

CHANGING CITIES VI: Spatial, Design, Landscape, Heritage and Socio-Economic dimensions: Climate Crisis. Cities' transitions towards smart & green development

**Urban Cultures & Public Open Spaces -
Digital Sound-art Installation as a Form of Public Art**

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Extended abstract

Once a Digital artwork is installed, a new condition develops and the space around it changes. Particularly, Digital artwork and Public space along, constitute an instrument of measuring space and time, a sum of knowledge that is capable of re-organizing our spatiotemporal perception. Hence, a number of questions rise, such as: Is the environment of any Public space suitable for hosting a Digital work of Art (by means of an artwork could saturate a place in its conceptual manifestations)? Is any Digital artwork powerful enough to transform -through minimal and marginally discreet or indiscreet interventions- the Public space in such a way that we shall be able to experience it in a more conscious way?

In this sense, we can understand the thinking that considers Digital Art Installations in Public Spaces to be subversive structures of architectural power, since as soon as they appear they lure us into the beautiful world of genuine aporias: What is that composes the identity of the place? Why the limitations of the place are a matter of awareness (considering that our understanding depends upon the recognizable, the marvelous and the uncanny elements that define the identity of a place)? How the additional element of an Art Installation makes us aware about certain spatiotemporal notions that we were unable to realize as significant?

The text is based on the way which our senses are triggered in our contact with both the physical and the digital elements, thus, it specifically refers to a Sound Installation in a Public Space. The immateriality of the medium and its power to enkindle cerebral activity lead us to examine the function of digital Sound artworks as a conceptive operation itself and at the same time, as a project of a contemporary idea, which responds to present, social and existential issues. See it as a memory revitalization, a sustainable proposition, an interesting statement, an experimental hypothesis or a brilliant strategy, a Digital Sound Installation exists in a broader sense, as a profoundly subversive force, addressing to the multidimensional, different approaches and discourses upon the cultural renegotiation of the Public open spaces.

Keywords: Digital Art; Sound Installation; Cultural Renegotiation; Public Open Space; Social Engagement

1. INTRO: URBAN WINDS

The conditions are changing our observation, the frame changes the text. Therefore, endowed with mobile ratios that are affected by regularly altering causes, this is ultimately a world of intentions. What it is interesting here, is the conditions of this world continuously are changing our perception of it; changing the subject, the object and our cognition of the space and time. Matters of cognition, the space and the time, the ambience of an environment, the scale of the things, their proportion, the intervals of our attention, and the vectors of the motions around us are constantly twinging our sense of understanding. Mainly because we need to hold on our thought in order to implement our thinking on any subject of a real situation.

"The gaze perceives the world under conditions, knowledge is obtained under conditions", Nietzsche wrote in the *On the Genealogy of Morals* [1], to remind us that the understanding of the

world is governed by circumstantial preconditions such as identity, gender, geographic and social origin, cultural and political systems of value in relation to an indefinite, predominant current system of values. All these evasive preconditions create the basis for the birth of idiosyncratic behaviors, since they connect to an already, educationally shaped, ability to perceive the world. Our ability regulates our capacity to internalize new information and relieves its interaction with the old ones.

If all the above are happening as true, then, we cannot be sure of the true value of the assumptions and theories we cherish to address to ourselves –or to others- thereafter, the only thing that remains for us to do is to create narratives about that which we think we know for sure, or, on the contrary, narratives which are consciously given as unsure. Yet, some artists create art-works, not to acquire a recognition of a truthful confession, far beyond that, they expose the complex relationship that sustain their existence, thus, their relationship to the world. To propose such a traumatic relationship is a starting point, where the preconditions produce conditions, and that's a very intriguing development of the start we made.

Diving deeper in to this aspect and more often than not, if our starting point is the succession of forms, our findings are forms of discontinuity, whereas, if our starting point is the discontinuous forms, our findings are forms of succession. There is a peculiar link between our intentions and findings, which leads from the circuit of seeming repetitions to the circuit of apparent "fragmentations". As a result, a communication based on free-associations arrives that allows the emerging of gaps, and if there are no better circumstances, in this zones where meaning is in dispense, artists find a lush place to experiment. To experimented, here means, to assume different, or even new, relationship between the parts of a narrative, between utterances and fragments, traditions and new revolutions. It also means an exploration of an environment that does not allow the development of the concomitant relationships, on the contrary, it opens a field for investigation [2].

This act that often appears as a mapping technique. Mapping is an exercise in analogy, a process of interpreting a real place, condition, situation, event, in an abstract (graphic) language, while at the same time it evolves the process of transforming an abstract finding into a legible object. Digital Media artists experiment in this field with the scale of things (conditions, situations, events) and the senses of vision and audition as the limited and psychologically dependent possibility of human's perception addressed to the world. Moreover, their artwork presents us with its own Aesthetics that concerns the interrelated and inseparable relationship of the subject (human) with the object of its attention (environment). Yet, a digital artwork cannot rhetorically impose a certain concept on the Public space, or a significant aesthetic quality. All it can do is offering to the visitor a powerful stimulus to reconsider his cognitive process and communication with the space in which it stands. In the present text, the digital artwork specifically refers to a Sound art Installation.

When an object produces sound, it produces pulsating movements that are transmitted to the environment. The relevant description would pictorially present us with spherical sound waves that are emitted in all directions through the air, at the level of the atmosphere. Certainly, to approach the occurrence of sound we need to assume a "transmitter" a "transmitted object" and a "receiver". In this sense, the transmitter is a sound-generating body and the receiver is the human body, explicitly, the skin and the ear. The transmitted object (that which is transferred between transmitter and receiver) is the sound-signal, a 'signifier'.

Herman Kolgen [3] seems to know a lot about the skin, much more about hearing and even more about acoustics, how the hypothalamus of the human brain "disorganizes" and its functions are "deregulated" when it receives certain sound-signals. "Urban Wind" (2015) is a Sound Installation, part of a larger series entitled "Windfields". The common element that runs through all parts is based on the dynamic characteristics of the wind, the flow of air, so, het places sound sensors in various locations of the city that receive data from the speed and direction of the wind. Gathered data are analyzed into groups of clusters of sounds that they governed by their own rules (accordions) and are finally transmitted as an euphonic "soundscape". Harmonies you've never heard or thought before, make you feel the contraction of the tiny muscle at the base of each and every pore.

2. 2066

In a poetic and an ultimately urban sense, Public Space is the place of physical coexistence of individuals, while a non-relational flow between Art and Public Space is often observed, a situation that is frequently represented through its typical qualitative features, that are, the "individual", the "space" and "art". If we think about the Installation of a digital Sound-piece, any surface of the built volumes in a Public Space turns into an osmotic membrane, as if any kind of material alters to a piece of blotting paper. The limitation of the urban space changes into a correlation: the transit of the relationship between individuals and space and the activity of continuous exchange of meaning between the sound-piece and the space, are in a constant negotiation at the level of the perception, to the person who experiences it. The physical (or architectural) and the digital (or audio) elements are mutually absorb each other.

Indeed, the immaterial nature of a digital sound-work gives a feature of an identity to the common abstract world we share, a world that changes spatially from step to step, temporally from one moment to another. Furthermore, as a creative act a sound art-work repeatedly cross the line between being eligible and ineligible in its shift to formulate and address an aesthetic and for that critical subject-matter. Regarding the duration of this time-based media, a digital sound-work seems to insist on a communication with the individuals that experience on the open public space that hosts it. This condition of communication is like a slowly liberating process regarding the humans. By catching our attention, it creates for us "capsules" of time intervals within which we can think about how this element of the space affects us. The slot of time during our uncertain wandering between what we know about a space and what is really "happening" in it, offers us the possibility to understand the multi-significant aforementioned identity of the public space in which we have found ourselves in.

By all means, to move freely in an open Public space (in any space) presupposes the apprehension of the nature of the environment in which we move, understanding somehow its identity. And while an open space entails many kinds of contradictions, we let the information we get from it to be recorded as subconscious knowledge, until a moment where an unexpected event "happens" and overturns our perception of it. In other words, when we are entering in an environment where there is a digital sound Installation, something is created that develops our thinking as it simultaneously reminds us of something familiar and introduces us to something unutterable. Suddenly we hear "something".

Hans Rosenstrom's [4] sound installation "2066" (2016) provokes to a visitor a strong doubt about their ability of their senses, puts them in an alertness to what is happening and whether that which is happening is revealed in the tangible dimensions of the Real. Three transducers, (his chosen type of 'speakers'), are inserted into five granite boulders, placed in the open space of Värtapiren harbor terminal in Stockholm, Sweden. The speakers transmit a vibration to a metal rod that penetrates the stone and is attached to a small metal plate. If someone lies on the surface of one of these stones and rests his head on the metal plate, the vibration from the speaker is transmitted as clear sound into her/his head. At the same time, these auditory pieces on ideas about how the world will look like in 50 years from now, seem to arrive from indeterminate sources, testing our power for a perceptual representation of space.

Space is an entire whole to which 'I' continuously refer to, in order to determine my position. Such a relation becomes possible in the appreciation of the dimensions interposing between oneself and any other point of this space that is clear to one's ability. A shift sweeps the space in its entirety, in order to succeed in being finally pinpointed by its subject. Such a shift is only perceptible within the spatial and, of course, temporal dimensions. It cannot be perceptible otherwise and in this sense, it can be said that space is a kind of form of the 'content' shift as well as the word is a kind of form of the 'content' knowledge. Further to that, the public space includes certain segments occupied by objects, as well as unoccupied, free segments, which in order to define them, one delineates them within a kind of mind-set. It is 'named' (i.e. 'free space') in order to be somehow intelligible, somehow measurable in order to be nominated with an apprehension. Which changes, not only in each step but also, at any and every second that the focal function shifts.

An appropriation of a space often ends to an invention of 'a topos of personal projections', accompanied with an assertion of a name and meaning. It gradually becomes the prerequisite

locus of a series of personal, positive or negative, signs and connections. Then, space, as both prerequisite and a terrain of a appropriation, refers to:

- a. the reproductive ratio (i.e. systems of perspective) and
- b. the empirical proportion (i.e. the individual, subjective state of perceiving the space and the empirical, objective state which answers to one's requirement for apprehending the notion of space).

Our individual sense of a space is engaged with the observations about perceptive debilities, cognitive reductions: the visual pyramid does not exhaust the entire possibilities of apprehending a space. Because the view differs as we move from a specific point A to a specific point B, although neither the space nor the perception about the space changes. Being at the point A delimits the entire entity of the space, because being at a certain point leads to an overview of a certain sight. However, a certain point of view cannot verify the remaining part of the space (the one that is not included in the territory covered from the sight A) as a non-existing. Moreover, the perception of the space is developed through ceaseless negotiations made by the individual who acts in it. At long last, space is a state of perception, likewise time is a matter of perception. Our perception of space and time coincides to the perception of our being (the recognition of the 'I' who witnesses the space). Indeed, the subject of the perception is always there, the subject itself is the reason and the 'account' of the perception [5].

We need to have these in mind in order move on to the auditory space, for the auditory ability is not bent on our intentions, it is not driven by a pre-determined focus of our perception (from A to B). The sense of audition is directly related to the all-dimensional perception of space, for that reason, it presents us with a vast spatial and functional range. Then, even the "silence" of one space is different from the "silence" of some other place, only because their physical and cultural characteristics differ. The mixture of the physical with the cultural characteristics is an obscure matter as it can be seen in the distinction between ordinary listening and reduced listening. According to Schaeffer [6], ordinary listening is divided into the four categories; listening, hearing, attending and understanding. Reduced listening is achieved by repeated listening, which enables the listener to focus on the intrinsic features of a sound, disconnected from its context. Reduced listening is a tool for investigation and for shifting listening attention intentionally, from the contextual to the inherent features of sound.

Criticism of reduced listening points out the difficulty of recognition of the contextual associations of a sound. Still following Schaeffer, in *Sound Unseen* (2014) he explores acousmatic sound (a sound that one hears without seeing its cause), a characteristic group of sounds we are dealing with in our everydayness. When both of our ears are stimulated, the difference between the intensity and the frequency at each ear, over time, has a major effect on sound perception: The term *binaural hearing* is essential for localizing sound sources; sound arrives at each ear at a slightly different time and with quite different intensity. The brain uses these differences to determine the location of sound in space. As a result, an analysis of an auditory scene depends upon the sensitivity of binaural hearing to the frequency information that comes from different sound sources [7].

3. L'OBJET SONORE¹

We arrive at two interesting bench marks; the first one deals with our conscious awareness of our auditory sense of listening and the second one responds to our engagement with the product of our hearing. I shall continue with some specifications in correspondence to the chain "transmitter - transmitted object - receiver", since they entail important aspects to the design of a sound installation for an open public space. Conscious awareness of hearing is an activity that consists of the semantic chain "stimulus – transduction – perception". Though to some degree is affected

¹Pierre Schaeffer (1967) distinguishes the term L' objet sonore, as an "auditory object for human perception" separating it from its quality as a "computational or electroacoustic object for composition".

by later processes of cognition and various levels of conscious processes, hearing is itself pre-conscious. The conscious awareness of listening is as an attentional process, which means that it is active and concerned with the chain “cognition, memory, interpretation and interaction”. Built upon the ability of hearing, listening moves beyond the plain auditory function, in as much as, it includes short-term and long-term memory along with the notion of interpretation. For that reason, listening is considered as a conscious activity. To elucidate the matter I shortly give the relevant theoretic approach of Barry Truax [8], Michel Chion [9] and William Moylan [10]. Truax described three general modes of engaging with the acoustic soundscape: listening-in-search, listening-in-readiness, and background listening. Listening-in-search is listening for something by means of actively seeking it out from the acoustic range of relative silence to all-encompassing sounds. According to Truax, this is listening “...at its most active, involving a conscious search (...) for cues (...) detail is of the greatest importance, and the ability to focus on one sound to the exclusion of others (...) is central...” (Truax, p.22). Listening-in-readiness is when something that is important or significant becomes audible, even though one does not consciously listening for it. As such, it represents “...an intermediate kind of listening, that in which the attention is in readiness to receive significant information, but where the focus of one’s attention is probably directed elsewhere.” (Truax, p.22) This mode of listening “depends on associations built up over time, so that the sounds are familiar and can be readily identified even by “background” processing in the brain. (...) Even when a sound is unfamiliar or unexpected, this type of listening is ready to treat it as new information and evaluate its potential significance.” (Truax, p.22). Background listening occurs when a sound is still not an object of attention, yet, it cannot be ignored. Background listening “...occurs when we are not listening for a particular sound, and when its occurrence has no special or immediate significance to us.” (Truax, p. 24). This usually occurs when the sound is familiar and expected element of the sound environment.

Chion also described three general modes of engaging with the acoustic soundscape: causal listening, semantic listening and reduced listening. Causal listening is triggered in order to gather and identify information about a sound’s cause (source). According to his obvious semiological approach, causal listening is the common mode of listening, a primary mode of understanding the world around us. “When the cause is visible, sound can provide supplementary information about it (...) When we cannot see the sound’s cause, sound can constitute our principal source of information about it.” (Chion, p.25). Semantic listening is triggered in order to understand and interpret the meaning that ‘transmitted object’ carries, such as language. It involves a learned association of sound patterns and meanings, thus, “...is entirely differential. A phoneme is listened to not strictly for its acoustical properties but as part of an entire system of oppositions and differences.” (Chion, p.28). Reduced listening describes a mode of attention focusing to the qualities or characteristics of the sound itself. “Reduced listening takes the sound – verbal, played on an instrument, noises, or whatever – as itself the object to be observed instead of as a vehicle for something else.” (Chion, p.29). Further, he insists that “...the descriptive inventory of a sound cannot be compiled in a single hearing. One has to listen many times over, and because of this the sound must be fixed, recorded.” (Chion, p.30).

Moylan described four general modes of engaging with the acoustic soundscape: First of all, the critical listening and the analytical listening; their difference involves isolation versus context. Critical listening focuses on the qualities of the sound itself, enabling an “...evaluation of sound quality out of context...”. Analytical listening searches for the relationships between sounds for an “...evaluation of the content and the function of the sound in relation to the (...) context in which it exists.” (Moylan, p.90). In support of these two listening modes, Moylan conceptualizes some crucial elements, that are: *sound event*, *sound object*, *perspective*, and *focus*, a familiar contextualization due to Tschumi’s views regarding the group of perspectives that the notion of a *city* includes [11]. These conceptual elements underlie those of Truax and Chion. Thus, the sound object formulation is closely related to the *L’ objet sonore* of Pierre Schaeffer. A *sound event* refers to the shape or contour of sound over time, “the shape or design of the musical idea (or abstract sound) as it is experienced over time” and “...a complete musical idea (at any hierarchical level) that is perceived by the states and values of the artistic elements of sound (...) the sound event is understood as unfolding over time, and is used in analytical listening

observations". By contrast, a *sound object* is defined as a focal point for evaluation, considered outside of their original context: it is the object of critical listening. In this sense, a sound object is "...sound material out of its original musical context" and "...a conceptualization of a sound as existing out of time, and without relationship to another sound (except its possible direct comparison with another sound object)." (Moylan, p.91). *Focus* is the act of directing one's attention to specific elements in the environment in order to apprehend information. "*Focus is the act of bringing some aspect of sound to the center of one's attention*". *Perspective* is the hierarchical level at which one is focusing. "*Perspective is the perception of the piece of music (or of sound quality) at a specific level of the structural hierarchy*" (Moylan, p.92).

In need to assemble, sound affects us; it alerts, distracts or concentrates us, while it develops into the space around us. To return to Truax, sound often functions as an auditory listener's engagement and immersion to the space. Among our genetic ability and our perceptual vagueness of listening while we are traversing through our cities, the idea of designing a digital sound Installation for an open public space appears as an arduous task. Hence, to work upon it, we need to take on an advance survey regarding the space in quest along with the conditions that affect the propagation of a sound-piece: Particularly,

I. A complete record of the referent open Public space need to be made, which concerns observations about:

a) The wider spatial arrangement of the elements surrounding the space, b) The complex principles that govern the identity of the space and c) The elucidation of information that is not found in the visible order of things, such as, the identity of the society that grows around it, which include but are not limited to: a) Observations about the historical, cultural, social and economic conditions that have shaped the present state of the place, b) Apprehension of the structures and balances that develop between the specific open public space and the individuals it hosts and c) The artistic intention of the one who observes and records, as seen through the choices and the decisions made and appeared in the recording material and its arrangement.

II. An evaluation of the properties of sound in reference to the exact conditions of a given open public space; an in situ case-study on:

a). Refraction (fluid change), b). Diffraction (acoustic shadow), c). Clarity (sound permeability), d). Reverberation (acoustic quality of a space), e). The linear and non-linear acoustics, f.) The aero-acoustics. g). Speed (depends on atmospheric temperature, thus, the medium through which a sound-wave is propagating, h). Due to the sound-wave nature (frequency, wavelength and amplitude), the spectral distortions that sound-waves undergo once they interposed by natural or artificial objects, then, during their propagation, sound-waves can be a). Reflected, b). Refracted c). Attenuated by the medium [12].

While sound is a pulsing vibration, a precise evaluation of factors that interfere with its propagation comprises also a significant matter of attention. The main factors affecting sound propagation in open spaces are:

a) The distance between transmitter and receiver: This is an important issue because it determines the perceived intensity of the sound in relation to its nature (spherical, cylindrical or plane wave), b) The height (from the surface of the ground) and angle (any change above or below of 45° from its axis) of the transmitter: The relative adjustment is necessary, especially in those cases where the receiver does not have a strictly specified position in space, c) The atmospheric absorption of the sound: The levels of humidity in the atmosphere significantly affect sound propagation, while the change in values affects its clarity and speed, d) The direction and intensity of the wind: The wind tends to bend the sound waves towards the ground, in the direction of its breath, e) The nature of the ground: It includes the anaglyph form of the ground and its height variations which affect a smooth sound propagation. Also, the quality of the soil and the type of nature that thrives into the place in quest are an important regulatory element of sound propagation. Specifically, vegetation on an outdoor scale does not have a fixed form, so their growth curve (the height and the density of foliage), mainly the inclusion of their evergreen or deciduous character in the seasonal change, needs to be taken under consideration [13].

Moreover, Digital sound is a subject analysed under different scientific fields that offers a desirable knowledge towards a composition of a Digital sound Installation for an open spaces, such as:

a). Electroacoustics; a field that examines electronically generated (synthetic) sounds, particularly *sine wave*, a periodic wave whose waveform (shape) is the trigonometric sine function, rely on electroacoustic engineering. b). Audio signal processing; a field referent to the electronic manipulation of audio signals using analogue and digital signal processing. c). Environmental acoustics; a field of studies concerned with the control of noise produced by human activities and machineries, thus, anything else that might be considered as auditory disturbance. d). Musical acoustics; a field dedicated to research and describe the physics of music and its perception, in other words, how sounds employed as music work. It includes among others: the human voice, computer analysis of music and composition; the perception and cognition of music. e.) Psychoacoustics; the research on this field tries to explain how humans respond to what they hear, whether that is noise or music. In many branches of acoustic engineering, a human listener is a final arbitrator as to whether a design is successful, for instance, whether sound localization works in a surround sound system. f). Bioacoustics; a field of studies on sound production and hearing of animals and plants, thus, recently evolves human functions and organs [14].

4. OUTRO: THE FORTY PART MOTET

Janet Cardiff's [15] *The Forty Part Motet* (2012), originally produced by Field Art Projects supported by Arts Council of England² presents us with an excellent example of the power of sound Installation to create three-dimensional audio scenes. The sound-piece is based on Thomas Tallis's sixteenth-century choral composition *Spem in Alium Nunquam Habui (In no Other is my Hope)*. Forty speakers arranged in eight groups of five forming a large oval. Each singer's voice, recorded separately, emanates from a single speaker. In an immersive installation, where each speaker initiates a different vocal recording. The voices meet together to produce a composition that envelops the audience, which is able to emotionally interact with the artwork. The use of spatial audio technology overlapping to acoustic engineering approaches, turning the audience to active participants in the meaning-making process.

With their intangible form and their technologically autonomous nature, we could see the digital sound art-works that move through entities of a space, as a sustainable resolution for culturally re-advancing an open public space. Auditory perception is responsible for interpreting and understanding our sound environment. Since it awakes our cognitive functions, we can see how sound provides for us a more consistent knowledge about the space. Yet, the construction of a sound Installation coincides to the creation of a system. A system relates to the notion of 'concept' that provides an account for the system and it lays the foundation for its manifestation. The materialization of a concept refers to the creation of a spatiotemporal dimension defined by the ambiguous relationship of "here" and "now" and the social dimension defined by the complex relationship of "me" and the "other". Thus, it is always a subject of continuous experimentation, an open and therefore unlimited in thought and means process [16].

To avoid any misunderstanding, a digital artwork cannot be a decisive metaphoric or a metonymic attitude, decisive for the identity of the space. As a digital art Installation cannot be a substitute for a deficient relationship between ourselves and the world, it also cannot take the place of an object of desire within a traumatic "void". It is not the counterfeit corpus of an absence of a political, social, personal care for our environments. Although, it can be some kind of (metaphoric, metonymic, etc.) expression of such an absence, inscribing the site of our relationship with an experienced loss, of a deficit or the "void" [17]. Thereafter, a digital sound-work (by definition ephemeral in its duration; any projection of personal affiliation is short-lived) leaves an open feedback system for the "individual", the "space" and the "artwork" itself [18]. By any social or individual connotation (carried through memories, propositions, statements, hypotheses or strategies), a digital artwork exists as a profoundly subversive force, an exemplary subject that offers the exciting prospect for us to cultivate possible ways in which, digital and physical public spaces could be designed to expand each other's conceptual existence.

² <http://www.fieldartprojects.com/index.php/about>

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