

Listen, record, stream, diffuse, listen
The technological approach to soundscapes by Bill Fontana

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1. Introduction

Within the framework of Sound Art Studies [Licht 2007, Labelle 2009], possible approaches and profitable insights are definitely the ones that investigate sound recording techniques used by artists and streaming possibilities of certain works. Starting from the sound recording devices, microphones, and generally hi-fi recording equipment, we often encounter similar choices between the equipment used by scientists and artists. The interest by some sound artists in detailed and specific recording techniques (accelerometers, hydrophones, electromagnetic microphones) reflect a process which started decades ago, while electronic music and music more generally, could be defined as reflecting a particular technical configuration in the context in which it was applied. In fact, dealing with recording and streaming technologies in the context of sound artistic practice we can observe fifty years of feedback between art and technology. This could be investigated through the work of single artists. In this essay, we will focus on the work of Bill Fontana.

Fontana, born in Cleveland in 1947 and based in San Francisco, has used field recording to create events dealing with the totality of hearing. He approaches this totality by monitoring a space, creating multiple spaces, and connecting these environments with live streaming technologies. For over fifty years, he has relocated sounds and created an expanded idea of music through sonic resonances. This essay aims to show his sound art practice with regard to the technology and the changes between the configuration of his original historical works and the technological development. Three fields of his activity will be investigated: *recording, real time streaming, diffusion systems*.

Fontana's interest in recording stemmed from an intuition he had long before he started to record and plan sound installations, which was when he started taking a distance from a traditional compositional practice based on musical notation. From 1960 to 1970, his work spanned genres, going from minimal music, to sound art bordering silence, to sound sculpture. While analysing this process, it is important to consider that at the time he was studying philosophy and music composition with professors including Philip Corner and John Cage (in New York at The New School).

Rather than music writing and notation, what fascinated him was the range of emotions related to the musical experience: «What really began to interest me was not so much the music that I could write, but the states of mind I would experience when I felt musical enough to compose. In those moments, when I became musical, all the sounds around me also became musical»¹.

The following paper analyses the work by Bill Fontana by collecting information from existing literature [LaBelle 2006; Licht 2007; Fontana 2008; Riding 2006; Riley 2005; Rudi 2005; Crowley 2004; Blume 1994], online essays: Koek *On the edge of vision*; Fontana *Resoundings*; Fontana *Musical information networks*, Fontana *Borrowed Landscapes*; Snodgrass *Soaring Echoes* (11/19) and author's interview by phone call (1h) on 15th October 2019.

In order to document and analyse these moments he started to carry one small tape recorder. The first device he used was a high-precision Nagra-Kudelski miniature audio tape recorder. With this first approach to field recordings he was dealing with the state of mind one has while experiencing everyday sonic environments. This led him to think about their meaning: «I asked himself whether I could better use those recordings to make studio compositions or concerts»². Meanwhile he started to approach the idea of sound sculpture with his series *Sound Sculpture with resonators* (New York, Toronto, Sydney and Melbourne, 1972 to 1978), an ongoing series of small installations made in alternative spaces and small galleries placing resonant objects on the roof or other outdoor parts of a building, and putting small microphones inside each object transmitting the resonance to an indoor gallery space³. It came out of a fascination with the idea that the world is musical at any given moment, if one has a musical point of view. A crucial moment of realisation for Bill Fontana's journey occurred in 1974, when he started a new job for the ABC, Sydney. He began to record the Australian soundscape. In 1976, during a total eclipse, he experienced the communication between birds of different species from the moment just before total darkness, a total silence and finally right after the eclipse. He describes that moment in terms of perceiving the sonic result more starkly than the visual experience of the eclipse and regards this event as the moment he started to think about the deconstruction of the visual within the aural⁴. Additionally, his work in Sydney exhibited notable development in his concept of sonic imagination: the *Tape Library of Environmental Recordings*, an Introductory Environmental Sound Programme produced for the Australian Broadcasting Commission. In this booklet (fig. 1), a work in progress he realized during the decade from 1970 and 1980, there is a clear demonstration of the field recording research he was taking on.

¹ Bill Fontana, *Resoundings*, <<https://resoundings.org/Pages/Resoundings.html>> (06/20).

² Author interview with Bill Fontana, October 2019.

³ Bill Fontana, *Borrowed Landscapes*, <<https://www.resoundings.org/PDF/fontanasoundsculpture.pdf>> (10/19).

⁴ Bill Fontana, *Resoundings*, cit.

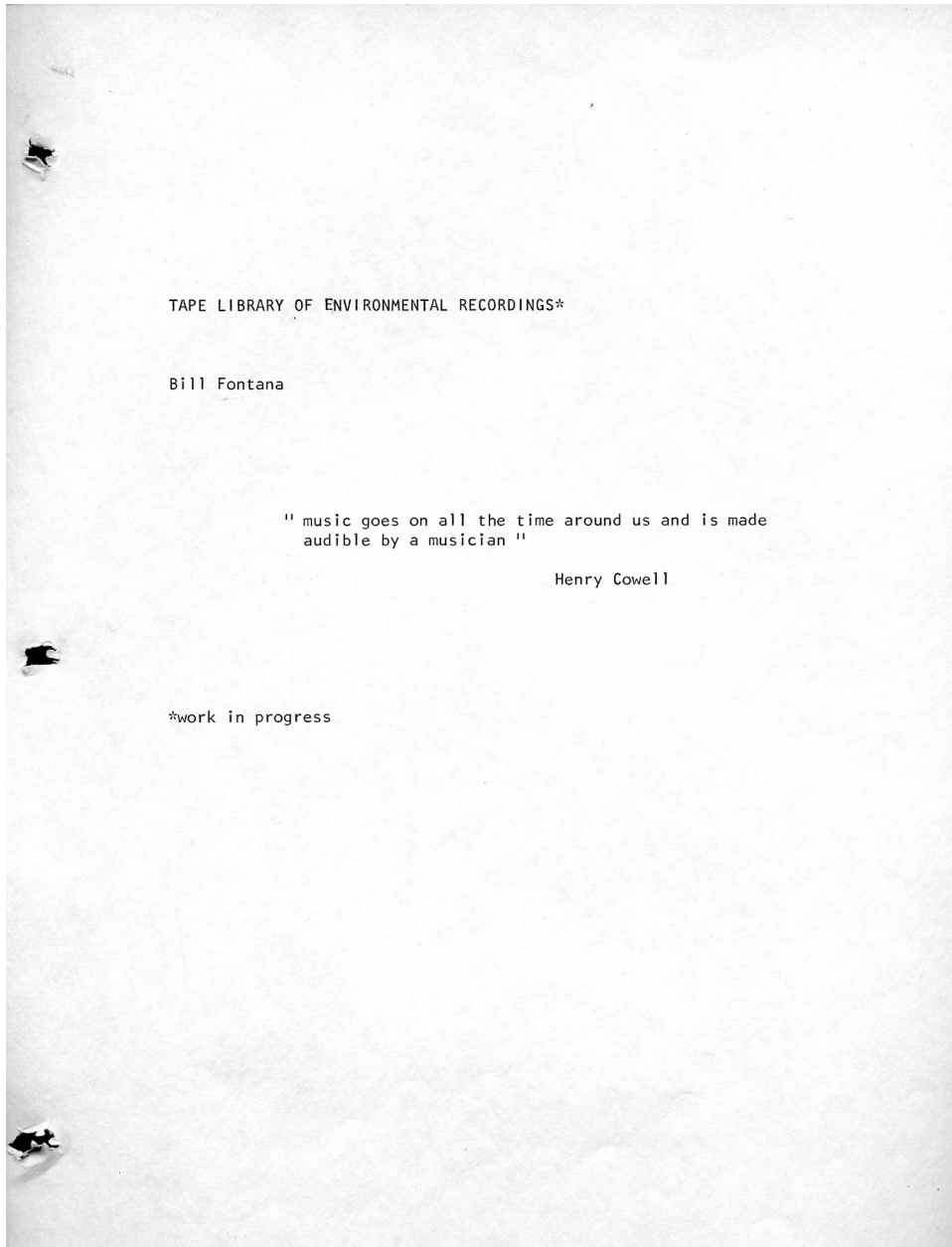


Figura 1. © Bill Fontana, first page of the booklet *Tape Library*, <<https://resoundings.org/PDF/TAPELIBRARY.pdf>> (01/20).

2. Real time streaming systems

Within the initial quote by Henry Cowell «music goes on all the time around us and is made audible by a musician»⁵, we can detect the inspirational current of thought he experienced. This document actually contains instructions of how and what to listen to while approaching the eight-channel recording collection, showing awareness that it might become «the source for multichannel sound sculptures and performance works»⁶. He began to work on acoustic networks of sounds approaching temporary networks realized with mobile 8 channel recorders. Just such a project was realized with the eight-channel sound installation *Kirribilli Wharf* (1976)⁷, a real-time (one hour) recording of eight separate holes in the bottom of a pier in Sydney Harbor. It was the first time he applied «sculptural thinking to the recordable listening process»⁸. The movement of waves would close the bottom ends of those vertical cylindrical holes creating compression waves, which were audible by means of microphones placed in the openings of these holes (8 were used). He describes the site of the installation as being in a «perpetual state of automatic self-performance»⁹. The key experience for Fontana was the fact that this array of microphones was a musical information network not discernible from any individual point and taken separately¹⁰, which is to say that it provided a sound map made by multiple points of live recorded sound within a ribbon microphone AKG.

From that point, he continued to think about the kind of networks connecting multiple spatial points to a defined listening zone using analog (broadcast quality) telephone lines and wireless communication. The method of transmission was 15 kHz telephone line. We are speaking basically about radio lines: the telephone company has taken a couple of wires and equalize them in order to have a higher envelope¹¹.

His career as a sound artist, defined in the late 70s until the late 80s, involved both live streamed installations, relocating sounds (which could be also be related to Maryanne Amacher's project *Cty-Links* - quoted in LaBelle 2006 - for which she transmitted sounds from various locations within and among cities through telephone lines and mixed them together), the use of multiple microphonic points, and the creation of common listening points through site specific sound system installations. Focusing on this latter technique, we will first analyse the development of his live streamed installation, his use of diffusion technology, and his recording technology.

⁵ Quoted in Bill Fontana, *Tape Library*, <<https://resoundings.org/PDF/TAPELIBRARY.pdf>> (10/19).

⁶ Author interview with Bill Fontana, October 2019.

⁷ *Kirribilli Wharf* (1976-88) from Locus Sonus Ressources bookmarks <<https://echosounddesign.com/media/Kirribilli.mov>> (01/20).

⁸ Bill Fontana, *Resoundings*, <<https://resoundings.org/Pages/Resoundings.html>> (10/19).

⁹ Bill Fontana, *Resoundings*, <<https://resoundings.org/Pages/Resoundings.html>> (10/19).

¹⁰ Bill Fontana, *Musical information networks*, <<https://resoundings.org/Pages/musical%20networks.html>> (10/19).

¹¹ Author interview with Bill Fontana, October 2019.

2.1 Site specific sound sculpture

The site-specific qualities of the listening zones Fontana have created in his projects show the reality of a soundscape and the process of mixing the experience of a sonic event with the visual connotation of a natural place, a gallery, or a public space. For this purpose, an interesting aspect of some of his sound installations at that time was the choice to use and describe the speed of sound as a matter of multiple delays, dealing with the *delay* as a «spontaneously contrapuntal texture created by the multiple live streamed recording locations»¹². This was the case of *Landscape sculpture with fog horns* (1981), a live acoustic map of San Francisco Bay where he used 8 dynamic microphones *ELECTRO VOICE 635*. There, microphones were installed at 8 different positions around the bay in order to hear the multiple acoustic delays from the fog horns on the Golden Gate Bridge. These sounds continue to be broadcasted from the facade of Pier 2, at Fort Mason Centre along the San Francisco waterfront and «mix profoundly with the sonic environment of the pier, and it is possible to hear them while walking along the Pier and passing under the speaker installed on along the top of the building»¹³. In this installation, we also encounter the use of the world “sculpture,” a definition that became crucial to all his future works and that arose conceptually in the aforementioned *Kirribilli Wharf*. This term grew from the transition from working with field recording to what he called a sound sculpture, which dealt with the aesthetic importance of relocating sounds from their original context without totally isolating them from their contexts. The spatial qualities of the sound source were what he called «the sculptural qualities of sounds» and probably also the reason his live-streamed installations both deal with both the real time connection of two different locations and the adaptation of a sound out of its site while still sounding plausible in the “new” site. Aside from his first live sonic transmissions with telephone lines, he was also fascinated by radio transmission technology because of the possibility by this technology

To hear multiple layers of sound in a radiophonic stream»¹⁴. The second point of interest was that analog transmission technologies were the only available technologies at that time. Besides, Fontana found that presenting his ambient sound recordings in a radio context was also an extremely effective framework for listening to them. He felt that if he could use digital transmission technologies, «the perception of his work in the streamed situations would not change, rather the streamed sound quality would be considerably better»¹⁵.

¹² Bill Fontana, *Musical information networks*, <<https://resoundings.org/Pages/musical%20networks.html>> (10/19).

¹³ Author interview with Bill Fontana, October 2019.

¹⁴ Bill Fontana, *Musical information networks*, <<https://resoundings.org/Pages/musical%20networks.html>> (10/19).

¹⁵ Author interview with Bill Fontana, October 2019.

2.2 Transmission technology

The use of digital enhancement in his work means allowed for the inclusion of multiple receiving sites and the possibility of having interactive relationships between transmission and receiving sites. Fontana used live radio as a social transmission network in *The Cologne San Francisco Sound Bridge* (1987) that featured a live exchange between the Golden Gate Farallon project in San Francisco, and an installation at the Museum Ludwig called *Metropolis Cologne*, which provided a live sound portrait of Cologne (Fig.2) with microphones at sixteen locations with loudspeakers on the facade of the Cologne Cathedral and other rooftops surrounding Roncalliplatz. For the stream between the Farallon Island and San Francisco, he applied the first digital transmission to his work, which was built within a microwave transmission using a high band video signal to carry multichannel audio to San Francisco. The installation was also streamed as a live radio concert through WDR that mixed the sounds from these two projects and was broadcast simultaneously to about 200 radio stations around the globe, representing the first satellite bridge in the radio's history. He repeated this work in 1993 with another radio sound bridge between Cologne and Kyoto.

More recently the work was included in the Radiophonic Spaces project¹⁶, a walk-in radio archive where more than 200 works of German-language and international radio art spanning 100 years can be heard and explored. The *Cologne San Francisco Sound Bridge* will be available from January 2020 on the related website as a sound excerpt, being part of the so called MINDMAP like a component of the exhibition. It is furthermore important to mention his first project using a large-scale live stream, for the Brooklyn Bridge: *The Brooklyn Bridge Sound Sculpture at One World Trade Center, New York* (1983)¹⁷. In this project, Fontana focused on the sound produced by a car driving on the bridge, which produced a low frequency droning sound that was perceived as an annoying humming by passengers on cars or pedestrians along the bridge. He decided to capture this sound, recording it through eight dynamic microphones ELECTRO VOICE 635 placed along this roadway, and streamed it live to the World Trade Center, the observation terrace of One World Trade Center, the Brooklyn Museum, and the public radio station in New York, WNYC (always within a 15 kHz telephone line broadcast). During this project, he also experimented with the phenomena of hearing for the same distance with which one sees.

The idea that from the terrace listeners could hear the sound of the bridge while simultaneously seeing it, would be applied in further works. In his "bridge" installations, there is an interesting link between his creative process and the one applied in another project by Sam Auigner and Bruce Odland (A+O). In their *Harmonic Bridge* (1993), realized for the MASS MoCA, the artists were also dealing with sonic vibrations, one a bridge produced by traffic. While aware of the sonic output of the

¹⁶ Project Website: <<https://www.uni-weimar.de/de/kunst-und-gestaltung/professuren/experimentelles-radio/radiophonic-spaces/>> (10/19).

¹⁷ *Acoustical Visions fo the Golden Gate Bridge* Documentary by the For Site Foundation <https://resoundings.org/Movies/Golden_Gate_Bridge_Documentary.mp4> (01/20).

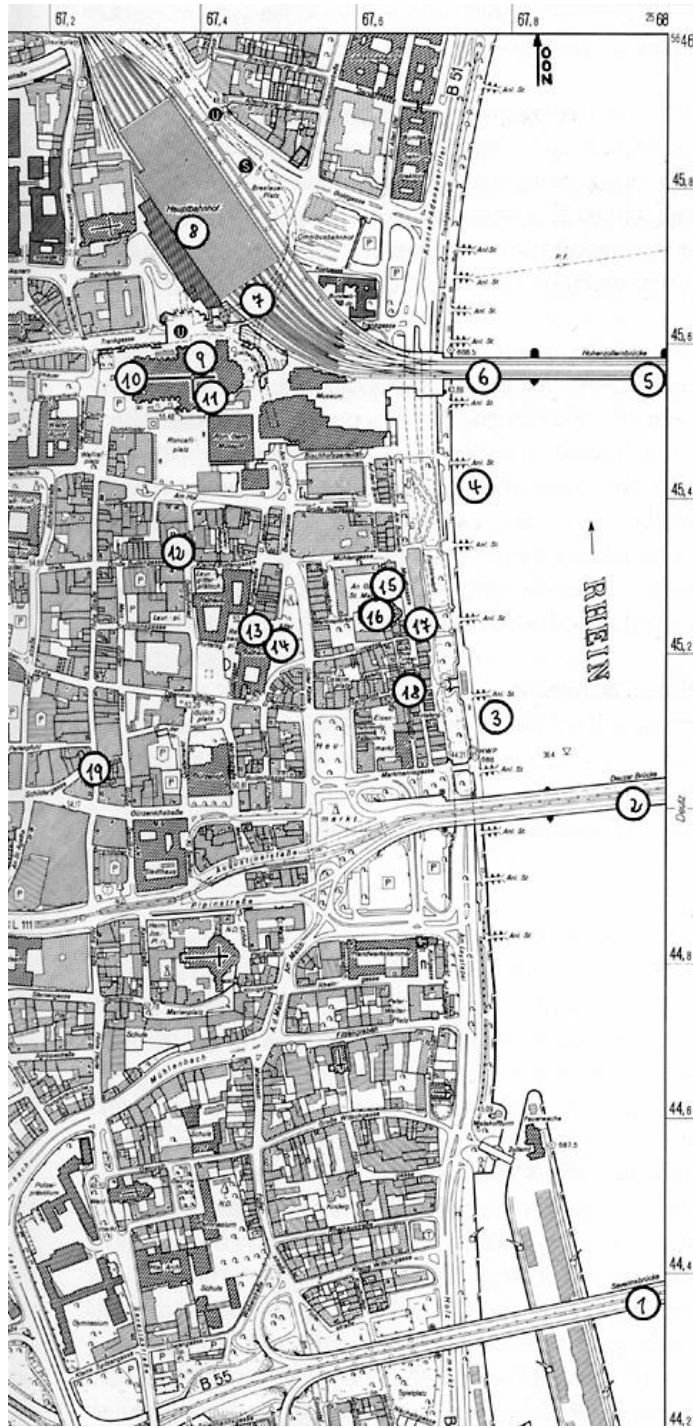


Figura 2. © Bill Fontana, Sound Map with sound sources in Cologne, <<http://www.medienkunstnetz.de/works/klangbruecke-koeln-sanfrancisco/images/3/>> (01/20).

structure, they applied a different process from Fontana's. While Fontana was dealing with the existing harmonic sounds streamed in another location without further manipulation (apart from the sonic changes during the transmission and diffusion), they achieved rolling tones in the key of C affixing two 16-foot tuning tubes to the guardrail of the bridge with microphones placed at a certain harmonic interval. In this case, we are dealing with two similar approaches to the same pre-existing site-specific sound, whereas the creative approach in Bill Fontana's work is more focused on the live transmission and decontextualization of a sound in another hearing situation. A+O instead are more focused on the site itself, revealing existing harmonies within the built environment.

2.3 Large scale streaming

Going further in Fontana's use of analog streaming technology, we encounter another large-scale project undertaken a few years later in 1990. *Landscape Sounding*¹⁸ was designed as a live radio sculpture realized through the placement of sixteen microphones in an ancient wetland of the Danube, the Hainburger Au, streamed over a microwave link to the Kunsthistorisches Museum and via a multiplexer to Maria Theresia Platz (live output from speakers).

By examining this project, we are able to better understand his use of the communication technology within the use of the microwave link, as for the aforementioned Golden Gate Farallon project in San Francisco. The sixteen microphones positioned in an area of 300 meter in diameter, were set around 100 meters apart from each other in trees, on the ground, and near or in the water (hydrophones). The microphone signals were carried through PTO lines to a microwave transmitter, after being encoded as digital signals. «Different distances between the different mics and the central connecting point - distances which caused delays in the reception of sound from different mics. These delays produced a 3 dimensional effect of space because a distinct sound would be picked up from mics located in different places in the au»¹⁹. These signals were received and retransmitted to the Museum where a digital multiplexer decoded the signal to feed the digital sound system at Maria Theresia Platz. There, the input mixer sent the sound in two different directions: one as the mixing desk and then as a stereo mix to the Funkhaus that transmitted the mix 24 hours per day. The second one was the control mixer, which then took the live output from speakers mounted on the facades and cupolas of the museum and underground and mixed theme. This live sound was taken as an input, sent to the mixing desk and outputted as a stereo mix within the sound of the 16 microphones²⁰.

¹⁸ The broadcast documentation <<https://echosounddesign.com/media/vienna.mov>> (10/19).

¹⁹ Source: <<http://kunstradio.at/FONTANA/LS/index.html>> (10/19).

²⁰ Bill Fontana <https://resoundings.org/PDF/Bill_Fontana_Landscape_Soundings.pdf> (10/19).

2.4 Digital streaming technology

The first time he used digital streaming technology was in Paris in 1994 for *Sound Island. Arc de Triomphe*²¹. This project is a good example of a connection melting two different spaces and times within a collective acoustic memory. During the commemoration of D-Day, a sound of the sea from Normandy was sent via underwater hydrophones and DPA microphones to hidden loudspeakers on the facade of the Arc de Triomphe. This was actually a hybrid project: it used digital streaming through dedicated air lines as permanent connections from Normandy to Paris, meanwhile in Paris it was analog (the installation on the three different levels of the Arc de Triomphe). The two underground access tunnels had live underwater gurgling sounds transmitted from submerged hydrophones. On the third floor of the monument, visitors could hear the open microphones in sixteen different locations, including the Opera, the Bourse, the Louvre, the Sacré-Coeur cathedral, various lively Parisian cafes, and many others²². Especially in this project, we notice his use of urban planning strategies to control traffic noises while the live natural white sound from breaking waves on the Normandy coast were masking the traffic noise surrounding the monument.

Regarding his artistic approach, Fontana is always emotionally involved with the spaces he works with; he relates to these spaces with his own personal, as well as collective memories. There, the memory was not only a historical memory regarding the site, but also the memory of the visitor returning to the site.

His intervention *Acoustical Visions of Venice* (48ma Biennale di Venezia, 1999) is another work connecting remarkable elements of the soundscape, where the listeners were dealing with live recordings and streams as with collective soundscape memories. This project «was entirely developed digitally through UHF transmitters streaming to Punta della Dogana where parabolic antennas were installed to receive the sound from sixteen microphones placed on different bell towers of the city»²³. Related to his latest projects, within the evolution of the fiber optics in communication technology we mention *Shadow Soundings* (2017), his colossal installation at MAAT Lisbon streaming the live sound and video from the 25th April Bridge in Lisbon. Especially in the Lisbon and Venice projects we note a tendency in his site-specific practice towards establishing a strong connection between the spaces and architectures he is working on, transforming them in his studio. He returned to Venice for the Architecture Biennale 2018 with *Primal Sonic Visions*, an exhibition in the spaces of Cà Foscari reflecting his year-long research at renewable energy sites between the Middle East and Europe. The exhibition was an audio and video installation involving two floors of the Cà Foscari spaces and the Court Yard (Fig. 3 and 4). Natural energy and natural environments served as sonic inputs projected in the urban environment to transform it. his technique has been used in his works *Landscape Soundings* (Vienna, 1990), *Vertical Water*

²¹ Author interview with Bill Fontana, October 2019.

²² Bill Fontana, *Arche Sonore 1994*, <<https://continuo.wordpress.com/2007/10/17/bill-fontana-arche-sonore-1994/>> (10/19).

²³ Author interview with Bill Fontana, October 2019.

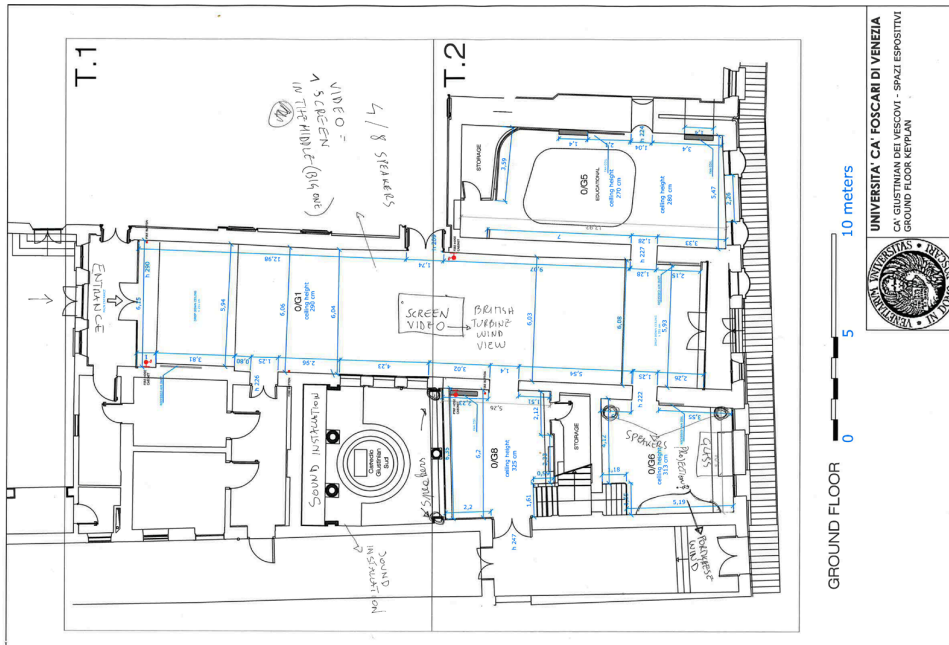


Figura 3. © Bill Fontana, Installation plan for *Primal sonic visions* (Ground floor of *Ca' Foscari Exhibition space*).

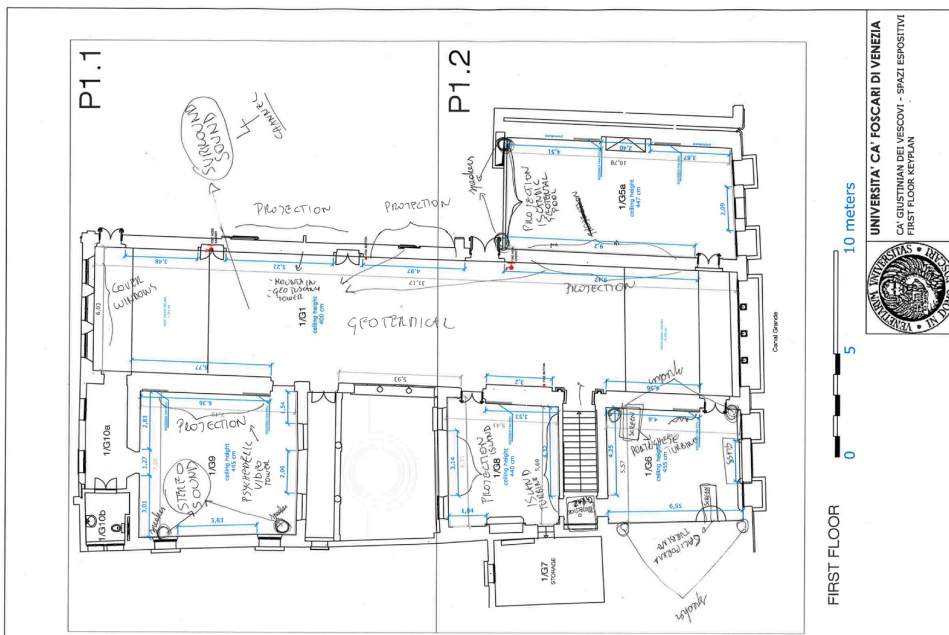


Figura 4. © Bill Fontana, Installation plan for *Primal sonic visions* (First floor of *Ca' Foscari Exhibition space*).

(New York, 1991) and *Sound Island* (Paris, 1994), and even more recently in *Sonic Dreamscapes* (The City of Miami Beach Art in Public Places program 2018).

3. Diffusion systems

Shadow Soundings (April Bridge, at the MAAT) demonstrated the process of monitoring a structure and its real time and past time soundscape through a living work of media art. He made seven visits to Lisbon over one and a half years to set microphones cameras up in the bridge. The multichannel video and sound installation with live cameras, microphones, accelerometers and hydrophones produced an abstract real time media art work for the 800 Square Meter Oval Gallery, the main exhibition space in the Museum using a mix of 10 live sound channels. As Ariane Koek writes in her essay about this project

Shadow Soundings is no less of an acoustic experiment, but on a far bigger scale. Fontana uses microphones and accelerometers in the same positions on the *25 de Abril* bridge, but the sounds they pick up appear to be heard at different times and different places. Sound travels at different speeds in the air, which the microphones pick up, and in the steel the accelerometers are attached to. He then mixes them up live with a compositional tool – the Matrix mixing console – to choreograph and extend movements of sound, so that it is deliberately layered even further away from reality, including the visual images. He is radically breaking down the relationship between sound and image, sight and sound, and taking us to another dimension of perception entirely²⁴.

A Meyer Sound D-Mitri audio platform with integrated multichannel networking was used to diffuse the sound of comprising six frames, with one DAI-24 input frame placed on a bridge tower to carry live, high-definition multichannel audio. The indirect “dark fibre” connecting the remote frame to the main rack spanned a distance of about 21 km, making it by far the longest connection yet deployed for hosting D-Mitri’s Ethernet-based audio network. Inside the museum, the D-Mitri platform served as a “digital brain” tasked with implementing Fontana’s design for an all-enveloping sound experience. Using Meyer Sound’s Spacemap multichannel panning software, Fontana programmed the system to dynamically assign the ten live sounds from the bridge to a total of 30 Meyer Sound self-powered loudspeakers mounted in and around the gallery space²⁵. On Meyer Website, the project technical background was explained as follows. «Assisting Fontana on the project was Scott George of London-based Autograph Sound. Also a collaborator on several prior Fontana projects, George was similarly enthused by the promise of AVB networking». «AVB networking is an exciting technology that enables us to transport extremely high audio quality over

²⁴ Ariane Koek, *On the edge of vision*, <https://resoundings.org/PDF/On_the_Edge_of_Vision.pdf> (11/19).

²⁵ Meyer Sound Website, <<https://meyersound.com/news/shadow-soundings/>> (10/19).

long distances», he observes, «so this greatly expands possibilities for projects where we want to get pristine audio from distant sources and bring it back to the exhibition space. I hope this will continue to grow and eventually allow us to send extremely high quality audio over networks to any point in the world. [...] Inside the Oval Gallery, the 30-channel D-Mitri system connects to two concentric rings of Meyer Sound self-powered loudspeakers. In the main gallery, eight UPJ-1P loudspeakers and six UMS-1P subwoofers play a sonic choreography made from the oscillating tones of traffic over the steel grid roadway and the accelerometer picking up sonic energy from the suspension cable. A separate zone, comprising 16 UPJunior compact loudspeakers, covers the sweeping outer walkway and plays a spatial composition derived from the live hydrophone in the river. In addition, four UPJ-1P loudspeakers extend the sonic effects on the exterior façade of the building»²⁶.

For all these reasons, this installation is the artist's most ambitious project. Fontana also used the D-Mitri system in three other projects. In Chicago for *Soaring echoes, Pritzker Pavillion, Millennium Park*, (2012) he used the existing 102 loudspeakers system of the Pavillion in the Millennium Park to diffuse the field recordings reflecting the dynamic movements inside the city soundscape. While talking about this project, he explained «that he was fascinated by the possibility of controlling and programming the diffusion sitting with his laptop in the park, using the D-Mitri tool to draw a SoundMap that showed the positions of the speakers in order to individually program the trajectories of sounds»²⁷. The work was constructed in seven movements, composed from field recordings from the rhythms of its public transportation systems to the underwater melodies of Lake Michigan and the Chicago River and recordings from the artist's sound archive.

In the 64-channel mix *Song Lines*, songs of warbling birds recorded in various wetlands in and around Chicago, as well as habitats in the northeast, soar back and forth across the air in a wave that suggests the motion of flight. Multi-directional kinds of movement are experienced in the elusive *Wind Phase*, which broadcasts high-resolution recordings of several wind turbines and the hum of cars passing over the Columbus Avenue bridge at different levels of the sound system. These kinetic mixes contrast with more textural pieces that employ human voices to address, for example, notions of collectivity and commerce, as in *Public Calls* that layers the roaring cheers of fans at a baseball game and traders' calls during the Open Outcry at the Chicago Mercantile Exchange²⁸.

In 2014 he created *Sonic Mappings*, the permanent sound art installation for the MAXXI Museum in Rome. He created a 38-loudspeakers installation by using a combination of acoustic DPA microphones, hydrophones, and accelerometers to re-

²⁶ Meyer Sound Website, <<https://meyersound.com/news/shadow-soundings/>> (10/19).

²⁷ Author interview with Bill Fontana, October 2019.

²⁸ Susan Snodgrass, *Soaring Echoes*, <https://echosounddesign.com/media/Soaring_Echoes_by_Susan_Snodgrass.htm> (11/19).

cord the water sources of Acqua Vergine from the source springs at Salone to the ancient tunnels under the streets of Rome. Here, it is important to stress the role of the Meyer diffusion system alongside the qualitative response. Dealing with the dynamics of the sound Fontana captured, the diversity and full range of sonic impact and acoustic resonance of the underground waters of Rome were following the curves of the MAXXI, within the bends typical of Zaha Hadid's architecture. This system gave the artist the possibility to create what he called a sound sculpture, structuring the space with sound and shaping the sound through the architectural forms and resonances. While commenting on the third project in which he used the D-Mitri system called *Sonic Dreamscapes* (2018), Fontana argued that «his choice of a 72-channel Meyer sound and projection systems [...] is the perfect instrument to create sound choreography inspired by the marine and natural environments of South Florida [...]»²⁹. This permanent installation in public space was commissioned by the City of Miami and supported by Art in Public Places and the New World Symphony and is a clear statement of his acoustic vision. Collecting marine and natural sonic environments and diffusing them in form of multiple sound compositions within multiple videos on a large wall projection, Fontana succeeds in transmitting the experience of an image that a sound makes and the sound that an image makes.

4. *Field recording*

We have focused so far on the live streaming and diffusion technologies in his work. However, if we remember the origins of Fontana's artistic approach to sound, we encounter the biggest issue and process in his research: that of field recording practice. As a sound artist of the first generation, Fontana has dealt with the fact that sound art was not established within the art world as he began to present his installations to a broader audience. This also meant that the technology he was using developed also in relation to the projects he was involved in, allowing him to experiment with new possibilities to deal not only with the audible but also with the vibrational matters of the architectures he was working on. Reminiscing the first time he used accelerometers³⁰, he mentioned the project he made for the Venice Biennale in 1999 which was organized by the Peggy Guggenheim Museum. At that time, he had a big commission in New York that was to connect all the Guggenheim Museums worldwide within a sound piece:

The project was never realized because of its complexity, but instead provided an opportunity for the artist to spend time conducting sonic research in the cities. I also purchased my first accelerometers in order to pick up the sonic vibrations of the museum's interesting locations from the structural point of listening. Furthermore, the first time I used accelerometers to realize a project was in London in 2003 for "Speeds

²⁹ Source: <<http://www.mbartsculture.org/bill-fontana-sonic-dreamscapes/>> (10/19).

³⁰ Author interview with Bill Fontana, October 2019.

of Time,” when I mounted them on the clockwork mechanism of the Big Ben, working within a sound engineer programming on Supercollider. Through an algorithm, I was able to emulate the overtone structure of the bells and to program a diffusion structure through eight speakers. The new version of “Speeds of Time” was originally commissioned by the Works of Art Committee of the House of Commons in 2004, and had focused on the Great Clock. As another live sound sculpture, sensors and microphones were mounted on the “Great Clock,” but instead of using Supercollider I used a system similar to D-Mitri, a range of DSP loudspeakers produced by Richmond Sound Design. That system, called AUDIOBOX, had sixteen input and sixteen output channels and a feature called Diffusion Generator (the new model of it is AB1616) enabled me to take the sound from live microphones and accelerometers and make moving diffusion patterns to sixteen channels applying also time delays (he used also time stretching) to different output channels and control the shape of the diffusion. The accelerometers I used for the Big Ben project were the same as those used for the project at London Millennium Foot Bridge called “Harmonic Bridge” (2006), when the bridge’s sound was streamed to the Turbine Hall of the Tate Modern, and the Main Concourse of Southwark Station of the London Underground. The choice to use these accelerometers was related to their suitability to record in high energy situations and due to their high frequency response.

4.1 *The vibrational material*

His field recordings evolved when he began to use bigger accelerometers, the *size make accelerometers* which are ten times more sensitive than those he used on the Big Ben and Millennium Bridge. Fontana applied them for the first time in his research for two projects in New York and Japan in 2015. In that same year he had an exhibition in Tokyo, and

while traveling to Kyoto accompanied by a friend of mine who was a cultural historian, I visited some Buddhist temples. Here I had the idea of putting those accelerometers on the temple bells at rest. That experience brought me to conduct a similar operation in New York. There, in 2015 I mounted accelerometers on the Bell Tower of the MetLife Building, a tower built in 1909 and located on Madison Avenue near the intersection with East 23rd Street which became a luxury hotel between 2007 and 2008, leading to the bells going out of use. Fontana, while in Kyoto, applied a kind of sonic reactivation of the bells, monitoring them with size make accelerometers to pick up the vibrational material derived from the urban sonic environment around the tower³¹.

Sound installation is, in fact, as we defined it through Fontana’s practice, always related to architecture or public space, creating new connections between spaces and bodies, managing to connect two separate places, both in space and time. Generally, his work showcases the complexity in sound installations through simultaneous points of listening, where in many cases there is a real time streaming of sound focusing on

³¹ Author interview with Bill Fontana, October 2019.

collective situations. The movement of a sound from its place, putting the sound object in another different spatial reality, connects spaces, and makes them collide in one reality and at the same temporal point of listening.

In his work, we find an attempt to create a view beyond the visual totality and beyond artistic categories. Thus, through his constant fascination with technology and experimentation with his working equipment, as well as his use of even more complex systems for sonic spatialization and streaming, he carries out research at the intersection of art and science. When analysing his work for its scientific and technological merits, we notice the multiple areas of research surface in his activity, from acoustic strategies in urban planning, acoustic ecology, sound engineering, but also cultural heritage, with a focus on the historical view of the urban and natural environment. All of these dimensions are consistent with his main concern of demonstrating the possibilities of listening to our world, both in a conceptual way, involving our bodies and history in order to open broader possibilities to engage with social reality and problematics, as well as technically, by focusing on a site-specific working process that continues to inspire artists, musicians and researchers today.

5. Conclusions

In retrospect, Bill Fontana's work reflects a multitude of aesthetic issues related to the contemporary approach to sound. Within the last 30 years, his sound installations became definable as works that open a space to multiple dimensions, in the case of works that deal with space; those crated and suspended in sound wonder in an virtual reality. According to Brandon LaBelle the sound is not fixed, it is ephemeral, it moves through the walls, through bodies, without perspective³². Fontana's concept of listening introduces sonic memory, a common ground that connects bodies and structures, and harkens to collective social and political consciousness. His influence on the contemporary sound artistic practice is mentioned in two categories of sound art: the sonic transmission technologies and the sound sculpture (as he defines his sound installation).

Although Fontana's work is always focused on both visual and sonic aspect of the human environment, his practice is mentioned in general sound art literature mainly for his musical attention to environmental sounds, his approach to sound sculptural definition and his work with sonic transmission (Licht 2007; Kahn 1999; LaBelle 2006). Fontana's work can be viewed from a range of different sound art theoretical perspectives. On one hand, as Alan Licht points out, Bill Fontana is one of the first generation of sound artists (Anne Lockwood, La Monte Young, Maryanne Amacher, Bernard Leitner, Max Neuhaus) who emerged at the same time as the Earthworks and Land artists. The beginning of his work as a sound artist, during the 70s represents an acoustic philosophy splintered from the acoustic ecology movement diffused through

³² Brandon LaBelle. *Background Noise - Perspectives on Sound Art*, New York, Continuum 2006.

the *World Soundscape Project* by Murray Shaeffer³³. While acoustic ecology aims to research the sonic environment background noises and uses the categories of lo-fi and hi-fi soundscapes, the hi-fi soundscape is one in which discrete sounds can be heard clearly because of the low ambient noise level, Fontana practices the relocation of ambient sounds to urban public spaces as a radical attempt to redefine the meaning of the acoustical context in which the sound sculpture is experienced. This leads us to say that the view that urban soundscapes have a lo-fi connotation is completely different from the concept proposed by Fontana which listens to the the whole sonic environment within a musical perception:

In the human/built environment there are some interesting examples of designed sounds that can be beautiful to hear. For example, fog horns, train whistles, and bells are designed to travel long distances and be clearly recognizable. However, in a general sense the human soundscape is not designed. Many densities of sounds occur at sustained high levels that have no quiet space in their acoustic shape. This traditional lack of designed sounds and sound relationships is largely influenced by the concept of noise. This concept assumes a hierarchical value difference between meaningful and meaningless sounds. It is a general fact that most people in our Western culture find little meaning in their everyday experience of ambient sound. Sounds are normally considered meaningful when they are part of a semantic context such as speech and music. Most ambient sounds exist in a semantic void, where they are perceived as being noises. In addition to the semantic context in which meaningful sounds are experienced (music and speech) the physical context in which this semantic context is experienced is a crucial perceptual issue in the potential meaning of ambient sound (Fontana).

Alan Licht focuses on the environmental attitude in the early work of Fontana, focusing more on his work as an example of the internal logic of sound installations like the meaning of duration/time as defeated in the installations that sustain sonic moments expanding the musical listening attitude into something else - letting the listener examine details as with a visual work of art. This dichotomy between the visual and aural aspects of time and its perception as seen in the work of Fontana are deeply treated by (LaBelle 2006). He mentions the way the sonic process activated by the artist through the dislocation of sounds and networking the soundscapes, extends listener's bodies, dislodging not only the sound from its location but involving the listener in this process of being in two places at the same time. From the musical network perspective, LaBelle mentions Fontana's work as «supplying musical potential with unimpeded source material». The artists supply to the field of sound art originates both, from his musical approach to environment sounds, defining the discipline of field recording besides its scientific aspect and putting it on an abstract and subjective level. In the work by some field recording artists in the past 20 years, we recognize a body of work that explores the transformation of noise into something aesthetic. In the work of many artists working with recorded

³³ R. Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World*, VT Destiny Books, Rochester 1993.

sound, (after Bernie Krause, Hildegard Westerkamp, and Chris Watson which all have links to the avant-garde, but their body of work also aligns them with environmental soundscapes and ecological documentary) in the experimental electronic performative environments like Francisco López, Lawrence English, Antie Grege Ripatti there is a wish to push the radical potential of sound evolving into more phenomenological listening, but at the same time dealing with a musical listening attitude. If we take the meaning of sonic sculpture in the way Fontana does, we are in fact approaching the contemporary necessity by sound artists into the possibilities of environmental sound as background noises as a commence to active understanding of the sonic messages they lead.

Defining Fontana practice as an active understanding of technology and as a tool to create a way to listen to the spaces with a deeper awareness to the different possibilities of hearing them, this essay wanted to point out his experiential consciousness about the world through the listening attitude (everytime and everywhere). The movement of a sound from its place, putting the sound object in another different spatial reality connects spaces. Through his searching the reality of the world he experimented the sound enclosing the real material of the world, describing it as a 3D space, in its totality.

Resources

Author interview with Bill Fontana, October 2019.

Blume, M., "Portrait of Bill Fontana," *International Herald Tribune*, July 9, 1994.

Crowley, J. *Interview with Bill Fontana*, "The Wire", London, April 2004.

D'Errico, M. A. *Interface Aesthetics: Sound, Software, and the Ecology of Digital Audio Production*, (PhD diss. UCLA, 2016).

Fontana, B. *Arche Sonore 1994*, <<https://continuo.wordpress.com/2007/10/17/bill-fontana-arche-sonore-1994>> (10/19).

Fontana, B. 2008. *The Relocation of Ambient Sound: Urban Sound Sculpture*, *Leonardo* 41: 154–8.

Fontana, B. *Borrowed Landscapes*, <<https://www.resoundings.org/PDF/fontanasoundsculpture.pdf>>, (10/19), undated.

Fontana, B. *Musical information networks*, <<https://resoundings.org/Pages/musical%20networks.html>>, (10/19), undated.

Fontana, B. *Resoundings*, <<https://resoundings.org/Pages/Resoundings.html>>, (10/19).

Fontana, B., *Tape Library*, <<https://resoundings.org/PDF/TAPELIBRARY.pdf>>, (10/19).

Fontana, B. "The environment as a musical resource", <https://www.resoundings.org/Pages/musical%20resource.html>, (07/20), Vienna 1990.

Fontana, B. "The Relocation of Ambient Sound", *Leonardo Volume* 20 # 2, Pergamon Press, Oxford, 1987 and republished in Volume 41, Issue 2, 2008.

Fontana, B. & Schöning, K. 1994. *Ohrbrücke/Soundbridge Köln – San Francisco 1987*. CD-Booklet.

Kahn, D. *Noise, Water, Meat: A History of Sound in the Arts*, MIT Press, Cambridge, 1999.

- Koek, A. *On the edge of vision* <https://resoundings.org/PDF/On_the_Edge_of_Vision.pdf> (11/19), undated.
- LaBelle, B. *Background Noise - Perspectives on Sound Art*, New York, Continuum 2006.
- Licht, A. *Sound Art. Beyond Music, Between Categories*, Rizzoli International, New York 2007.
- Riding, A. “*The Sound Artist Bill Fontana Amplifies the Tate Modern’s Millennium Bridge*”, New York Times and International Herald Tribune, June 20, 2006.
- Riley, R. “*Bill Fontana – Speeds of Time*”, Haunch of Venison, London 2005.
- Rudi Jøran, “From a musical point of view, the world is musical at any given moment: an interview with Bill Fontana”, *Organised Sound* 10 (2), 97, 2005.
- Schafer, R. M. *The Soundscape: Our Sonic Environment and the Tuning of the World*, VT Destiny Books, Rochester, 1993.
- Snodgrass, S. *Soaring Echoes*,
< https://echosounddesign.com/media/Soaring_Echoes_by_Susan_Snodgrass.htm> (07/20).