Sound Imaginations: Listening Cultures and Audiovisual Immersion

By Paulo C. Chagas

Sound Imaginations is an interdisciplinary project I conducted from 2016 to 2019 as a Senior Fellow at the Center for Ideas and Society at the University of California Riverside, that combines scholarship on sound studies with field research and artistic expression. This article provides an overview of the project and its outcomes. It begins with the theoretical background before moving into a description of the field research and concludes with an account of the artistic result, *Sound Imaginations: Audiovisual Immersive Installation*, presented at the beginning of 2020 in the Culver Center in Riverside, California, just before the COVID-19 pandemic shutdown.

Sound as Listening

The initial motivation was to investigate a sound phenomenon from the point of view of *listening*. What is listening? How do we perceive sounds? The simplest answer is to say: we hear the sound. In fact, a sound phenomenon is intrinsically associated with our ability to perceive and identify sounds, which is linked to the idea that we are immersed in an acoustic environment constituting a fundamental of human communication. The acoustic environment enables the creativity of music and all communication through sound, including language, music, sound design, and sound art. Between silence and cacophony, music makes tangible the active principles of *sound* and *listening* as fundamental signatures. Sound is embodied in everything all the time, even if we are not listening. Music embodies the desire to comprehend the ubiquity of all sounds. The belief that everything can resonate can be traced to the mythological roots of Western music extending back to Antiquity. It expresses our desire to listen to sounds everywhere, resonating in different spaces and temporalities, from molecular vibrations of the planet to other cosmic entities of the universe (Chagas 2021, p. 12). As Kahn claims, sound is pervasive, "all space becomes indelibly, inaudibly, or pervasively filled with voices and sounds awaiting to be heard" (Kahn 2001, p. 200).

Then how should we define listen-

ing? Chion (1994) identifies three modes of listening: causal, semantic, and reduced. The most common is causal listening, which consists of listening to a sound to gather information about its cause or origin. Through causal listening we recognize the voice of a specific person or a sound produced by a particular object, such as a moving automobile or a bird singing. We recognize the general nature of what caused a sound – human, animal, mechanical, electronic, etc. — though we need a context to understand the sound. We also recognize that sound can have several causes, origins, and sources, insofar as perception is an experience of simultaneity: the listener must separate sounds from background noise and identify sound objects and events (Chagas, 2005).

The second mode as defined by Chion is *semantic* listening, which contains the possibility of interpreting the meaning of an acoustic message, whose model is language. It works in an extremely complex way. For example, a phoneme is heard not strictly for its acoustic properties, but as part of a whole system of oppositions and differences. In this sense, semantic listening is articulated through semiotic systems, such as the different languages of the world, sonic codes of communication such as a drum sound or Morse code, as well as music and sound art that can symbolically interpret sonic creativity. Additionally, there is the contribution of sound design, which has become prevalent in the contemporary world of electronic and digital devices.

The third mode is *reduced* listening, which focuses on the traces of the sound itself, regardless of cause and meaning. This concept was proposed by the "musique concrète" movement that emerged in Paris at the end of the World War II around Pierre Schaeffer. Inspired by Husserl's phenomenology, the aesthetics of concrete music came to be from the interaction of sound material with technical devices, especially the tape recorder. In the *Traité des objects musicaux*, Schaeffer (1966) proposes the concept of *acousmatics* to characterize the awareness of a listening that extrapolates the causal and visual sources of sound production. The term acousmatic goes back to the pre-Socratic concept of aurally transmitted knowledge. For five years, Pythagoras' disciples sat behind a

curtain listening to the master's lectures without seeing him, concentrating only on the sound of his voice. Acousmatics proposes hearing sound as an invisible phenomenon. Schaeffer's approach is an attempt to overcome historical and cultural habits of musical, vocal, and instrumental listening, and to unveil new possibilities of musical creativity with the use of technical apparatuses. Sound must be separated from its external connections so that the fantasy can focus entirely on the sound phenomenon without cultural, social, and historical connotations and, above all, musical stereotypes. We must listen to sound and music as the disciples of Pythagoras listened to the master's lectures; we must let the sound speak for itself through its inner voice (Chagas 2014, p. 128).

As Chion states, "reduced listening has the enormous advantage of opening our ears and sharpening our power of listening. […] The emotional, physical, and aesthetic value of a sound is linked not only to the causal explanation we attribute to it, but also to its own qualities of timbre and texture, to its own personal vibration" (Chion 1994, p. 31). In cinema, for example, sound, much more than image, can become a means of affective and semantic manipulation. On the one hand, sound acts directly on us, physiologically (breathing noises in a movie can directly affect our own breathing); on the other hand, sound influences perception through the phenomenon of added value. It interprets the meaning of the image and makes us see in the image what we would not see or would see otherwise. Unlike image, which is localized, sound is all-encompassing.

Sound as Discipline and Soundscape

The development of sound technology has drastically changed the way we produce and consume sound. New forms of technologically mediated listening, new processes of manipulation, treatment, and electronic sound processing, shape our lives and occupy our physical and existential spaces. From the 20th century onward, we have observed an exponential growth in sound emissions, together with a decrease in centralized sound sources. Loudspeakers of all sizes and types, and machines and digital devices that

emit sounds, surround us in private and public spaces. By 2021, an estimated 15 billion mobile devices were operating worldwide — a number expected to reach 18.22 billion units by 2025, increasing our dependence on this equipment to run our daily activities. In other words, we will be sharing our acoustic space with increasingly intelligent devices that reproduce electronic sounds, voices, noises, and music. Mobile listening in cars and the emergence of new genres of digital music based on sound creation are intrinsic aspects of the contextual changes that impact our listening experience and acoustic creativity.

We are moving into new and rich areas for which we need to find the right approaches and methodologies. Wittgenstein suggests that sound is just the surface of music and that the musical work hides something deeper, insufficiently described by philosophical models or scientific theories (Wittgenstein 1998, p. 11). The infinite complexity of music can only be understood in the context of its use, which includes the understanding of cultural and social references that create meaning beyond what is expressed by sound (Chagas 2014, p. 24). The same argument applies to the artistic realm of sound creation and production: we can only understand sound when we realize how it is used.

Sound studies is an emerging interdisciplinary field that investigates the material production and consuming of sound, noise, and silence — and how this connects to our history and culture. Sound is an analytical point of departure or arrival. By analyzing both sonic practices and narratives to describe them, it reframes the question of what sound is and explores how we express ourselves in and through sonic worlds. Sound studies reaches across disciplines and traditions, it extends both in time and space. It investigates sound phenomena in a relational context including music, listening, media, space, architecture, poetry, technology, performance or any other aspect of our sonic life.

In the introduction of T*he Sound Studies Reader*, Sterner proposes the concept of *sonic imagination* as a synesthetic neologism to emphasize how sound observation "occupies an ambiguous position between

sound culture and a space of contemplation outside. Sonic imaginations are necessarily plural, recursive, reflexive, driven to represent, refigure and redescribe" (Sterne 2012, p. 5). Sound studies should not follow a single methodology but a plurality of approaches: "Instead, sonic imaginations are guided by an orienting curiosity, a figural practice that reaches into fields of sonic knowledge and practice, and blends them with other questions, problems, fields, spaces and histories" (Sterne 2012, p. 6).

The pioneering notion of *soundspace* proposed by the Canadian composer and scholar Murray Schafer in the 1970s is a key concept in sound studies (Schafer 1994). It refers to the sonic environment and includes not only the "natural" environment of sounds but also the entire culture characterizing the sonic environment of any specific space or object of study. Driven by Schafer's ideas, many scholars and artists have been pursuing the mapping of historical and contemporary soundscapes and observing the transformation of soundscapes in the industrial and digital society. The concept of soundscape inspired the World Soundscape Project (Truax 2000) and scholarly narratives in acoustic ecology, history, anthropology, and sociology. Many authors have criticized Schafer for having projected the problematic concept of 'landscape' borrowed from visual art into sound studies, as it suggests a static perspective rather than the kinetic and surrounding characteristic of sound phenomena. It also implies a division between hearing and seeing, which is highly problematic in the contemporary world shaped by the connective reality of audiovisual and multimedia technology.

Feld (2003), for instance, proposes the concept of *acoustemology* – the union of acoustics and epistemology, which investigates the primacy of sound as a modality of knowing and being in the world. Soundscapes are not just physical exteriors, they are perceived and interpreted by human actors and are invested with significance by those whose bodies and lives resonate with them in social time and space. As a cultural system, sound both penetrates bodies and emanates from them; hearing and producing sound are thus embodied with

competencies that situate actors and their agency in particular historical worlds.

Listening Cultures

In the second part of the Sound Imaginations project, I collected field recordings of audio and video material in various geographic regions of the world. Inspired by the concept of listening cultures, proposed by Schultze (2015), I set out to investigate listening habits and techniques and the cultural and historical aspects associated with them. I aimed to observe myriad phenomena, such as human relations and technical devices, architectures, and structures of space and time that represent contexts of individual and social listening. Three questions underpinned the research:

1. How do different cultures approach listening?

2. How do human beings listen in different ways?

3. How do we hear the acoustic environment, living beings, surrounding machines, architecture, natural and cultural spaces?

Based on Schultze's methodology, I systematized the research into seven listening categories:

1) Listening cultures of relationships – the sonic phenomena that shape the layers of co-existence between human beings, animals, plants and machines.

2) Listening cultures of work – cultures of evaluation, collective work rhythms, auditory cultures of technology.

3) Listening cultures of entertainment – popular cultures of entertainment, rituals, sonic cultures of the body.

4) Listening cultures of protest – presence of political activity through noise, singing, talking, aural forms of protest.

5) Listening cultures of violence – sonic violence, impairment of the senses, connection to drugs and work cultures.

6) Listening cultures of no-sound – sounds that are not perceived by human beings, the unheard, the "unsound."

7) Future of listening – listening as an active process; the diversity of material and sensorial listening cultures; embodiment and disembodiment of listening.

Recordings

The field research was conducted between January and July 2019, during a sabbatical semester. In early January, I purchased an equipment package for 360 3D video and ambisonics sound recording consisting of:
• Video camera (Insta360 ONE X) with various tripods and accessories.
• Multichannel audio recording (SoundDevice PreMix6).
• Ambisonic microphone (Sennheiser Ambeo) with tripods and accessories.

With this equipment, I travelled to capture audio and video material in the following geographic locations and dates:

1) São Paulo, Brazil from January 19 to February 17, 2019. Recordings were made in Trianon Park in downtown São Paulo and in the Studio dos Lagos in the outskirts of the city. Trianon Park, located on the Paulista Avenue, contains part of the Atlantic Forest, which covers the São Paulo region. Paulista Avenue is a financial and commercial district located in the core of the city, whose ambitious buildings represent the modern architecture of Brazil. Some recordings were made on Sunday when the avenue is closed to the traffic and over one million people use this public space for recreational purposes. Studio dos Lagos is a state-of-the-art sound recording studio located in an area of environmental preservation in the Atlantic Forest. I made recordings both outside and inside the studio.

2) Riverside, California, USA March 1, 2019. I made recordings in the UC Riverside Citrus Collection, facilitated by Dr. Tracy L. Kahn, Curator and Givaudan Citrus Variety Collection Endowed Chair. Recordings were created on the agricultural unity located on Martin Luther King Boulevard. With the assistance of Nikolay Maslov, curator of Film & Media Project of the Culver Center, I aimed to document the variety of species and richness of the UCR citrus collection and to capture the surrounding environment.

3) Moscow, Russia from March 13 to June 12, 2019. I made sound and video recordings in multiple environments. Over a period of three months, I explored a significant number of locations and situations to gain insight on the cultural diversity and richness of the

Russian capital. A highlight of this work is the footage made on May 9th in the so-called march of the "Immortal Regiment," which is part of the celebrations of the end of World War II. Up to 1 million people took part in this procession through the streets of Moscow carrying portraits of their relatives who fought or died during the war. I marched with the crowd and recorded videos of the procession flowing down Tverskaya Street, one of the capital's main roads, through Red Square. Additionally, I made recordings in different parks, boulevards, the traditional Arbat Street, and the Trinity Lavra of St. Sergius, a monastery located outside Moscow and a major symbol of the Russian Orthodox Church. My goal was to capture the manifoldness of the fascinating Russian capital and culture.

4) Mannheim, Germany – May 16-20, 2019. I recorded urban and industrial landscapes in the major industrial city of Manheim in central Germany. During this short trip, I made recordings on the Wasserturm, a Romanesque water tower that is the civic symbol of the city, on a river port that concentrates major industrial plants, and in the Luisenpark, an impressive green area containing many gardens.

5) Pune, India – June 12 to July 24, 2019. Pune is a vibrant city located in the state of Maharashtra. It has an important concentration of universities and educational institutions, which gives the city a flair of freshness and modernity. Over a period of six weeks, I made a significant number of sound and video recordings in many different locations including streets, parks, workplaces, temples, and a religion procession. On a side trip to a surrounding region, I recorded in three locations: Ramdara Shiva Temple, Bhuleshwar Shiva Temple, a 12th century landmark, and the Changa Vateshwar Shiva Temple. The extensive sound and video material collected in India are diverse, unique, and captivating.

First-Person Methodologies

To make the audio and video recordings, I applied first-person methodologies, which means that the process of being observed appears as relevant and manifest *for* a 'self' or 'subject' and is associated with cognitive and mental events that accounts for the lived *experi-*

ence. Varela and Shear (1999) outline the first-person method as an interplay between observations and validations, which accounts for the changeable and fluid character of the human experience. An example of this can be found in the domain of musical performance, in which the performer undergoes disciplined training to acquire technical and musical skills, but the experience of performing music has to be explored and modified in non-arbitrary ways.

This pragmatical approach guided the choice of the recording equipment. The Sennheiser Ambeo microphone, the Sound Devices MixPre-6 recorder used for recording ambisonic sounds, and the camera Insta 360 ONE X and different tripods used for capturing 3D images, are portable devices easily carried by a single person. The way this equipment was used varied according to the objective and subjective conditions of each location and situation. For example, in protected locations such as Trianon Park or areas without human presence, like the UCR citrus collection, it was possible to position the microphone/recorder in one place and leave them alone for longer periods of time, simultaneously capturing sound and image. In other situations where there was a strong human presence, it was necessary to stay close to the equipment. In events such as walking inside the "March of the Immortal Regiment" and wandering through the busy streets of Moscow and Pune, I carried the camera attached to an invisible baton. In these instances, it was not possible to carry both the camera and the ambisonics microphone, so I recorded sounds with the camera microphone.

This kind of equipment favors the auditory and immersive experience of the observer himself. The microphone and the camera can be considered extensions or replacements of the sensory and cognitive system of the subject immersed in the soundscape and landscape, suggesting an apparent objectivity in the process of capturing sounds and images from the environment. However, what we consider objective, that which allows the constitution of a corpus of shared knowledge about objects and natural events we observe, is, in fact, "partly subjective, as it depends on individual observation and experience, and partly ob-

jective, as it is limited and regulated by empirical and natural phenomena" (Varela and Shear 1999, 1). In other words, the subjective is not the same as dealing with purely personal experiences, as is often assumed, but is already implicit in the objective and in dealing with objective phenomena. First-person subjective experience is thus an explicit and active component of the observation process.

Audiovisual Immersive Installation

The artistic output of the project is the exhibit *Sound Imaginations: Audiovisual Immersive Installation*, presented between February 29 and March 5, 2020, in the Culver Center of the Arts in Riverside, California. The installation was created with the ambisonic sounds and 360 3D videos recorded during the field trips to São Paulo, Riverside, Moscow, Mannheim, and Pune. The process of creating the installation was accomplished in three stages:
1. Selection and editing of the video footage.
2. Producing of audio and video material.
3. Installation design and exhibition setup.

I accomplished the first stage working solo, and Nikolay Maslov actively participated in stages two and three and curated the installation.

In the first stage, I selected a variety of footage showing different aspects of each geographic location. The edition of 360 3D videos was accomplished with the software Insta 360 Studio. Editing 360 footage is a complex task as the video allows multiple editing options in three dimensions. The software offers fours views – default, crystal ball, tiny planet and natural view – and five parameters to adjust – pan angle, tilt angle, roll angle, field of view (FOV) control, and distortion control. The editing process is accomplished by setting keyframes in the timeline and defining the views and parameters for each keyframe. We were also able to alter the transition settings between the keyframes to create smooth movements and different combinations of fade-ins and fade-outs. With these settings it is possible to create a great variety of tridimensional movements that can be extremely dynamic and sophisticated. After defining all keyframes, the 3D video was converted to a conventional video format (mp4).

All videos were edited to play on a loop.
I created a total of 89 videos consisting of:
• 11 videos from São Paulo, Brazil
• 10 videos from Riverside, California
• 28 videos from Moscow, Russia
• 11 videos from Mannheim, Germany
• 29 videos from Pune, India
The length of these videos varies between three seconds and six minutes and thirty-four seconds.

I organized the videos under four categories:

1. Short videos: <= 00:55" – 34 videos

2. Medium videos: between 00:56"–02:30" – 32 videos

3. Long videos: > 02:30" – 13 videos

4. Videos to be used in the main large projection (see below) – 10 videos

In the second stage, we created 14 videos for the audiovisual immersive installation: a main video and 13 other videos. The main video was conceived to be projected onto the installation's central screen. It is an audiovisual composition of 26:53" in length and 7.1 surround multichannel audio, featuring ten videos that create a narrative. It is the only video of the installation that has sound. The other 13 videos were conceived to be shown without sound on monitors distributed throughout the installation space. Nikolay Maslov assembled these videos according to the following themes: (1) Title and Presentation (2) India (3) Germany (4) Riverside (5) Russia (6) Brazil (7) Temples (India, Russia) (8) Crowds (9) Trees (10) Sky (11) Buildings (12) Water (13) Interiors.

In the third stage, we designed and created the exhibition in the Black Box of the Culver Center of the Arts. The installation consisted of a 7.1 multichannel surround sound system (seven speakers and a subwoofer) and a multichannel visual projection system comprising a large central projection screen extended along one wall, 12 video monitors distributed through the space of the Black Box, and one video monitor (title and presentation) placed outside the entrance.

The exhibition accounts for the preliminary results of the investigation on listening categories, which constitutes the theoretical framework of the research project. The first four listening categories – relationships,

work, entertainment, and protest – are the most represented in the field recordings. It was not my intention to carry out a systematic investigation, nor did the project provide for the logistical infrastructure to explore the vast potential of listening categories. I recorded dozens of hours of video and audio material from which only a very small fraction was shown. The installation in the Culver Center is an autonomous artistic work, independent from the theoretical premises and ideas that guided the research. It was not my purpose to demonstrate the listening categories, but rather, to suggest further areas of inquiry, research, and artistic creativity.

Conceptually, the installation develops an aesthetics of audiovisual immersivity in terms of both physical and virtual spaces. In the physical dimension, it places the observer inside a space populated by sounds and images projected by loudspeakers and video monitors, whose design can be varied depending on the characteristics of the space and the audio and video equipment available. We used a 7.1 surround sound system and 13 video monitors, though we could theoretically expand the installation to a much larger number of speakers and monitors and, consequently, create an audiovisual immersive space with a much more detailed definition both in terms of sound and image.

3D rotations, circular movements, and changes of perspective continuously reshape the 360º space of the installation. The constant flow of 3D images generates sometimes vertiginous movements. The sound surrounds the listener with a vibrational system that physically affects the body. The observer is absorbed by a kind of audiovisual vortex, which also contributes to the multiple relations between image and sound, oscillating between synchrony and non-synchrony. For example, in the main video of the installation, we see images of the exuberant tropical vegetation of Trianon Park in São Paulo while hearing noise of a heavy traffic, which is counterpoint to the impression of tranquility. Indeed, the sounds of the traffic are what one hears in the park, but the ambiguity between the perception of sound and image – which may even go unnoticed by a park visitor – is not evident to anyone watching the video. The observer probably does not

São Paulo – Trianon Park. View from the top of the tripod, microphone is on the ground.

Riverside, California, USA – Citrus collection, University of California, Riverside.

Moscow, Russia – March of the Immortal Regiment on 9th May 2019. I am on the middle front of the picture (bald head) holding the camera with an invisible stick.

Mannheim, Germany – Wasserturm (Water Tower), a city landmark.

Pune, India – Temple (Siddheshwar).

Pune, India – Pilgrimage (Pandharpur Wari).

realize they are dealing with a park within a dense urban environment, and may be led to think the image and sound don't belong to the same environment and therefore are not synchronized. In fact, in other moments of the main video, we listen to multiple simultaneous soundscapes, reinforcing the aesthetic of non-synchronization. For example, we see images of Moscow's cityscape while we hear a soundscape of birds recorded in India.

Uncertainty and ambivalence are attributes of the relation between sound and image in the audiovisual immersive installation. Confusion and doubt contribute to questioning the observation and expanding the space of experience through the entanglement between the perceptions of the real and the symbolic. The opening of the space for multiple and simultaneous instances of listening and seeing is precisely in accordance with the foundational concept of the installation to develop "sound imaginations." This idea can be approached from two perspectives: as sounds imagined by images or images induced by sounds.

Conclusion

Participating in the acoustic space is the basis of the conception of listening as shared activity. Listening is an intervention in the acoustic environment, a way of creating a sense of the self and preserving the relationship of ourselves to others, which is fundamental to constructing human subjectivity. Human beings are immersed in a vibrating world. Beyond the vibrations our ears can perceive, our bodies and minds vibrate sympathetically – both consciously and not-consciously – with other entities, matters and energies of the environment. The sonic present is an uninterrupted flux of vibrations, a resonant space with dilatations and reverberations in which the listening subject becomes itself a place of resonance. To listen is to endeavor to find possible meaning, while seeking reference in a vibrational world of omnipresent feedback loops of internal and external references, for which Nancy (2002) coined the term "re-soundings." Our understanding of music implies the possibility of entering this resonating spatiality and negotiating meaning by projecting ourselves to the others. This happens when we listen

to music performed live in a shared space, for instance a concert hall, but also when the sounds are presented to ourselves as products of recording technology or artificial objects. In the current post-human society populated by technical sounds, images and all kinds of electronic and telematic devices, sound presents itself as modulated by significant processes of reconstruction of the body and the relationship between presence and absence. Our sense of listening and seeing are increasingly shaped by intelligent systems that intensify the sensory perception and projects our imagination into the reality of an ongoing human-machine interface.

The idea of immersion emerges in recent developments in audiovisual experience as a cognitive modality based on the sensation of the observer in a physical or virtual space that intensifies the relationship with the object of listening and seeing. The audiovisual immersive work creates the illusion that the observer and the object of observation – the self and the other – are no longer separated in the shared space of live experience. The primary goal is to generate a presence, a cognitive paradigm that privileges presence rather than representation as in traditional art. In other words, simulation instead of mimeses. In the project *Sound Imaginations*, the construction of audiovisual immersion results from the research on cultures of listening and the interweaving of listening and seeing as perceptional categories and objects of observation. The audiovisual installation addresses some possibilities of these categories and creates an immersive environment to experience them. However, this project is far from an exhaustive treatise on the cognitive and artistic potential of the subject. A systematic approach and a larger infrastructure in terms of both human and technical resources would be required to delve deeper.

The foundational concept of a 360º 3D space determined a series of choices in the process of capturing sound and video material and furthering the compositional strategies adopted for designing and building the installation. However, the concept of audiovisual immersion is not restricted to the multiple relationships between sound and image, but extends to an intrinsic social and cultural dimension. The variety

of experiences captured during my travels through different continents and geographic locations are in line with the ethical and aesthetic paradigm that places diversity and heterogeneity of cultural values in the very core of my artistic work. In this sense, I believe that the fundamental purpose of the audiovisual immersive installation is to promote connectivity as an essential feature of human experience. As I stated in an interview, "I want to make a connection as humans, to be inspired by listening cultures. When you look at different aspects of life, sound and vision are very important components. With this project, I want to emphasize both the ambiguity and the plurality of life" (Baltazar, 2020).

References

Baltazar, S. (2020). "Connecting the world through images and sound." *UC Riverside News*, February 20, 2020. https://news.ucr.edu/articles/2020/02/20/connecting-world-through-images-and-sound (last access July 12, 2023).

Chagas, P. C. (2005). "Polyphony and Embodiment: A Critical Approach to the Theory of Autopoiesis." *Trans: Revista Transcultural de Música* 9. www.sibetrans.com/trans/article/179/polyphony-and-embodiment-a-critical-approach-to-the-theory-of-autopoiesis (last access July 12, 2023).

idem. (2014). *Unsayable Music: Six Essays on Musical Semiotics, Electroacoustic and Digital Music*. Leuven: Leuven University Press.

idem. (2021). "Sound, Truth, and Paradigm." In: P. C. Chagas and J. C. Wu (eds.), *Sounds from Within: Phenomenology and Practice*, Cham: Springer Nature Switzerland, pp. 1-28.

Chion, M. (1994). *Audio-Vision. Sound on Screen.* New York: Columbia University Press.

Feld, S. (1994). "A Rainforest Acoustemology." In: M. Bull and L. Back (eds.), *The Auditory Culture Reader*, Oxford; New York: Berg, pp. 223-279.

Kahn, D. (1999). *Noise, Water, Meat*. Cambridge (MA): The MIT Press.

Nancy, J.-L. (2002). *À l'écoute*. Paris: Galilé.

Schafer, M. R. (1994). *The Soundscape: Our Sonic Environment and the Tuning of the World*. Rochester, VT: International Distribution Corp.

Schaeffer, P. (1966). *Traité des Objects Musicaux*. Paris: Seuil, 1966.

Schultze, H. (2015). "Hörkulturen der Gegenwart. Eine Anthropologie in acht Hörweisen." *Positionen* 105: 15-18.

Sterne, J. (ed.) (2012). *The Sound Studies Reader*. London and New York: Routledge.

Truax, B. (2000). *Acoustic Communication.* Santa Barbara (CA): Praeger.

Varela, F. and Shear, J. (1999). "First-person Methodologies: What, Why, How?" *Journal of Consciousness Studies* 6 (2-3): 1-14.

Wittgenstein, L. (1998). *Culture and Value*, revised 2nd ed.,. Oxford: Basil Blackwell.

Media

Sound Imaginations (2020) – Audiovisual Immersive Installation – Exhibition announcement: https://artsblock.ucr.edu/Exhibition/sound-imaginations (last access July 12, 2023).

Sound Imaginations (2020) – Audiovisual Immersive Installation – Tour: https://youtu.be/V_9VlC1sBgk (last access July 12, 2023).

Sound Imaginations (2020) – Audiovisual Immersive Installation – Artist discussion: https://youtu.be/x2boVluA24c (last access July 12, 2023).

Sound Imaginations – long version (2021) – Video: https://youtu.be/ewVYfN7FyOE (last access July 12, 2023).

Sound Imaginations – short version (2021) – Video: https://youtu.be/vvtVfuvgRhA (last access July 12, 2023).