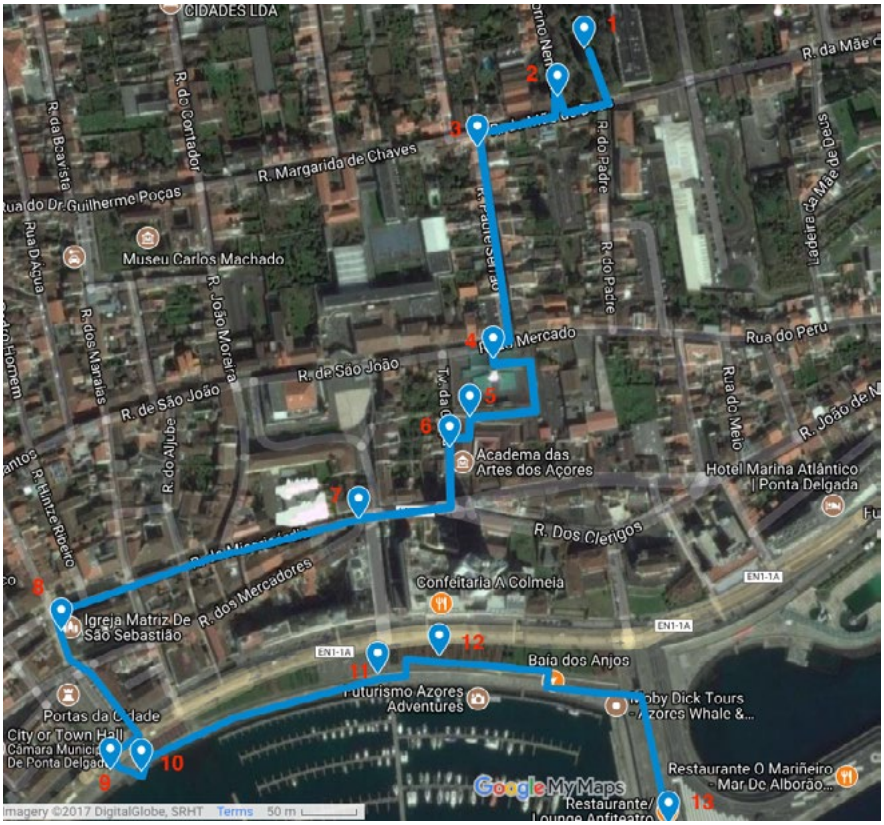

Figure 1. Map outlining route of the Ponta Delgada SOUNDwalk.

The walk began at the ornamental pond in the grounds of University of the Azores with the first augmented listening point; here listeners were given the opportunity to tune into the sounds of underwater aquatic life through the use of hydrophones. The hydrophones also picked up the bass frequencies of nearby traffic, which was a surprising addition to this soundscape. After a few moments to relax and reflect the group was led in silence to point 2 on the map, a short detour into a covered acoustic, a passage beneath a building. Transitioning in and out of this space allowed the walkers to observe the effect of architecture and the built environment on the behaviour of sound and our perception of it.

Table 1. Focus points of the Ponta Delgada SOUNDwalk.

Map ref	Title	Focus
1	Hydrophones in the University of the Azores pond	Live Listening Post
2	Covered Acoustic	Environmental
3	Ear cleaning exercise	Listening Exercise
4	Food market	Environmental
5	Underground car park	Environmental
6	Traffic on cobbles, flagstones	Environmental
7	Romeiros	MP3 Recording
8	Electromagnetic field recordings	MP3 Recording
9	Flagpole contact microphones	Live Listening Post
10	Lagoa do Fogo recording	MP3 Recording
11	Marina alcove listening	Environmental
12	Underground car park	Environmental
13	Porto Formoso Sea	MP3 Recording

At point 3 the walkers were stopped and asked to conduct an ear cleaning exercise. This is a regular feature of a SOUNDkitchen SOUNDwalk that serves as a way of aiding the walker to tune into the environment and focus their concentration on listening. The listening exercises we employ are often based on those of R. M. Schafer (Schafer, 1967). In this instance the group was asked to focus in on the sounds of their own body as they walked single file down a quiet, narrow street. Then, at a certain point, they were asked extend the focus of their listening to the people in front and behind, finally to expanding further—to take in the wider soundscape of the town environment.

At point 4 the walkers were led into the food market, which is not only colourful and busy visually, but also sonically. They were taken on a route that highlighted the multitude of sounds in the small space; recorded music emanating from shop units on the perimeter, stall holders working, talking and shouting, transactions, customers, children: all amplified by the acoustics of the space which was partially covered and enclosed.

On exiting the market the group was led in silence down to an underground car park (point 5 on the map). It is quite common for soundwalks to be led in complete silence from beginning to end. However, with the exception of this particular walk, our walks have been for members of the general public typically inexperienced in the focused environmental listening we demand and unfamiliar with this practice. We ask participants to remain silent during the walk and, as guides, aim to say as little as possible in order to encourage a state of heightened listening. Nevertheless, we have found that occasional interjections to provide instructions, directions and brief explanations are necessary when working with recordings and live microphones and useful in sustaining focus and preventing walkers from feeling alienated.

The underground car park offers an opportunity to enter a completely different acoustic environment, the subterranean world of concrete. On entering this particular car park, other than the sporadic sounds of cars entering or leaving the space, the predominant sound was an air conditioning unit on the far wall. We led the group towards this sound, experiencing a gradual crescendo before moving past to the exit, where they were relieved of the claustrophobic surroundings. Before leaving the car park they were asked to focus their attention on the sound of the air conditioning unit and track how far they could progress down the street outside before the sound became inaudible.

Figure 2. Photos from left to right: Food market (point 4); walking down cobbled street towards point 6; Walking towards the marina listening to electromagnetic sounds (point 8–9).

A *soundmark* is defined by Schafer as a community sound that is unique or possesses qualities which make it specially regarded or noticed by the people in that community (Shafer, 1977). One distinctive soundmark of the town of Ponta Delgada is the sound of car tyres squealing as they turn corners on the cobbled streets. This was the focus of point 6, and we were fortunate that a local driver obliged at just the right moment. On one of the walks we were also able to contrast the sound of the cars with a horse and cart that passed down the cobbled street with its sight-seeing passengers.

Point 7 required the walkers to listen to a track on their MP3 players as they walked down Rua da Misericórdia. This was a recording made the previous day in the same place and walking the same route. It featured the Romeiros, pilgrims who travel the length and breadth of São Miguel in a religious ritual. Having previously encountered them in numerous places on the island, we were lucky to capture a recording of them in Ponta Delgada. Walkers were accompanied by the sound of footsteps, the clicking of walking staff ferrules on the cobbles and the soft repetitive chanting of prayers as the Romeiros headed to theirs and our destination the principal church in the town, Igreja Matrix De São Sebastiao.

By point 8 our route had taken us to the very centre of the town with its many shops and cafes. We drew the walkers' attention to the many electrically powered devices that populate the town centre; ATMs, building intercoms, streetlights, electricity junction boxes, parking meters, telephone boxes etc. As the group walked from the church to the entrance to the marina, they listened to a track that consisted of a montage of electromagnetic field recordings. This revealed the usually inaudible soundscape of the numerous electrical devices that they passed on their route through the town.

The next stop (point 9) was a flagpole marking the entrance to the marina. There was a gentle breeze and to the naked ear one could hear the relatively quiet sound of the flag and the cord moving against the pole. By using contact microphones attached to the flagpole we augmented the walkers' hearing ability to listen to the sound transmitted through the pole, amplified and resonating the metallic structure.

We had entered the Marina at its most western point intending to walk some of the several hundred metres it spans in an easterly direction. To the east, in the distance beyond the marina, we could clearly see the towering caldera of Lagoa do Fogo. Point 10 on the route required the group to walk towards the caldera, listening to a recording made on the shore of Lagoa do Fogo. This transported the walkers into the caldera with the sounds of gentle waves lapping the sandy shore, cries of seagulls from the resident colony and the distant sound of a tour group high on the caldera rim enjoying a photo opportunity.

We paused at point 11, midway along the marina, at the amenities building for residents, whose boats were moored nearby. This long, single story structure features a series of full-length windows recessed in individual alcoves just large enough to accommodate one person. Each member of the group was invited to stand in an alcove to listen to the effect of the architecture on their perception of the soundscape as it provided shelter from the wind and reflections from the glass and stone surrounding them.

Adjacent to the amenities building was an entrance to another underground car park. Point 12 on our route allowed the group to listen to this very long and relatively narrow architectural structure and its reverberant acoustic, while comparing it to their sound memory of the first car park, encountered near the start of the walk.

We emerged from the car park further along the marina right next to a busy restaurant and ascended the stone stairs, enjoying the sounds of slapping sandals and footsteps, to arrive at a huge amphitheatre (point 13). Stopping in the large performance space with the towering bank of raked seating (Figure 3) in front of us, we directed the group to climb the steps through the seating to the very top, where there was a long narrow window stretching the full width of the structure. The window provides a high vantage point to view the sea stretching out to the horizon. Whilst walking this final section the group listened to a recording of sea waves crashing on the shore of Porto Formoso beach on the north coast of São Miguel. This track had a very long fade in, designed to provide a slow crescendo of waves as the walkers ascended the steps, culminating in the revelation of the sea view as they reached the window destination. However, the serendipitous nature of soundwalking, combined with our lack of local knowledge, conspired against us on the first walk and instead of a glorious unhindered sea view the group encountered a very close perspective of an enormous cruise liner.

Figure 3. The Towering Bank.

The walk will be available via a mobile app in 2018 and an edited mix of sounds encountered on the SOUNDwalk is currently available online at: http://soundkitchenuk.org/project/soundwalk-ponta-delgada-sao-miguel

Figure 4. Window to the sea.

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Electromagnetic Field as Medium to Listen to the Texture of the World

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ABSTRACT: Reflecting on how listening to the electromagnetic field could reveal the energetic fabric of our world – and therefore influence our environmental relationship to it –, the paper presents the approach and results of the "Electromagnetic Field / Acoustics Explorations" workshop presented during the conference "Invisible Places" on sound urbanism and sense of place.

KEYWORDS: electromagnetic field, sound in space, sonification, invisible activity, textural presence, noise, information, environmental awareness, listening as social design.

1. Introduction

As a sound artist, I consider that my primary job is to bring awareness to the ubiquitous presence of sound, and the role that it plays in connecting us to the environment. Approaching listening as a medium, but also, as a social design practice, part of my work consists of leading soundwalks in urban environments to creatively engage the local communities with their living surroundings.

By bringing attention to the presence and behaviour of the electromagnetic radiations, the workshop aims to explore how listening to the invisible noise of our urban environment can inform our understanding of it.

2. Report

2.1. Mechanical versus Magnetic Waves

As electromagnetic waves are not mechanical vibrations but electromagnetic radiations, they cannot be directly perceived by the human ears. To be heard, electromagnetic radiations must be converted to pressure waves in order to convey 'readable' information to our ears.

Because sound is a mechanical energy, it uses matter (like air, water or plasma) to transfer information to us. It is mechanical vibrations that our hearing system interprets as significant audio signals. In other words, it is only raw data of vibrations that our ears turn into meaningful symbols of linguistic signs and musical structures. And so, it is the transformation of vibrations into sound that helps us understand the world around us. Based on this method, the process of sonification[1] is used by scientists, researchers and artists, to understand phenomena that exist beyond the scope of our physical senses. With sonification, complex data can be revealed, interpreted and analysed.

2.2. Listening to the invisible

In the attempt to make the listeners aware of the flow of information that sparks and disseminates within the urban environment of the city of Ponta Delgada, the participants were equipped with a professional high frequency analyser and a hand-made amplifier circuit. With these devices, the electromagnetic field is rendered audible, and thus observable in terms of frequency, sonic texture, grain, loudness, volatility, variability and density.

Built for the detection of electric smog in areas of building biology, the professional device (the HF35C Analyser) uses a transducer to transform the electromagnetic fields into acoustics waves and signals, which are detected by an omnidirectional antenna. Designed for the identification of radio waves ranging from 800Mhz to 2.5 GHz, the analyser is particularly

1. Sonification is the use of non-speech audio to convey information or perceptualize data.

relevant to detect cellular phones, cordless phones, microwaves, as well as technologies such as WLAN, WIFI, 3G or Bluetooth. Mainly translated into a vocabulary of audio signal pulsations and granular noise textures, the electromagnetic radiations appear to be quite constant in their aspects and constitutions. The Bluetooth signals, for example, render the high steady pitch that we all know very well by now. These signals, when reaching a maximum speed and/or interfering with other signals, start to create – from a textural point of view – interesting granular material: a mix of medium to fine grain particles intertwine in the foreground, while a more fat and gross granular texture lies in the background. Other propagations like the DECT[2] (cordless telephones) generally delivers a repetitive thick 'beep. beep – beep / beep.beep – beep' signal that overlaps a more detached 'tak.tak / tak.tak' sound, recalling some kind of hypnotic techno beat from the 90's, twisted with the minimal rawness of the electromagnetic field's idiosyncratic style. Quite sensitive to other signals, the DECT radiations are volatile and can accumulate pollution from other near signals, adding significant power to their original output. The DECT radiations are the most prominent in Ponta Delgada. Their pollution is very present and can be very intense; especially nearby hotels, banks, institutional buildings, and sometimes churches. The reason for that are the security systems. Used by public buildings, but also by private consumers, those security systems are the number one source of electromagnetic smog in the small city of Ponta Delgada. Spreading within a radius of 4 to 5 meters from their sources, the DETC radiations can easily investigate the whole streets. For example, the street 'Beco Jardim Antonio Borges' with its fifty rooms hotel, and parking, located nearby a bank and the post office, renders an impressive amount of DECT radiations. Some measurements have shown quite dramatic results, even at more than 5 meters from the hotel and parking spaces. Strong DECT radiations are also present in dilapidated walls and other run-down structures. The frequency radiations seem to agglomerate in cracks, crevices and clefts like insects and moulds.

Another repetitive, and volatile pulse-pattern, is the one of the GSM signals from mobile phones. Allocated between 900 MHz to 1800MHz, the cellular audio signals render a consistent 'morse code' that displays a quite aggressive character. The oppressive effect is mainly due to the general loudness of the signals. Also, the 'ta.-ta.-ta.-ta.-ta.-ta.-ta.-ta.-ta.-ta.-ta.-' characteristic of these audio signals, as it rarely evolves into other rhythms, makes it very difficult to listen more than a few minutes. These two features (loudness and fast repetition) make the GSM signals one of the most repulsive to my ears. Only when the signals get coupled with other close radiations, can some variations then happen, offering some relief from their frontal repetitive pattern.

The WLAN also features a repetitive pattern that displays a sequence of 'pa.pa.pa.pa.pa. pa.pa.pa.pa.pa'; but on the contrary to the other ones, this one has almost no granularity.

2. Digital Enhanced Cordless Telecommunications (usually known by the acronym DECT), is a standard primarily used for creating cordless telephone systems.

Each 'pa' signal is clear, compact and dry. Their loudness rarely evolves into a too high volume, and their impulses are quite soft. There is something almost mechanical about the WLAN signal that takes away the general aesthetic of electromagnetic radiations. There is not much to expect from those signals, as their patterns, tones and behaviors are very constant and demonstrate no particular creative impulse. WLAN appears therefore as pretty flat and redundant. It only gets interesting when it mixes with other signals, for it accumulates more texture, density or richness in the background, contrasting even more with its mechanical materiality.

Another electromagnetic signal that I am particularly a fan of, is the one from some radars. Evolving in the higher frequencies, they demonstrate an elegancy close to 'micro-sound'[3] and other compositional works from Alva Noto and Ryoji Ikeda. Fine, discrete and fragile, these particles of radiations are the delicacy of the electromagnetic field. Their graceful presences demonstrate a politeness toward the listener. To the contrary of the aggressive GSM, the radars radiations are exquisite to my ears. Unfortunately, I could not find many of these delicate tonalities and sparkling particles in Ponta Delgada's city center. It is by the harbour that most of the radar waves could be heard; but even so, not many of those microtonal radiations were to be found there.

To get to hear the refined world of electromagnetic micro-particles, the participants then needed to use the other device: the hand-made one. Specially build for the soundwalk, the device uses a capsule microphone amplified by the LM386 chip, with an additional gain. Amplifying the electric currents and their electromagnetic radiations, the device allows the participants to listen to the micro sparks of electric and electromagnetic waves. With this device, the capsule microphone acts as the antenna to capture the electric radiations. And so, it is by scanning screens of mobile phones, computers and other public machines (like parking meters) with the capsule microphone that the device reveals the flares, radiating dots and scintillations of the electromagnetic field.

2.3. Implications in listening

The two devices and their respective sonification of the electromagnetic field involve different attitudes in listening. The professional HF35C Analyser allows for a larger reading of space than the hand-made amplifying device. With the HF35C Analyser, the body's gestures can scan buildings, streets and the environment in an intuitive and almost playful way; thus, enabling a more global mapping of the various electromagnetic waves in the different urban zones of Ponta Delgada city.

The hand-made amplifier device, on the other hand, brings a more gentle and focused attention in listening. Implying the use of headphones to enter the world of subtle micro

3. Microsound are all the sounds that are below the time scale of musical notes. They usually last less than one-tenth of a second.

particles, the device immediately generates a more intimate type of listening. Changing the posture of the body from extravert to an almost introvert position, the hand-made amplifier suggests a more private listening, which makes it possible to observe the tiny sounds that evaporate and mutate like dust in the air.

3. Conclusion

Listening to the sonification of the electromagnetic radiations – and their propagation in space-, allows us to become aware of the invisible and textural electromagnetic energy that cohabits within our urban environment and lives. Superimposing their granular existence, and microtonal language over the streets and buildings, and through all of our communication tools and toys, the electromagnetic radiations navigate the vacuum of the world by using their own routes, waves, lines, and gathering rules. They do not relate to matter as we do. Therefore, they pass – and trespass – our concrete walls, as they do with our fleshy body and structural bones.

Becoming aware of their presence, it's opening our selves to the realms of energy that exist beyond the frontiers of our eyes. It participates in "reimagining form so that it resists the conventional objectification of the material world" (Anunas and Ingold, 2013). As Sufi master Pir Vilayat Inayat Khan expresses it, "to step beyond the physical plane, one has to learn to remark the form beyond the substance; and enter a whole world of forms beyond the world of substance". Listening to the world around us, contributes to connecting us

to the vibratory energy of sound, and thus partakes in reshaping our understanding of it. Tuning our ears to the invisible radiations that animate the background of our world, is to consciously observe the texture that interconnects each of us, and our implication in it.

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Island Nex(us) – Arquipélago

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ABSTRACT: Island Nex(us):Arquipélago is an augmented reality soundwalk present at Invisible Places 2017 in Ponta Delgada, Azores, Portugal.

Island Nex(us):Arquipélago connects the community of São Miguel island with the sounds and stories of island communities in the Asia Pacific region who are facing ramifications of climate change. This soundwalk will enable people a different and unique experience of their surroundings, and through this dynamic, present difficult issues of climate change in an interactive and immersive way. This report describes the technical details of the implementation, the creative process and future developments.

1. Introduction

"Soundscape composition is as much a comment on the environment as it is a revelation of the composer's sonic visions, experiences, and attitudes towards the soundscape. Audio technology allows us as composers to sort out the many impressions that we encounter in an often chaotic, difficult sound world. If "listening is as much a 'material' for the composer as the sounds themselves" (Katherine Norman), then daily sound impressions play a significant role in the compositional process itself."

Linking Soundscape Composition and Acoustic Ecology by Hildegard Westerkamp

The possibility of creating new forms of interaction between people and their environment is an important factor of connection at multiple layers of dynamics – social, cultural, political, environmental – in the Anthropocene era. Our detachment from natural rhythms and cycles implies a significant impact in the way Nature shapes itself. Not fully understanding the consequences and balancing our needs leads to a significant human impact on the Earth's geology and ecosystems. These new forms of interaction foster the awareness over these impacts and purpose ways of researching and working with a deeper knowledge and understanding of our environments.

Island Nex(us):Arquipélago is an effort to combine both engineering advances with artistic practices and explore the topic of acoustic ecology. It investigates the relation with our soundscapes. Collecting sound field recordings, an aural mapping is created to guide participants through a series of 39 chapters connected to Asia Pacific regions.

2. Soundwalking

Soundwalk is a process of active listening, where the goal is to listen to the environment and expose the ears to every sound around us no matter where we are. This process brings forward the proposition of a different perception of the environment, one that accounts for the soundscape, and thus, one that goes beyond the visual capabilities. The new perception requires the listener to be aware of its surroundings, to be able to identify and characterize a whole spectrum of sounds and above all its relation with them.

An augmented reality soundwalk builds on top of this notion to explore other realms of perception and awareness. The contrast between what is listen and what is seen can be a great tool to indulge people in interacting with information that would not happen otherwise.

Feedback from Island Nex(us):Arquipélago participants shows precisely this behavior. When presented with strange sounds to the surroundings, their attention and interest became higher to listen and explore new sounds and stories at the same time their appreciation and sensitivity towards the soundscape and landscape that surrounded them was also higher.

3. Mapping

Ponta Delgada was built on the slope terrain that characterizes the typical geography of the island and the whole Azores archipelago. It also resembles the traits of a city where the community relies on the ocean and sea activities: the big harbour, the fisherman community, the weather.

A proposed mapped of 39 locations was created to lead participants from the university campus to the harbour. There was no intention to force participants to follow this particular path, but in fact give them the time to listen to each of the recordings and the city soundscapes.

There was nevertheless a narrative intent to walk the listeners through different soundscapes. In the university campus, recordings and sounds recorded were mostly facts related with the tribal communities and cultural manifestations of the Asia Pacific regions, particularly the islands of Vanuatu. The relation with water and the importance of this element to the way tribes lived their personal lives and communities' dynamics. The impact of climate change on both geographic level and in the cultural heritage of these people. Walking closer to the harbour, to the sea level, new and different sounds appear. Just as participants go down the slope towards the water, these sounds reflect that descent to utterly and detailed sounds of aquatic environments. Shrimps, shells, whales and other animals that are also affect by the impact of climate changes.

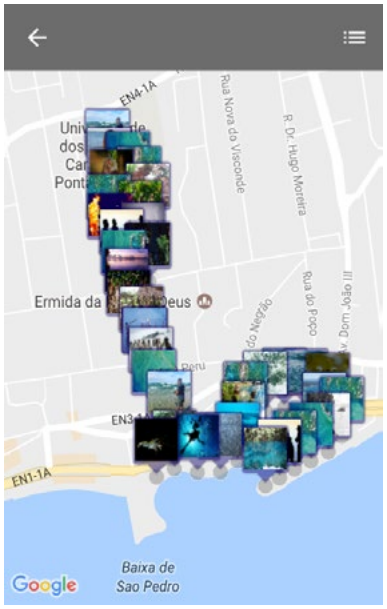

Figure 1. Echoes.xyz full map.

Figure 2. University Campus map.

Figure 3. Harbour map.

4. Implementation

Island Nex(us):Arquipélago was implemented using Echos.xyz, an application used to create and explore immersive geolocated experiences and programmed to map (tag) certain places, careful selected for their important surroundings, cultural heritage and feasible pathway. When experienced on location, these geolocated soundscapes are linked with actual surroundings, offering the possibility to perceive the soundscapes differently, through active listening.

In Ponta Delgada, the 3-D binaural soundscapes were based on environmental field recordings (both aquatic and terrestrial), cultural ceremonies and community collaborations that will be composed into dynamic soundscapes revealing the ecological interconnections inherent in all of us.

For the binaural recordings, a 3DIO Free Space Pro II microphone set and hydrophones were used. Since the time available during the conference was quite short, the plan was to spend the first day visiting the city and conceiving a practical and interesting map for the storytelling.

During the conference' days people were be able to access the soundscapes at any time of day or night, listening either in groups or independently.

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Photos

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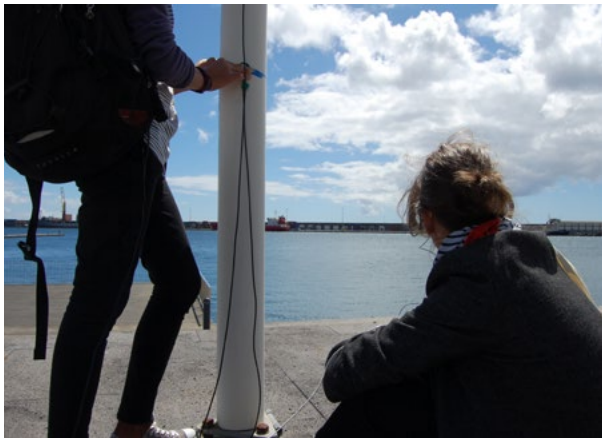

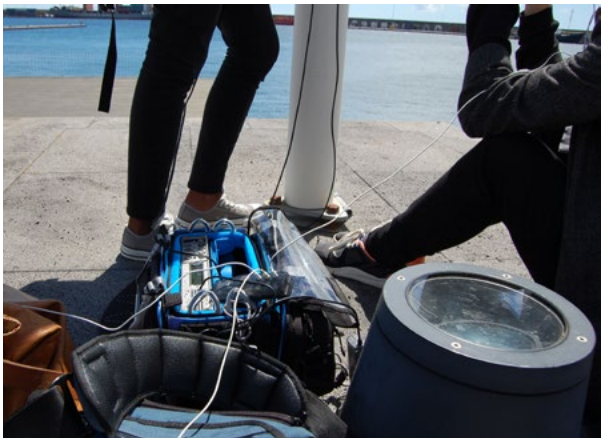

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