NOISIFICATION
Listening to the abat-voix

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ABSTRACT

The *vibration-environment* is a term that conceives sound as an immersive scenario. As an ecology, it is constantly producing relationships between auditors and sources. Sound is understood in this research as a medium or a trace, a matter of cohabitation and as a sharing of a common space.

Focusing on anthropogenic sounds, the research question is about the terms in which the vibration-environment is determined, designed and assembled —the ways in which humans produce noise. Thus, 'noise', as a 'condition' inherent to the vibration-environment, is constantly at the backdrop. This 'condition' is what eventually stands as the questioned element within this thesis.

As a starting point, a series of references about cultural implications of *sound in space* situate audible phenomena as an ethereal substance, which has been connoted as a sacred element and as ungraspable matter —especially when the source of the sound is unknown or, in relation to the *acousmatic* term, invisible.

At the same time, reverberation and echoes exemplify the physical particularities of sound in relation to space and architecture, bringing as well a magical dimension widely used in music and religion.

In close relationship to this, the *abat-voix*, as a surface used in churches to direct priests' voices towards the public to make them distinct, becomes a clear example of sound deployment within a political dimension. Thus, *listening to the abat-voix* refers to the questioning of the vibration-environment and the questioning of the relationships between noise and the physical and contextual vibrations occupying spaces and bodies.

This approach sets a crucial aim within my practice. *Noisification* defines a process that aims to intervene in situations with specific contextual and political significance. *Mise en abyme*, reflection, illusion and mirage become strategies to emphasise the relationship with the sound and with anthropogenic soundscapes in order to trigger a different form of exchange with the recognised sources.

Using loudspeakers becomes my main methodology to manipulate and represent sound. It constitutes a process of breaking bonds between the audible and its source and therefore a process of hiding the source. Such methodology performs a chase for acousmatic sounds —and *acousmatic listening*— and therefore for invisible ethereal matter. *Noisification* is a chase for fiction and for alternatives to the noise.

CONTENTS

INTRODUCTION. NOISE

Crises can also be expressed through sound, and specifically through noise, which functions perfectly as an economy of disruption.[1]

My parents' house is very close to a road. When they bought that house in the nineteen-eighties it was a small road. After some years it became a four-lane highway. It has progressively become more and more busy and more noisy. In the last few months I have been frequently thinking that everywhere I go I am immersed in the same background noise. On each spot there are specific particularities. For instance, the room where I now live faces the railway and thus, periodically, loud roars of a few seconds in length reach inside. Nevertheless, as a backdrop, the continuous hiss of a not-so-far-away highway embraces this particularity. It is like being immersed in a constant environmental vibration. The highway that I have been hearing my whole life and the new highways I listen to at this moment become parts of the same landscape, the same vibration-environment. In this sense, vibration is understood as generating a landscape, a soundscape, the sonic environment. How is this contemporary vibration determined, designed and assembled? Under which ideological framework are we manufacturing this environment, this vibration-environment?

We are predetermined to figure out every direction a sound comes from. Hearing means an information-interaction process with the environment, to perceive it, to be part of it and to react to it. Hearing becomes ecology. It does fabricate a relation between subjects

1 Sara Nadal-Melsió, *Allora and Calzadilla*, Barcelona: Fundació Antoni Tàpies, 2018, p. 15.

through the fabrication of a relation with the sensible reality.

> Hearing is concerned with interiors, vision is concerned with surfaces; hearing tends toward subjectivity, vision tends toward objectivity; hearing is a sense that immerses us in the world, vision is a sense that removes us from it.[2]

Through this quote by Jonathan Sterne, the narrators of *Navigating noise at Neem. Dialogues Between Anthropology and Climate Science on the Spectres of Sound*[3] conclude their essay about their experience as an anthropologist and a climatologist on an ice core drilling in Greenland. They work within a team analysing information obtained out of the accumulated glacial ice layers. They narrate how the different soundscapes of the drilling camp become trace, signal and information in many ways through the different processes of the camp's activity. They conclude that 'human sensorium has to be understood as a dynamic whole, where seeing cannot be hierarchically separated from hearing'[4].

This approach summarises what is the main subject of this thesis. It aims to reflect on the particularities of hearing, through sound as ecology, as an oblique methodology in itself, and aims to sketch a sonic epistemology, and this epistemologies' political and social dimension. It approaches sound not as an isolated phenomenon but in close relation with specific sources.

2 Jonathan Sterne, *The Audible Past: Cultural origins of Sound Reproduction*, Durham, NC: Duke University Press, 2003, p. 15.

3 Martin Skrydstrup, Thomas Laepple, '*Navigating noise at Neem. Dialogues Between Anthropology and Climate Science on the Spectres of Sound*', *Navigating noise*. Edited by Nathanja van Dijk, Kerstin Ergenzinger, Christian Kassung, Sebastian Schwesinger, Köln: Contributors and Verlag der Buchhandlung Walther König, 2017, p. 214.

4 Ibid., p. 214.

With regard to basic orientation, the visual provides more reliable information to most humans. Besides this, there exists in our society a certain cultural bias of the senses. Information, communication and knowledge are primarily based on the visual. However, the contemporary, highly technologised world is not exclusively visually mediated. Sound designers are constantly developing new vibration-environments implied in all sorts of infrastructures. For example, electric car developers are now obliged to include identifiable sounds in their vehicles and environmental noise has already been, for few decades, a cause of increasing concern on a large-scale.

These instances take place at a time when our impact on the environment has become critical. The *anthropocene*, as a new geological epoch[5], appears as a need to outline our uncontrolled influence on the Earth. *Capitalocene*[6] more specifically determines neoliberal global economy as the agent responsible for triggering an overall phenomenal force crucial in the development of the current ecological crisis.

5 'In a single lifetime we have grown into a phenomenal global force. We move more sediment and rock annually than all natural processes such as erosion and rivers. We manage three quarters of all land outside the ice sheets. Greenhouse gas levels this high have not been seen for over one million years. Temperatures are increasing. We have made a hole in the ozone layer. We are losing biodiversity. Many of the world's deltas are sinking due damming, mining, and other causes. Sea level is rising. Ocean acidification is a real threat. We are altering Earth's natural cycles. We have entered the Anthropocene, a new geological epoch dominated by humanity.' Globaïa, *Welcome to the Anthropocene*, 2012, digital video, 3:28, from the website *Welcome to the Anthropocene*, http://www.anthropocene.info/short-films.php. accessed April 29, 2018.

6 '... Capitalocene —the age of the capital— ... has the advantage of naming the culprit, sourcing climate change not in species being, but within the complex and interrelated processes of the global-scale, world-historical, and politico-economic organisation of modern capitalism stretched over centuries of enclosures, colonialisms, industrializations, and globalizations.' T. J. Demos, *Against the Anthropocene. Visual Culture and Environment Today*, Berlin: Sternberg Press, 2017, p. 86.

'A sound or sounds, especially when it is unwanted, unpleasant, or loud' or 'any bad change in a signal, especially in a signal produced by an electronic device' or 'unexplained or unexpected information in a sample that is not useful and that can be ignored'[7]. The manifold connotations in noise bring about a complex background that surpasses sound itself. However, noise still bears a negative remnant. It could have two Latin origins: *nausea* (sea-sickness) or *noxia* (hurt, harm, damage, injury).[8]

Thereby, questioning the contemporary context is at the core of this thesis. The question I seek through sound in space is a question about our relationship with the extensive, socially generated reality. *In space* refers not only to an environmental or neutral architectural space but also to a contextual space, a *social space*. Tackling contemporary social sound in space brings, in my view, the necessity to think about the environmental crisis and the role of sound in such anthropogenic global influence; the European Commission's *Green Paper on Future Noise Policy*[9] declares; '[...] the sources of environmental noise are not of local origin'. This means that, for instance, we could actually drive from my home city's highway in Spain to Amsterdam's ring road —and beyond— without experiencing any substantial shift within an actually common general soundscape.

Nevertheless, attempting to increase general responsibility towards human interference on reality brings with it the problematic of theoretically conceived limits regarding which interferences are to be preserved and which are to be stopped —the target

7 https://dictionary.cambridge.org/dictionary/english/noise accessed March 12, 2018.

8 https://en.wiktionary.org/wiki/noise accessed March 12, 2018.

9 *Green Paper on Future Noise Policy*, Brussels: European Commission, 1996, http://aei.pitt.edu/1204/1/noise_gp_COM_96_540.pdf accessed April 30, 2018.

setting. In the realm of sound, this issue has problematised, since their origins, the fields of *soundscape design* and *acoustic ecology*. It is a gap embedded in the ambiguity and subjectivity of 'noise' as a term and in the biased confrontation between 'nature' and the 'anthropogenic'. If we adopt a formal point of view in order to distinguish musical sounds from noise, the sound of a far-away highway coming through the windows in the living room would have the same status as the sound of a distant waterfall. However, noise goes beyond that formal significance.

The proposed framework and inquiries will be researched through three parts that relate to physical processes of sound. *Vibration* will develop concepts around ethereal phenomenon triggering symbolisations of sound as cosmological matter. *Diffusion* explains the behaviour of sound in relation to architecture and space. Links between mysticism, religion, echoes and reverberation settles a grounding to think about contemporary political implications in architecture, infrastructure and noise. The last part, *Resonance* aims to outline strategies for irrupting/disrupting perceptive processes focusing around noise and sound in space as a way of questioning specific contextual situations. *Resonance* acts as a personal statement within my practice.

I VIBRATION

Continuous quick, slight shaking movement.[10]

ETHEREAL MATTER

By tackling the scope of sound in space I am raising a set of questions, whose starting point is related to the biological process of perceptual phenomenon; sounds, as scent or colour are perceivable sensations linked to factual physical processes, although without any apparent physical consistency.

Sound refers to the perception of vibration, in the form of waves, produced by changes in matter. Scents are complex compounds of gasses perceived by the sense of olfaction. Colour refers to some properties in the way we perceive through the eye the electromagnetic radiation waves reflected by objects. Sound, scent and colour are perceptible experiences, immaterial physical processes in opposition to solid, tangible and haptic matter.

Seth Horowitz, paraphrasing the authors of *Advances in the neural bases of orientation and navigation*[11], differentiates between *telesensory* systems and the *endosensory* systems.

> The telesensory systems such as vision, hearing, and smell gather information about the environment separate from the navigator's body, whereas endosensory systems such as taste, touch, and

10 https://dictionary.cambridge.org/dictionary/english/vibration accessed April 30, 2018.

11 J. A. Murray, J. Estepp, S. D. Cain, '*Advances in the neural bases of orientation and navigation*', Integrative and Comparative Biology, Volume 46, Issue 6, 2006, p. 871-879.

> proprioception (awareness of the relative position and interactions between muscles and bones) [...].[12]

Upon the comparison between these two categories (intangible versus solid matter, or *telesensory* and *endosensory*) arises a question about the different ways in which we perceive ethereal and solid matter. How do we psychologically organise, identify and interpret immaterial phenomena? There exists the possibility to corroborate the existence of a physical object by literally holding, grasping or weighing it. Feeling its presence through more than one sensitive channel, to be aware that the thing is not just an illusion, especially when touching, which should be the sense that brings most powerful feelings about something being really there.

However, vibration, light waves, or gasses cannot be held, grasped, or weighed; just heard, seen, or smelt, and there is never corroboration from another sense.

> The ear is the organ of the unverifiable, the 'unproven'. The moment of the appearing of sound is also the moment of the disappearance. The short-term auditory memory is unable to contain it and, after few seconds, lets it go. Hearing is accursed: it is doomed to forge certainties out of evanescence.[13]

We can just sometimes corroborate the body that holds the colour, the cause that dissipates scent or the source that triggers the sound.

12 Seth Horowitz, *'Trying to hear the way. A neuroethological Perspective on Noise and Signal in Auditory Navigation' Navigating noise*, op. cit., p. 222.

13 François J. Bonnet, *'...Exeunt All Humans?', Florian Hecker – Formulations*, edited by Robin Mackay, London: Koening Books, 2016, p. 20.

Biologically the senses were developed as a way to manage environmental information, that is to say, 'affordance'[14] and orientational processes, in order to survive.

> [H]earing was forged through hundreds of millions of years of natural selection as countless lineages perished from detecting a predator too late, finding no mate, or overlooking a meal hidden nearby [...].[15]

Besides this evolution of the senses, the emotional aspect remains indissoluble to perception. This would have been developed together with different cultural constructions in relation to nature. Immaterial phenomena have historically had a particular emotional response in different cultures. They can bring about a wide range of emotional responses along with pleasure, although when their cause or source remains unidentified they can trigger uncertainty and fear.

This is especially intensified with sound. Culturally, this biological and emotional response based on the unknown source of perception has been strongly linked to the sublime, spirituality and mystery. Lightning and thunder have perhaps stood as the prime paradigm of a most astonishing event (which has recurrently been similarly embodied in different sorts of divinities in different cultures, i.e. Zeus, Jupiter, Thor, etc.)

Focusing on sound, it is probably because of '[...] the verificatory character of hearing and its need of a

14 'The concept of *affordance* aims to capture a more active and meditational relationship between organism, environment, and perception than that denoted by passive notions of «values» or «properties» (as in «I perceive the properties of an object»). According to James Gibson, perception of the environment is perception of affordances. The environment presents opportunities for, and constraints upon, action, which organisms actively tune in to discover' Christopher Haworth, *Analysis-Synthesis: Cultural and Environmental Listening in Florian Hecker's Affordance*', *Florian Hecker – Formulations*, op cit., p. 211.

15 Robert Jourdain, *Music, the brain and Ecstasy: How music Captures our Imagination,* New York: Harper Collins, 2002, p. 2.

body'[16] that unidentifiable sounds become 'the cries and songs of inanimate, legendary beings.'[17]

In this realm the references are endless, especially references that rely on sound as the source of the divine creation of the universe; 'In the beginning was the Word, and the Word was with God, and the Word was God'[18], 'the echo of the music went out into the Void, and it was not void [...] And he showed to them a vision, giving to them sight where before was only hearing; and they saw a new World made visible before them, and it was globed amid the Void'.[19]

Besides the incarnation of Gods and the connections with the origin of the universe there is also the relationship between ghosts and mythology and immaterial, identifiable phenomena, i.e. the *ignis fatuus* (*Will-o'-the-wisp*), like those of the myth about the tomb of St. James in Compostela;

> According to the legend, one night, when the hermit Paio was praying, he began to see lights in the sky that seemed to indicate some place not far away. Guided by these angelic choirs, the hermit Paio walked until that point where he finally discovered the tomb containing the remains of the Apostle St. James.[20]

Or the revelation of St. Jerome to St. Augustine;

> A light and sweet odour came into his study and a voice told him that 'he might as soon enclose the

16 Bonnet, *'...Exeunt All Humans?', Florian Hecker – Formulations*, op cit., p. 21.

17 Ibid., p. 20.

18 King James Version, *Holy Bible*, John 1:1.

19 J.R.R. Tolkien, *The Silmarilion*, London: Harper Collins Publishers, 1999, p. 8.

20 http://thewayservices.es/en/churches-of-santiago-de-compostela-san-fiz-de-solovio-the-church-where-it-all-began/ accessed December 5, 2017.

ocean in a small vessel, as soon clasp the whole earth in his fist, as soon halt the movement of the heavens as describe the beatitude of the saints without having experienced it', as the speaker was now doing. When Augustine asked who he was, he replied he was Jerome. Augustine later heard that Jerome had died in Jerusalem at exactly that hour.[21]

There is also the story of the Yakushi-Do temple in Japan where a Dragon ceiling painting seemed to produce itself a cry, and to the Colossi of Memnon in Egypt which had the reputation of 'producing a sound when the first rays of the sun reached it. [...] The dragon still cries, and the Colossus still sings.'[22]

As a matter of fact, previous references could be enclosed under a relevant conception; mentioned examples actually refer to acousmatic sounds or, rather, acousmatic listening. Acousmatic listening alludes to a situation in which the emitting source of the sound is invisible. In the second half of the twentieth century, the term 'acousmatic' was developed in relation to Pierre Schaeffer's *musique concrète*. Musique concrète relies on recorded, manipulated and electronically produced sounds played through electroacoustic transducers —loudspeakers. The term 'acousmatic', 'exhumed by Jérôme Peignot, originally referred to the pupils of Pythagoras, who listened to the teaching of their master without being able to see him, since he was hidden behind a curtain that screened him off from his audience.'[23]

21 Ronald Lightbown, *Sandro Botticelli: Life and Work*, New York: Abbeville Press, 1989.

22 Bonnet, *'...Exeunt All Humans?', Florian Hecker – Formulations*, op cit., p. 19-20.

23 François J. Bonnet, *The order of sounds a sonorous archipelago*, Falmouth: Urbanomic Media LTD, 2016, p. 106-107.

In the field of musique concrète, acousmatic listening aims '[...] to focus on the sound itself qua phenomenal object'[24], meanwhile Pythagoras' case aimed to enhance the communicated semantic information in his speech. However, when applied to environmental perception, acousmatic listening tackles another level of relationships: ethereal phenomena acquire a phantasmagorical dimension, suggestive and evocative.

UNIVERSAL BACKGROUND NOISE

As mentioned, sound, pure vibration, has been often related with the origin and essence of the universe; inscribed in specific cultural instances, sound becomes eternal matter. Similarly, this attribution of universal vibratory substance has been recurrent within different contexts.

> God created the body so that the soul could come to earth to study music so that it could have a better understanding of universal structure. Music can be a model for universal structure because we perceive sound as vibration and if you believe, as I do, that vibration is the key to universal structure you can understand why I make this statement.[25]

American composer La Monte Young explicitly situates vibrational eternal matter within the inspiration of his practice. Similar statements have been associated with minimalism and drone music, where 'music is far more as a fluid matter, an energy, than as the manifestation of a discourse that develops over time'[26] Spanish

24 Ibid., p. 106.

25 La Monte Young, cited by David Toop in *Ocean of sound: Aether Talk, Ambient Sound and Imaginary Worlds*, London: Serpent's Tail, 1995, p. 178.

26 Bonnet, *The order of sounds a sonorous archipelago*, op cit., p. 294.

composer Llorenç Barber would speak of sound as the 'muscle of the universe'.[27]

This conception has direct relations to certain scientific approaches that understand this vibration, this noise as the core of macrocosmic reality.

> In the beginning was the sound. And this sound was so tremendous that we are able to hear its echo until now. The constant noise, even heard by a postmodern ear [...] in the loneliest place on the quietest winter night, is explained by astrophysicists as the echo of the Big Bang.[28]

In the field of western music, noise is conceived as the non-musical. This relates to diaphonic sounds, sounds with non-periodical wave-forms. These sounds lack an identifiable pitch. Noise becomes formal chaos, randomness and unpredictability. Besides, it becomes miscommunication. Noise therefore exists everywhere except in tonal music. The soundscapes are not made of periodic waveforms, neither are they organised.

But of course, noise cannot be conceived just in formal/informal terms. Christian Kassung would affirm; 'noise is the media of sound'[29]. Kassung is inspired by Aristotle, who argued that sounds propagate through the space where particles of air are constantly resonating, producing something similar to what we can hear inside a conch shell[30]. Over noise as a constant

27 '... el mensaje importante no es el hecho de comunicar, sino el valor del sonido en sí mismo como músculo del universo.' Llorenç Barber, *El placer de la escucha*. Madrid: Árdora Ediciones, 2003, p. 54. Translation provided by the author.

28 Jochen Hörisch cited by Christian Kassung in '*Falling Darts, a Lost Submarine and a Blind Man. Notes on the Media History of Navigating through Noise*', *Navigating noise*, op cit., p. 62.

29 Ibid., p. 62.

30 '... for the air imprisoned there is always moving with a proper motion of its own. But sound is something of external origin and is not native to the ear. And this is why it is said that we hear by means of what is empty and resonant, because that by which we hear has air confined with it.' Aristotle cited by Christian Kassung, Ibid., p. 62.

meaningless matter, the message, sound, would arise. Saying that 'noise is the medium of sound' situates noise itself as the backdrop where everything else takes place. This is somehow equivalent to state that noise and vibration are a universal environmental matter; noise becomes the vibration-environment that weaves reality out of randomness.

In this sense, the highway noise melts with a broader meaningless fluidity. It becomes the same, cosmic backdrop but also a daily scenery. Highway noise is a ubiquitous background, a medium for sound. The highway noise becomes meaningless, unheard daily background noise. For Michael Serres, in regard to background noise, he states: 'every message, every cry, every call, every signal must be separated from the hubbub that occupies silence in order to be perceived, to be known, to be exchanged'.[31] This hubbub that occupies silence becomes silence itself. Background noise becomes silence and becomes the 'muscle of the universe'. When John Cage entered the anechoic chamber, moved by a will to experience silence, he ended up listening to his own 'nerve's systematic operation' and his 'blood system'[32]. If biologically we cannot experience silence, silence becomes everything we hear but do not consciously listen to. François J. Bonnet states:

> [i]n any sonorous given context, there exists a threshold of noise beyond which there is silence —that is to say, beyond which sound becomes inaudible. The ear may be able to hear it, but pays no attention to it. Memory lets it go, it leaves no trace.[33]

31 Michael Serres cited by Nathanja van Dijk in '*Wandering Off. In Conversation with Kerstin Ergenzinger and Patricia Pisters*', *Navigating Noise*, op cit., p. 113.

32 John Cage, *Silence*, Middletown, CT: Wesleyan University Press, 1961, p. 13-14.

33 Bonnet. *The order of sounds a sonorous archipelago*, op cit., p. 54.

If 'the identity between noise and silence is obtained when background noise becomes an ogre [...]'[34], then when does noise become an ogre? When is the limit surpassed between daily unheard sonic backdrop and noise as a perturbation? When does noise become 'parasitic perturbation'[35]?

34 Ibid., p. 57.

35 Michael Serres distinguishes in his work *Genesis* between two types of noise; 'background noise' and 'parasitic perturbation'. Van Dijk, '*Wandering Off. In Conversation with Kerstin Ergenzinger and Patricia Pisters*'. *Navigating Noise*, op. cit., p. 113.

II DIFFUSION

The process of spreading into a surrounding substance.[36]

SPACE, ECHOES AND GHOSTS

In addition to the cultural aspects of sound — ephemeral, invisible, unverifiable— the spatial particularities have been at the same time very suggestive in the building of connotations around the sonic. We perceive vibrating energy most of the time when transmitted through the atmosphere. This is somehow a determinant characteristic regarding sound and its perception, its total dependence on the space it flows through, which at a sensible level, becomes very significant. 'When a sound wave interacts with space, it is modified in a very specific way'[37]. The physical, geographical and atmospheric configuration of the space modulates sound embodiment, and this has strongly triggered all sort of associations settled in relation to the actual phenomenon. Regarding what the characteristics of different sorts of spaces are, in addition to what physically exists in that space (the haptic matter that fills the space), we will find very different final configurations, particularities and attitudes of ethereal matters that historically have brought very different connotations and cultural constructions. Raymond Murray Schafer shows in his book *The Tunning of the World* a few examples of cultural reading around acoustic manifestations in space;

36 https://dictionary.cambridge.org/dictionary/english/diffusion accessed April 30, 2018.

37 Kassung, *'Falling darts, a lost submarine and a bling dart', Navigating noise*, op cit., p. 80.

> Echo and reverberation accordingly carry a strong religious symbolism. [...] Echo (in which reflection is distinguishable as a repetition or partial repetition of the original sound) suggests the bouncing of sound off innumerable distant surfaces. It is thus the condition of the many-chambered palace and of the labyrinth. But echo suggest a still deeper mystery. [...] In other words, every reflection implies a doubling of the sound by its own ghost, hidden on the other side of the reflecting surface. This is the world of alter-egos, following and pacing the real world an instant later, mocking its follies. [...] Lucretius, whose philosophy blends science and poetry so skilfully catches something of this magic quality in his description of the echo: 'One voice is dispersed suddenly into many voices... I have even seen places to give back six or seven cries when you uttered one: so did hill to hill themselves buffet back the words and repeat the reverberation. Such places the neighbours imagine to be haunted by goat-foot satyrs and nymphs... [...][38]

SPATIAL TRANSMISSION

The plasticity of sound in combination with surfaces and other physical obstacles and our biological predisposition to identify spatially where the sounds come from shows some hints about how we are particularly influenced by sound in space.

> [A]lmost all of our auditory experience is devoted to identifying things: a faucet dripping, a spoken word, a clarinet's warble.... but evolution's priority was to find out where sounds come from rather than what

38 Raymond Murray Schafer, *The soundscape: our sonic environment and the tuning of the world,* Rochester: Destiny Books, 1994, p. 218-219.

they are. There's not a lot of point in distinguishing the sound of prey or predator when you can't tell which way to approach or flee.[39]

In this regard, music stands as an exploration of the way we perceive sonorous matter through space, emphasising and appropriating the emotional layer that perception delivers. It could actually be conceived as the art of spatial transmission —although historically it has been too focused on a unidirectional source.

Music grounds its aesthetics in listening, which '[...] reveals itself as a phenomenon that deals with movement through space, the resistance of bodies, and the transformation of energy.'[40] This assumption takes into account how the ubiquity of music in social spaces arose after its commodification following Edison's invention of the phonograph in 1897. And how, later, the technical development of studio production and domestic reproduction brought the reinforcement of a 'hyper-spatialising of music.'[41]Ina Blom mentions in her essay *Hecker made me disco*:

> [...] The idea of having a specific «sound», historically new and specific to rock, was essentially spatially oriented, underpinning a host of fantasies concerning the organisation of musical as well as social space. Rock, then, primarily functioned as a quasi-architectural surround or scene maker, the purveyor of a series of distinct atmospheres, which were also an effect of new production methods.[42]

39 Jourdain, *Music, the brain and Ecstasy: How music Captures our Imagination*, op cit., p. 20.

40 Ralf Beil, *Fireworks for the tympanum and the cerebral cortex*, 2007 http://www.macba.cat/PDFs/ralf_beil_janet_cardiff_eng.pdf accessed April 30, 2018.

41 Ina Blom, *'Hecker made me disco', Florian Hecker – Formulations*, op cit., p. 182.

42 Ibid., p. 182.

This approach was especially highlighted in ambient music, which '[...] was basically an extremist expression of the spatialising drive of rock itself. With *Ambient 1: Music for Airports* (1978), Brian Eno sought to design a form of music that could insert itself seamlessly into specific spaces, enhancing the perception of the space as such without disturbing its social functions.'[43]

In relation to the development in music studios mentioned previously, Blom, paraphrasing Peter Wickle, states: 'Notation and linear progress was far less important than the ability to spontaneously add and change elements with the concept of a rhythmical and atmospheric whole'[44]. This seems very significant regarding the way music —art of spatial transmission— has been developed in relation to the environment.

It seems logical to situate the roots of this development in reference to the early pioneer of architectural acoustics, Wallance Clement Sabine. He 'felt that the development of a tonal scale in Europe, rather than in Africa could be ascribed to the differences in living environment. In Europe, prehistoric tribes sought shelter in caves and later constructed increasingly large and reverberant temples and churches. Gregorian chant grew out of the acoustical characteristics of the Gothic cathedrals, and subsequently baroque music was written to accommodate the churches of the time.'[45]

Architectural acoustics scientifically study the physical particularities of sound in space. A very proximate ancient field seeking those particularities, is a forgotten practice that François Bonnet retrieves in his book *The Order of Sounds. A Sonorous Archipelago: echometry*, '[...] the science and art of making echoes; of the making of buildings whose disposition —above

43 Ibid., p. 183.

44 Peter Wickle cited by Ina Blom, *'Hecker made me disco', Florian Hecker – Formulations*, op cit. p. 182-183

45 Marshall Long, *Architectural acoustics*, Burlington: Elseviver Academic Press, 2006, p. 1.

their vaults— favours echoes.'[46] Echometry could thus be regarded as a more precise exploration of spatial transmission, as the exploitation of the plasticity of sound in space. Echometry was intended to seek marvellous acoustics specifically addressed to the construction of sacred discourses.

> [b]ut the resulting theoretical formalisation, echometry, was foreshadowed by religious and doctrinal considerations that authorized the consideration of acoustics at the level of dogma, {...}.[47]

RITUALS: THE ABAT-VOIX

Previous uses of sound in space show how manufactured spatial transmission and sonic environments have been developed as a sensible element within a context, within specific rituals and discourses.

In regard to the field of architectural acoustics it is relevant to bring into discussion a device that somehow exemplifies this idea of acoustics at the service of a discourse. The abat-voix, or sounding board, was created to make sounds of orators clearer. It was developed in churches where the huge resonance of the acoustics made the speeches indiscernible. Placed over the pulpits, the abat-voix 'might be attained by intercepting so much of the sound as escaped behind and echoed in this part of the vaulted roof; as also by giving it right direction.'[48] What the abat-voix shows is a paradigmatic example of explicit political use of sound and

46 'Definition from the so-called Trévoux Dictionnaire Universel François et Latin (the dictionary, itself a synthesis of sixteenth-century dictionaries, was compiled between 1704 and 1771' Bonnet, *The order of sounds. A Sonorous Archipielago*, op cit., p. 28.

47 Ibid, p. 29.

48 John Blackburn, *Description of a Parabolic Sounding Board, erected in Attercliffe Church*, The Philosophical Magazine, 6, 1829.

architectural acoustics. It acts through the sensible; it constitutes discourse through a mediated environment. The abat-voix becomes a paradigm in regard to the manipulation and contextualization of the sensible —sound— merged in a specific ritual, thus, merged in specific political implications.

> [...] the context of presentation of an expressive production of sound, from the tolling of bells on the hour to thunderstorms to concerts, is almost always ritual in nature. [...] In fact, if the ritual bears within it a phrase, this is because it is always the «parergon»[49] of an expressive appearing; it always frames a sensible manifestation, conferring upon it the supplement of sense that can determine it. The ritual is always a means, never an end. Sensible manifestations are always ends, substitutes for sacred ends, 'placeholders'.[50]

If we consider the abat-voix as evidence of the parergon and context or frame that signifies the sensible, in which terms is the contemporary vibration-environment diffused within a specific context? Under what parameters is environmental sound in space circumscribed in social and political implications?

In order to answer these questions there are two different ways in which we could think about the vibration-environment. The first one, as mentioned, would consider sound in space as sensible manifestations inscribed in a parergon. It would be regarded as independent and permanent phenomena, susceptible to trigger an 'ontology of the flux in which sounds are

49 'A «parergon» comes against, beside, and in addition to the «ergon», the work done *fait*, the fact *le fait*, the work, but it does not fall to one side, it touches and cooperates within the operation, from a certain outside.' Jacques Derrida cited by Bonnet in *The order of sounds. A Sonorous Archipielago*, op cit., p. 308.

50 Ibid., p. 308-309.

energetic forces that have to be considered real and mind-independent.'[51] This position conceives sounds as 'separable from its cause'[52], and their statuses are dependent on the context-parergon, 'the sonic can be described as a multi-faceted operator of cultural formations'[53]. Reformulating previous questions regarding the terms in which vibration-environment is diffused within a specific context, what is the abat-voix of the post-industrial soundscape?

51 Felix Gerloff, Sebastian Schwesinger, *'What Does It Mean to Think Sonically? Contours of Noise as Sonic Figure of Thought'*, *Navigating noise*, op cit., p. 175.

52 Ibid., p. 175.

53 Ibid., p. 177.

Previous quotations about autonomy are set in a background around sound art practices and other aesthetic methods regarding the representation of sound —rather than literal environmental sound in space. However, considering sound as independent from the mind as well as independent from human perception becomes a crucial turning point that has to be applied to the environmental noise realm. Sound is an independent phenomenon, it really physically happens. Even if just as a byproduct, it implies specific consequences, and those consequences go beyond human perception. This brings a non-anthropocentric perspective, crucially in regards to the scope of sound within current ecological crisis.

However, conceiving soundscapes in regards to the sources they are composed of, and focusing on sounds that are a direct result of human processes, brings another perspective, which would consider every anthropogenic sound as context itself. The vibration-environment made of human produced sounds becomes an abat-voix within a social, cultural and political context. Environmental sound in space becomes as well inscribed in a ritual. The highway noise that gets into my living room is in a way that contemporary abat-voix. This noise, produced by a specific social process, becomes infrastructural configuration and *dispositif* —'epistemic ensemble of apparatuses [...] [that] delineate the field of possible knowledge and thinking [...]'[54]—.

This reveals a situation that makes it necessary to talk about specific ecological and health dangers on the one hand and, on the other hand, reveals forms that evidence in themselves a social and cultural context, through autonomous formal sounds and through anthropogenic noise respectively. But obviously, these two

54 'Dispositif' is a notion by Michel Foucault mentioned by Felix Gerloff, Sebastian Schwesinger, *'What Does It Mean to Think Sonically? Contours of Noise as Sonic Figure of Thought'*, *Navigating noise*, op cit., p. 177.

aspects are interconnected and cannot be commented on independently of one another.

PARASITIC PERTURBATION

Parasitic perturbation regards noise as 'a disruptive and transformative relational force'[55]. It comes from media theory, however, it is applicable to environmental noise. At first sight, since this perturbation remains invisible it takes part of the background noise, but actually it is constantly on a tightrope; as an inaudible backdrop, it constantly becomes evident perturbation. In this sense, the paradigm of continuous highway faint hum becomes a two-faced element; the meaningless environmental matter and the disruptive and aggressive pollution.

Through previously mentioned non-anthropocentric perspectives, a series of ecological implications are important to mention. Regarding sound as an independent force shows evidently how the acoustic becomes a form of pollution. The most significant damage affects animal species that orientate through acoustic signals. These species are being hugely disturbed and disoriented by anthropogenic noise.

> Baleen whales migrate along hemisphere–spanning routes that have been stable for centuries. Female blue whales would listen for calls of potential mates and others of her species that could travel for thousands of kilometres, relying on the acoustic power of their low-frequency calls and the remarkable ability of underwater sound to propagate across entire oceans. But in the last century, the cacophony of human shipping, sonar, and explosive-based ocean floor mapping exercises,

55 Michael Serres paraphrased by Nathanja van Dijk in '*Wandering Off. In Conversation with Kerstin Ergenzinger and Patricia Pisters*', *Navigating Noise,* op cit., p.113.

> as well as the closely approaching prop noise of eco-tourism 'whale-watching' boats, has narrowed their acoustic active space from thousands to barely 100 kilometres or less[56], driving them from their traditional mating and feeding grounds, and forcing them into unfamiliar and potentially dangerous new areas. The noise of oil platforms, container ships, cruise lines, and submarines arguably harms them as badly as whaling.[57]

In closer relation to highway noise, 'recent studies have demonstrated that even relatively low-intensity, low frequency road noise can contribute to habitat degradation. Studies using a 'phantom road', with speakers playing typical vehicular sounds along an otherwise quiet area, demonstrated that local bird populations actively avoided the area'.[58]

This approach is not of minor importance. Even if just through two examples, those bring a more accurate portrait about the consequences of the anthropogenic noise at a broader scale. It is very significant that, while this is objectively happening, the only way the situation is attempted to be 'fixed' is based on an anthropocentric approach. This 'fixture' aims at concerns contained, as an instance, in the already mentioned *Green Paper on Future Noise Policy*. Even if it obviously damages health, and even contains a risk of deafening —at extreme situations of environmental noise exposure, to what extent are these concerns too

56 Leila T. Hatch et al. cited by Seth Horowitz, '*Trying to hear the way. A neuroethological Perspective on Noise and Signal in Auditory Navigation*' *Navigating noise*, op. cit., p. 220.

57 Nowacek et al. cited by Seth Horowitz, '*Trying to hear the way. A neuroethological Perspective on Noise and Signal in Auditory Navigation*' *Navigating noise*, op. cit., p. 220.

58 McClure et al., Ware et al, cited by Seth Horowitz, '*Trying to hear the way. A neuroethological Perspective on Noise and Signal in Auditory Navigation*' *Navigating noise*, op. cit., p. 229.

focused on anthropocentric subjective facts? Unlike the threat on biodiversity the psychological damage on humans is of a more complex and contextual dimension.

NOISE BARRIERS

Infrastructural noise barriers constructed along the highways next to the residential neighbourhoods take an equivalent role to the one of the abat-voix; although through a totally opposed strategy which, instead of propelling a voice to make it audible, dissipates a voice that evidences a corrupted system. Noise barriers, as well as the abat-voix, attempt to fix the sonic under a specific political and ideological regime. In this sense the noise barriers are paradigms, materialisations, in themselves, of a social and economic process. Infrastructure, through its complex technicality, supports strongly that way of social and economic organisation.

Noise barriers actually imply strong contradictions. Since sound appears as a byproduct of other processes, noise becomes a side effect and the noise wall becomes the remedy that tries to keep a side effect —noise— in control. Road traffic generates a large amount of low frequencies that are very difficult to dissipate, and many noise barriers reflect noise instead of absorbing it. Thus, noise is just diminished in a specific direction but amplified in another. In this sense noise barriers work in identical acoustic terms to the abat-voix. Besides the fact that they are not very efficient, they imply in themselves another set of side effects. Identified with dystopian landscapes, a noise barrier is still an impersonal, impassable, opaque wall marking a territory.

III RESONANCE

The production of a sound as a result of vibration (= shaking) of another object.[59]

SOUND BEHIND A WALL

When I arrived at my room in The Netherlands in 2016 at the end of the summer, the only thing I could see through the big window were some leafy trees. Soon I heard train noises and I instantly thought that the railway was behind the trees. Actually I could only guess that the railway was just behind because I could not really see it and I did not have any information about the area. Similarly I could guess that birds and the highway were not very far when I heard what I identified as birdsongs and highway hum. In autumn, the trees lost their leaves and then I could corroborate in synchrony the event (train passing) and the sonic trace (train noises). It was disappointingly evident. Hearing a train and being able to just see a curtain of trees brought me a nice feeling. Maybe because I could never totally assume that the noise was a train and I could easily imagine something different behind it. As mentioned, a great deal of the soundscape, as well as the highway hum at my parents' living room, is acousmatic —in an urban context we are exposed to many different acoustic signals, however the event triggering those is only sometimes directly visible. Paradigmatically, noise barriers, when opaque, create a specific acousmatic situation. Behind a wall the highway hum becomes unproven and ethereal.

59 https://dictionary.cambridge.org/dictionary/english/resonance accessed April 30, 2018.

In the last months I have been working with multi-channel surround sounds composed of recorded elements that are reiterative in the places where the experiments take place. The first draft[60] was displayed in a huge building fitted with a heating system based on warmed air distributed through the space by large fans. This process constitutes the main soundscape inside the building. Based on a continuous noise, it automatically becomes unnoticed background noise. When the thermostat triggers the system off and on again this background noise turns for a moment into foreground. Recording and playing back fan noises, at a different rate through different speakers located around the space, intensified the background-foreground process. But more specifically, playing at different rates through the different speaker locations generated an unusual acoustic situation.

The second proposal[61] took place in a building which was abandoned together with the dismantling of the railway infrastructure in 1990 in my home city, Seville. The tower, whose original function was to take care of the railroad switch, has been a symbolic witness of significant changes in the city. The relationship with the landscape is very evident due to the morphology of the space itself, designed to control, watch and therefore contemplate the outside. With that starting point, and through the same exercise of pre-listening in the specific space, this project put the focus on the outdoor surrounding soundscape. This was mainly defined by traffic noise —what remained after the railway was a busy road. Thus, the recorded traffic noise which was played back through six loudspeakers merged with the actual traffic noise that came inside through the

60 Four channel audio, 06:59 min, shelf, fans, variable dimensions. Project developed in November 2017 in Sandberg Instituut's assembly hall, Amsterdam.

61 Six channel audio, 19:18 min variable dimensions. Project developed in December 2017 in La Torre Encendida, Seville.

windows. The location of the loudspeakers in the middle of a relatively small room was shortening the distance between listener and the event emitting the noise; the outside soundscape was brought inside.

The last installation[62] started with a recording made at a specific location. The microphone, situated in one place, registered what happened in that spot for one hour. Then, it was played back from the inside of a container located next to that specific place where the recording was made. Designed to be heard from the outside —listeners were not allowed to get inside— the installation generated a mise en abyme that was perceived when the enclosed reproduction of the soundscape spilled outside the container within the same environment it referred to. The location of listeners in relation to the container and the railway favoured the situation that they would realise the presence of the copy after listening to trains passing —the most evident sounds in the recording— without any visible train passing.

Regardless of the particularities in every display, the three projects actually engaged with the phantasmal condition of sound and the emphasis of this through the acousmatic situation. They play a deviation equivalent to the circumstance where the train passes behind the leaves. There is a lack of synchrony or a lack of bond between sounds and sources. Furthermore, by playing back sounds through loudspeakers, which in itself corresponds to an acousmatic situation through a representation, a specific tension between reality and falsification is caused. The sources are hidden through the mechanics of electroacoustic fixation and reproduction. However the strongest disruption happens when one is not yet aware of the fact that loudspeakers are actually playing the sounds.

62 Four channel audio, 60:36 min, variable dimensions. Project developed in January 2018 in The Sandberg Instituut's outdoors, Amsterdam.

Playing a sound behind a wall, hiding its source, makes sounds somehow autonomous, independent entities. This autonomy triggers two forms of cognitive disruption. On the one hand sonic matter could be identified without a visible source. This makes the listener first identify a familiar sound and then they would realise it is a reproduction or they would look for the source producing that sound. On the other hand, if this sound is not recognised because its formal aspects alone do not provide enough identification, then this sound would become undetermined and, even if there would also be a search for sources, the situation could only generate associations related to form. In this sense my practice differs to what could be considered as traditional musical forms. In any case there is always a production of narratives in relation to the space where the intervention occurs, the formal particularities of the composition and the intrinsic discursiveness in identified sounds. Locations and sounds always deal with listeners' previous conceptions regarding the category of space and the represented object. Since what previous proposals pursue is not a classic musical expression but listening to contexts and thinking about contexts, it is necessary to specifically focus on symbolic content intrinsic in sound and space. Previous works developed a methodology settled in the value of those narratives around space and content. In principle the situations performed as fans, traffic and city noises compositions for a warehouse, a tower and a container.

The acousmatic setting becomes an uncertain and disrupted context but also a potentially suggestive scenario. By masking, the acousmatic triggers a gap between the real and the unreal, the known and the unknown and between signal and noise. When there is no source or when a sound does not correspond to the place it becomes a form of noise. It becomes *noisification*. In this sense noise could perform a positive role,

however, like the environmental parasitic perturbation, noise is always on the tightrope. As mentioned, the challenge of *noisification* is to scratch a real contextual situation. Otherwise it would become sterile perturbation. Through *noisification* the noise wall becomes instead a wall of noise, a wall made out of noisy substance, a stream of vibratory and environmental matter able to resonate, to make other bodies vibrate. The evocative potential of the acousmatic and of *noisification* becomes a contingent power of fiction and speculation. *Noisification* seeks to provoke a perceptual disruption or shift. The challenge is to disrupt, shift and resonate within the explicitly political. The challenge is to listen to the abat-voix.

It could be a manipulated mise en abyme, closed circuits, or a sound taken from far away and brought into an immediate space. It could be train creaks behind leafy trees, highway hum behind concrete walls, offshore drilling blasts in a living room or a constant online streaming of war hubbub.

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Image

Oude Kerk pulpit, Amsterdam, photographed July 2, 2018.

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