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► **To cite this version:**

Sofia Balbontin, Mathias Klenner. Resonant Spaces, The Sound created by Space and the Space created by Sound. Proceedings of the 4th International Congress on Ambiances, Alloaesthesia: Senses, Inventions, Worlds, Réseau International Ambiances, Dec 2020, e-conference, France. pp. 204-209, 10.48537/hal-03220295 . hal-03220295

**HAL Id: hal-03220295**

**<https://hal.science/hal-03220295>**

Submitted on 17 May 2021

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# Resonant Spaces

## The Sound created by Space and the Space created by Sound

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*Abstract.* From the interaction between sound and space, the dimension of soundspace emerges. This research project and its series of artworks focuses on the aesthetic, and social aspects of soundspace as a means to create alternative and subjective narratives, to re-signify and deconstruct the memory of space and the architecture that sustains it. The paper revise the concepts of space and sound in architecture, social sciences and sonic arts of the 20<sup>th</sup> century, trying to create a link between these diverse practices and theories. Understanding that a major shift in all this disciplines occurred when sound and space coalesce. “Resonant Spaces” takes this tradition an applies to a series of art pieces.

*Keywords.* Soundspace, Architecture, Performance, Critical Spatial Practice

### Introduction

The concept of space has changed in the last century. In social sciences and humanities, the abstract and geometric space has become social space (Eisenberg, 2015); in music the space has brought time as the main focus of composition (Pardo, 2017); in the fine arts through the development of conceptual art, performance and land-art have revalued the context as the main basis of art work (Rogers, 2013); and in architecture where the static space of the building becomes dynamic (LaBelle, 2006).

The present research and the series of artworks “Resonant Spaces” are presented as a resignification, from subjectivity, performance and body, to the symbolic, affective and representational apparatus of architecture and, finally, to our society.

### Sound Lines

Eisenberg (2015) suggests that sound and space are phenomenological and ontologically intertwined. From his perspective, sound is spatial since the listening process contains a spatial narrative for each sound. It is almost impossible to imagine sound without space or space without sound. For Leitner (1978), architect and sound artist, the soundspace becomes a space in constant transformation, defined by sound itself and its evolution over time. It becomes necessary to redefine the term ‘space’, understanding it as a sequence of spatial sensations, that is, a series of temporal events, where space unfolds in time, is developed, repeated and transformed. Leitner presents a series of spaces like sculptures of sound built from listening. His objective is to draw acoustic dynamics to create the sculptural experience of sound (Labelle, 2006). They are sculptures in movement that work in sync with the movement of the

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listener. Leitner's legacy affirms that the interaction of sound, space and body creates new architectures, new soundspaces.

### **Time in Architecture**

The relationship between sound and space, can be understood from acoustics, based on the long relationship between music and architecture to maintain the sonic fidelity of spaces for musical performance (Blessner & Salter, 2007). But it was not until the appearance of the artistic avant-gardes of the 20<sup>th</sup> century and the emergence of what we call Sonic Arts, that the relationship between sound and space begins to take a dimension that transcends acoustics to become an instrument for experimentation in the arts and architecture. One of the first works to establish a new relationship between sound and space from architecture is the Philips pavilion by Iannis Xenakis and Le Corbusier, presented at 1958 Brussels World's Fair. Licht (2009) establishes that both, the tradition of acoustic architecture and sound spatialization were brought together in the Philips Pavilion. Edgar Varèse's *Poème électronique* and Iannis Xenakis's *Concret PH* were reproduced as an installation through 450 speakers. The pavilion built an architecture of sound that was changing over time and building other spatialities. Pardo (2002) states that geometry and mathematics are the generator of architecture and of the spatialized movement of sound and even of the composition of sound pieces in the Pavilion.

Time enters as a new variable that questions the static nature of architecture and opens up a diversity of design possibilities where the body and subjectivity plays a leading role. Space is not static anymore; it is in motion.

### **Spatial Turn**

For Eisenberg (2015), the spatiality of sound and its sonorous nature were not fully integrated by Western culture until the so-called "Spatial Turn" occurred. The Spatial turn is an intellectual movement that turns to the concepts of place and space in the social sciences and humanities, specifically, under the idea that space is the context for the social, and also affects it (Lefebvre, 1974). According to Lefebvre (1974), space in its definition includes the body, action, energies (sound) and the built environment. He demonstrates that space is a social and political phenomenon and not just an absolute or natural phenomenon (Ouzounian, 2006).

This dialectical and dynamic conception of space is directly related to the processes occurred in art, music and architecture during the 20<sup>th</sup> century. Both arts and social sciences are transformed by this process where space becomes dynamic. Time penetrates space and space into time in a subjective condition, where space becomes a social space in constant change. Sound takes presence as energy that gives shape to the space in transformation and becomes creative matter for the arts, to declare the dynamic and social condition of space.

### **Critical Spatial Practice**

Architect and critic Jane Rendell coined the term "critical spatial practice" to refer to works that cross the limits of art and architecture to engage with both the social and the aesthetic, and with the public and the private (Rendell, 2006). The term not only emphasizes the critical, but also the spatial, specifically the spatial aspects of interdisciplinary practices that operate between art and architecture. Creative practices and processes that articulate critical responses to contemporary social reality from space.

In the practices of sound resistance, Brandon Labelle (2018) states that sound has the ability to make the invisible visible, to bring to light discourses that are marginalized from hegemonic circuits, at the same time, it has the ability to infiltrate the public space without necessarily being co-opted as the visual image. Taking into account both resistance practices based on sound and the concept of critical spatial practice, the present research works between them. Creative practices that operate at the disciplinary crosses between art and architecture, working within soundspace critically to contemporary society.

## **Sonic Flux and Background Noise**

The noise in the history of philosophy and art of the 20<sup>th</sup> century takes a leading position, like a murmur that is always there, that forms the basis of our being, from which shapes and sounds appear (Serres, 1982). Each signal is separated from the hustle and bustle of silence, noise and silence come together like two sides of the same coin.

Christoph Cox (2018) raises the idea of “Sonic Flux,” sounds cease to be point elements and can be understood as part of a continuous and lasting flux. For Sterne (2012), space is not only a container or a context for action, but it is generative and always in flux, as well as our perception of it. Would it be possible to speak of a spatial flux? As Cox (2018) establishes, the sonic flux that is part of space, there is actually a continuous relationship where space and sound intersect (Saladin, 2014). If space is dynamic and is also in flux, we can extend Cox’s idea to the concept of soundspace. Soundspace as a continuous flux that is always in motion, of energy and matter where all soundspaces coexist.

## **Listening of Space**

Roland Barthes (1993) makes a difference between hearing, as the mere physiological phenomenon that can be described through acoustics and the physiology of ear, from listening. Hearing is a passive and receptive act, characterized by a state of alert to the environment. While listening, also called decoding, is active, it is no longer only physical, but psychological, it involves the brain, mind and soul, in an interior and creative act. The artist Pauline Oliveros (2005) starts from Barthes’s premise to define her practice, called “Deep Listening,” where space and time merges into the concept of soundspace. Influenced by John Cage, his idea of “Deep Listening” involves listening to the continuum of sound including its silences, as well as Michel Serres (1982) suggests.

Lucier (2014) describes his work “I am Sitting in a Room,” where he records his own voice inside a room reciting a speech which is reproduced and re-recorded several times in the place, until only the resonant frequencies remain. In that piece he makes a fundamental statement: “performing is more a matter of careful listening than of making sounds happen.” It is in attentive and deep listening where the force of sound art resides. The understanding of the world through sound practices changed during the 20<sup>th</sup> century, because our way of hearing the world has changed.

## **Relational Vibrations**

Aden Evens (2005) presents sound as a vibration that always remains and never goes away, only transforms, resonating on the walls of a room forever. Adolf Loos (1912) affirms that it is not the form of architecture that provides good acoustics but it is its materials, its walls that for years have modified its molecular structure by vibrations of good music. For Amacher (1979) the limits of architecture do not end in the walls,

but go from space through the body, transforming the notion of what it means to inhabit space. The space becomes inhabiting the body in an active way from vibration (LaBelle, 2008).

The vibrations going through sound, the body and space are intrinsically relational, leaving the walls to go through air, connecting bodies, generating air pressure, connections are built. The vibrations destabilize the architecture and also ourselves. In their relational action, vibrations and resonances build atmospheres and environments. Jean-Paul Thibaud (2011) states that the environment of a place works as an energy flux that influences the space and its situational conditions, while at the same time building a feeling of belonging. The relational condition of soundspace, as a means through which we build social relationships between humans, non-humans and architecture itself, promotes a sense of belonging with the built environment.

### **Performance and the Voice of Space**

Rogers (2013) describes the transformation of the concept of space meant for music, the arts and architecture, going from a geometrical dimension to an ideological and social one. At the same time, that art began to open up to other expanded fields, performance became the main component of experimental music. The relationship between the elements became increasingly important, allowing the context to become the content (Albers, 1952). As music began to break its obstacles with space, and art and architecture broke its obstacles with time, they began to converge in a new space, the space of performance (Rogers, 2013). That can also be understood as the soundspace.

In 1969, Alvin Lucier presented his piece “I am Sitting in a Room.” Lucier not only makes the space build sounds specific to its architecture through reverberation, but also transports a soundspace to a totally different space, that of the auditorium. With this, what he is doing, through electroacoustic means, is building a space through sound, at the moment it is reproduced. By perception, we can experience the spatiality of the room where Lucier recorded his piece. The soundspace is not only created by the acoustics of the room, but also the sound recreates the original space. Jennie Gottschalk (2016), when referring to the different performance works from experimental music that work with the resonance of spaces, points out a common characteristic that is to fill the space with sound or fill it with sound objects through an additive process. Saturate it, like the act of filling a container with water.

### **Resonant Spaces**

Based on this theoretical reflection on the evolution of artistic disciplines around sound and space, we now face our own research project: Resonant Spaces. Using the tradition of experimental music to fill spaces with sound through action, “Resonant Spaces” uses vocalizations and percussions with found objects, and slow feedbacks to take out the voice of space and its resonant frequencies. From the tradition of acoustic studies, impulse responses and frequency sweeps, as artistic tools, are used to make the space speak.

The case studies for experimentation are abandoned infrastructures in the margins of memory and the urban, sublime architectures from wartimes, inhabitable places with unique and exacerated acoustics: A Gasometer and a Cooling Tower of an abandoned power plant in Belgium, a Flood Cistern, a Textile Residual Water Pool and an Air-Raid Shelter in Catalonia, and two Oil Tanks of the WWII in Scotland, with reverberations (T60) from 5-80 seconds.

As an attempt to converge the thinking of social sciences and sound studies about space, and the practice of sound spatialization architectures, sound art pieces and performances, “Resonant Spaces” creates a series of soundspace artworks: a documentary called “Resonant Spaces Research”<sup>3</sup>, a performance and installation series called “Resonant Spaces #1<sup>4</sup>, #2<sup>5</sup> and #3<sup>6</sup>,” and an LP that gathers all the sounds experimentations “Espacios Resonantes”<sup>7</sup>.

## Conclusions

Artists, musicians, architects and thinkers from social sciences during the 20<sup>th</sup> century, have opened up the notions of space and sound, not only as geometrical, physical or abstract dimensions, but as resonant spheres (Dewey, 1934) where the world can be experienced and understood in its social and relational dimension. In this sense, the body appears as a direct link between sound, space and the memory of place.

The performance and the presence of body in space builds a subjective and unique gaze, which is capable to reconstruct space, architecture and memory. The background noise is open, to give rise to the soundspace flux, from its original history as architectures, until today as opportunities for artistic action. Performances that generates a third space, where the public is part of the sound experience and their bodies intervene in the perception of the sounds that travel through speakers.

“Resonant Spaces” was developed as a story that tried to join diverse disciplines and traditions around sound and space. Through an active listening of soundspaces, our perception allows us to think about possible new critical spatial and sonic practices.

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