The Sound Installation

In this paper I analyze the interaction between sound and the visual arts as well as its development through the acoustic space and time. In other words, I am trying to understand the aesthetic implications of the sound sculpture and sound installation disciplines. Nevertheless, in order to understand the main characteristics of this relatively new media, we need first to consider some important premises:

1. - Sculpture and installation become **expanded disciplines** when sound is added to them. In this case the sound element attached could be part of the objet, related with the object, or completely alien to the object.
2. - When we add an element that has an alien language to the visual field, we inevitably create a **x connection** between the senses of our ear and our sight.
3. - The experience of the artistic visual work is modified completely when we use sound as an integral element, due to the generation of a new **temporal perception** of the **space.**
4. - The characteristics of the **place** modify completely our perception of the sound element of an installation; this specific place will also determine a ***x* context** that will alter the interpretation of the work.
5. - We do not necessarily need a visual element to have a sound artwork, an installation can be structured only with sounds.

I will concentrate in this text on the concept of **sound installation**, hoping to be able to understand better the language of this interesting genre.

The Sound Installation

Let us begin by defining what is an installation. In the dictionary we find "conjunction of installed things". And if we look for the definition of "installing", we discover **"**To put or place something on its proper site". By which we infer that an art installation is a conjunction of elements placed in particular locations that are chosen by the artist. However, the space factor is not specific enough here and in the visual arts it is important to know if the elements of an installation may be together or separated; then, we need to look up for some other definitions that have been established in this field.

In the text “Artistic territories for hearing and seeing", the curator and sound artist José Iges quotes a definition of installation by the Spanish artist Concha Jerez:

"The installation is an expansion of a three-dimensional space, with the notable difference with sculpture, that the axes with which matter is being organized are not exclusively internal to the work, but also external". A work of

art is an installation if it establishes a dialog with the surrounding space, and the installation in situ is the installation per se" (Iges, 1999).

Later on Iges asserts: "A work is an **installation** if it establishes a dialog with the surrounding space, and the **installation in situ** is the installation per se, although there are installations that could be adapted to different spaces" (Iges, 1999).

Having covered the space element, we now need only to define what is a **sound installation**, and again, I quote José Iges who has realized an excellent theoretical work about this concept: "Sound sculptures and sound installations are **intermedia works**[1], and they behave like expansions of sculpture and installation".

Connections between the sound and the visual aspects.

What are the existing connections between the sound and visual aspects of a sound installation? José Iges suggests two structural possibilities:

1. - Perceptive reality, dialectic or complementary, which has to do with a poetic statement more than with a musical one[2].

2. - Works that present a visual part which behaves practically as an instrumental part for the fluidity of the sound discourse[3].

I suggest a third structural category:

3. - A sound instrument with a sculpture quality, in other words, an aesthetic object with the capacity of producing sounds, either played by man, by natural

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[1] The artist Dick Higgins (former member of the *Fluxus* art movement) created the term "intermedia" in an article written in 1966 titled *Statement on intermedia*.

[2] A good example of this point is the sound sculptures of the German artist Rolf Julius, who unites speakers with the sculpture matter. Nevertheless, he is not interested in the physical interaction of these two elements, but in the poetic discourse generated from the contact of both things, something similar to what happened with some surreal sculptures (like one by Joan Miro which consist of an egg placed on a chair for example).

[3] In this case José Iges quotes the sound installation “The bird tree” by the German artist Christina Kubisch. In this work an audio cable is placed along the wall, in such a way that the design simulates trees with branches, the audience uses headphones and walks forward listening to sounds from different kinds of birds.

elements (rain, wind, etc), or by a mechanical device[4]. A sound installation can be constituted by various elements of this kind interacting with space[5].

I would like to go deeper on this subject and make a new classification founded on how close or distant is the relationship between the sound and the object. Here, it becomes necessary to make a division of the interactions that occur between these two different elements, obtaining then:

a) A close relationship, where the sound attached to the object was produced by it.
b) A distant relationship, where the sound added to the object doesn't have a connection with it, excepting the association established in our minds.
c) An intermediate relationship, where the sound attached was produced by the object or by a similar object, and was possibly transformed by the artist up to a certain degree where the existing connections would become ambiguous.

On the other hand, there is a particular case in which sound can interact in a physical way with the object. Here, there will be an abstract and psychological interaction as well as a real and concrete interaction, because the sound vibrations can alter the consistency of the physical object making it move or resonate in a particular way[6].

Sound, space and time.

"In art installations sound contributes to circumscribe a place actively, reabsorbing the dual opposition between time and space. One of the principal properties of sound is that of *sculpting the space*[7]" (Bosseur, 1998).

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[4] This device could be a musical instrument because it has aesthetic qualities. If we place for example a guitar in a gallery or museum of contemporary art, we would automatically convert it into an art object.

[5] Sound sculptures could be conformed simply by speaker cones or loud speakers, in which case they will become objects with aesthetic qualities. Nevertheless, in this case there cannot exist a sound that is specifically fit to a speaker because the speaker reproduces an infinity of different sounds, so the only natural element of a speaker is its vibratory effect, which posses a visually neutral aspect.

[6] There are various sound artists that have worked with speaker cones vibrations interacting with different kind of materials like water recipients (Hiroshi Yoshimura), aluminum plates with ping pong balls and broken glasses (Manuel Rocha Iturbide), sand (Gary Hill), etc. In most of this cases we are dealing with sound-kinetic experiments, but in some others the effects produced by these interactions have to do more with a poetic effect resulting from the contact between sound and matter. This is the case of Rolf Julius sound sculptures quoted before.

[7] Bosseur specifies in his text that the statement *sculpting the space* belongs to Erik Samakh.

We will now study the specific case of a sound installation and we will develop the space element which is determinant for the enriched experience of this new art media.

We encounter a natural interaction between the audience and the work of art within a determinate space. Yet, what is the primordial difference between an installation that uses sounds and one that doesn't use them? . When sound exists, this can help acquiring a more tangible experience of space due to the reflections of sound and to its subsequent resonance's created by the limiting structures. Also, the presence of a sound element in an installation could produce a longer permanence of the audience in site. Sound has a temporal aspect and the development of this temporality will oblige the public in attendance to wait, to listen, and to be aware of the gradual or rapid changes that are produced between the sound and the space[8]. In general, the structure of this type of works should have a relative time factor[9], which means that the aesthetic of the artwork should be able to manifest either if we stare before it an instant or several minutes.

I would now like to talk about the triple relationship sound-space-time, quoting various artists and musicians that have thought about these phenomena.

Space exists only with sound

The Japanese artist Jio Shimizu observes: "…it is only by means of the individual sounds existing in the space that the space itself is perceived" (Shimizu, 1999). That is, with out sound space doesn't exist. On the other hand, the musicologist Giancarlo Toniutti writes: "Different phenomena happen with space, peculiarly with a localized space, and it is at this stage that they receive a meaning from us. Sound, as phenomenon is thus part of the space, since it can only exist in a space. We could think of sound as the inner movement of a space, its rising in the air…Its therefore obvious that only the audible movement of a

[8] In my doctoral thesis "The granular techniques in sound synthesis" (Rocha Iturbide, 1999) I talk about the importance of the temporal factor in sound art. "The artistic creation of sound objects or sound spaces happens in public places like galleries, parks, museums, etc. The people that visit such sites decide the amount of time they want to spend before each work. For this reason, the artist needs to consider this fact, particularly when we deal with art works in which time constitutes a central element. This is the specific case of sound art works".

[9] By relative time factor I am talking about a non-lineal conception of time where there are no specific beginnings and ends. The artist Max Neuhaus talks about the relationship between sound and space: "I don't work with the temporal *continuum* in the realizations that are related with specific places. There is no beginning or end; these realizations are textures of continuous sounds, not by way of a magnetic band but by staging a process that generates sound. This process is not developed in time in the same way that music does. We can have sometimes a dynamic texture; events are produced but we don't have the feeling of going from a beginning to an end" (Neuhaus in Bosseur, 1992).

space can receive a meaning" (Toniutti, 1999). Here, Toniutti makes us see that the signification of space can only be made through the action of sound in it.

Traveling through space by means of sound

The American composer John Cage made an analysis of the importance of sound and its way through space, explaining that the experience of sound takes place in the interval that exists between one sound and the other:

"We have a tendency to forget the space between things. We leap across it to establish our relationships and connections. We believe that we can slip as in continuity from one sound to the next, from one thought to the next. In reality, we fall down and we don't even realize it! We live, but living means crossing through the world of *relationships* or representations. Yet, we never see ourselves in the act of crossing that world! And we never do anything but that!" (Cage J & Charles D 1981).

Space as instrument

Space can also be seen as a musical instrument. We can perhaps imagine that a gigantic guitar becomes an auditory space acoustically activated by the public from the inside[10], or of a symphonic orchestra distributed throughout the whole space of a concert hall, becoming an instrument that could be played by someone giving out instructions. The musician and artist Achim Wollscheid writes: "Space, with its assembly of sound producers, listeners and sound producing objects becomes the INSTRUMENT" (Wollscheid, 1999).

Now, if the space is a kind of instrument, how does the space sounds like? The space is the acoustic box of a virtual instrument, and the characteristics of this acoustic box with its particular resonance's constitute the musical qualities of that space. In the sound work "I am sitting in a room" by American composer Alvin Lucier, he writes performing instructions. One has to record his voice reading a text in a determinate close space. Then, one reproduces this recording in the same space through speakers and records that reproduction with another tape recorder. Finally, we repeat the same process several times until the voice disappears completely and only the resonance's of the space which were activated by the sounds of our speaking voice remain (Lucier A, 1970).

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[10] In the installation "Internal sound" by the American artist Terry Fox, a thick piano string is placed in a church in such a way that the building is converted into a musical instrument. The string is attached from the wooden door of the entrance of the church, along the principal nave to the door of the stone crypt. The audience outside the crypt plays the string while the people inside it listen to the resonance's of the vibration of the string. The crypt has been converted into the resonance box of the *instrument church*.

Inspired by this idea, I have developed a computer music technique in order to discover the hidden harmonies of different sound objects and spaces. In a recent installation I did in collaboration with the Mexican artist Luciano Matus in Mexico City (*Reconocimiento del Espacio*, 2002), we explored the space of a Mexican colonial church. We spread metal strings sustained by magnets along the space, and played transformed sounds that were produced in the church beforehand. I used four of the eight vaults of the building activating their acoustic characteristics with random clapping sounds. I recorded the different resonance's of this vaults and then, through cross synthesis techniques[11], I created long harmonic sounds that were then played through loud speakers in each of the vaults creating a 4 voice sound work that interacted again with the church vaults[12].

Space and silence

The futurist Italian Tommaso Marinetti was perhaps the first artist that described in a conceptual and poetic way the creation of an imaginary space of silence:

"The building of a silence 1) Build a left wall with a drum roll (half a minute). 2) Build a right wall with a din, a downtown car / streetcar horn, voices and screeches (half minute). 3) Build a floor with a gurgling of water in pipes (half a minute) 4) Build a ceiling terrace with chirp chirp chirp srschirp of sparrows and swallows (20 seconds)" (Concannon K, 1990).

Silence can be understood as a kind of void that exists in space and it's a necessary element for the communication of sounds. Also, silence could be thought as anti-sound in the same way that matter has its counterpart in anti-matter[13]. However, different slices of silence could also establish a dialog between them and be interconnected thanks to the existence of scattered sounds in time. In my sound work *Ligne d'abandon*[14] (Rocha, Orozco, 1995), silence duration's are considered at the same level of sounds, because both constitute musical duration's and they complement each other. In this work, listening to a silence after a screeching wheel sound is to find us immersed in a dramatic suspension of time.

Place and Context

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[11] Consisting of convolution processes between white noise and the vault's resonance's activated by the different clapping sounds.

[12] I was aiming to discover the hidden music of the architecture of the building and to play it from its own source again.

[13] John Cage did not believe in complete silence, he thought that even in an acoustically isolated anachoic room we could hear the beating of our heart or the circulation of the blood through our veins.

[14] Realized in collaboration with the Mexican artist Gabriel Orozco.

Lets talk now about the importance of the place and context of the sound installation. A common place for an installation is an artistic space, that is, a gallery or a museum. Yet, we can contemplate the possibility of placing sounds in a public space that has nothing to do with art. In this case, the sounds introduced will change the perception of that place in the same way that the music specifically designed for supermarkets or waiting rooms (better known as *musak*) changes our mood while being at those places[15]. Some artists like Max Neuhaus have worked in public spaces like parks, and have disposed loudspeakers in trees with the purpose of altering the mood of people passing by, in order to establish a *new perception of the place by way of sound*.

Speaking about change of context, I can refer to the sound work *Ligne d'abandon* before mentioned. The first presentation of this work dealing with the screeching sounds of a car wheel was in a gallery[16]; later on, I presented this work in a four floor underground public parking lot at the *World Trade Center* in Guadalajara, during the FITAC art fair in 1996. In this second presentation, the screeching wheel sound traveled with more liberty through the huge space of the parking lot, obtaining also a clearer relationship between the ambiguity of the screeching transformed sounds and their locomotive origin.

The organization of sound in an installation

To finish with this essay I would like to explain in detail, which are the essential factors to be undertaken by the musician or artist in order to realize the sound elements of an installation. This will determine the type of interaction that will be established between the public and the work.

To start with, there are artists that aren't necessarily musicians, and we have to contemplate that they need to organize sounds in time, if not in a musical way, at least in an artistic way. Furthermore, its important to be conscious that a sound installation can simply consist of sounds diffused in a space, preferably from different points in favor of best underlining its acoustic qualities and thinking that the movement of the audience in it will enhance the sound perceptual result of the work.

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[15] Talking about supermarket music and context, the Mexican artist Fernando Ortega brought about an action in which he hired a musak company in order to install their music system during the inauguration of a photo exhibition in the museum "Centro de la Imagen" in Mexico City. The three artists and the audience did not know anything about this, and the reactions were varied. Some people did not notice, others came moved with the museum director to cheer her for the nice music, and others were outraged.

[16] "Ligne d'abandon" was presented as part of Gabriel Orozco's exhibition at *Crusel Gallery* in Paris in 1993 where he presented his well known sculpture made out of a Citroen Car (*La DS*).

Many artists that do sound installations use a short audio track that repeats over and over by way of the well-known *loop* artifice. This simple and sometimes boring technique has a lineal character, and thus, the surprise factor doesn't exist. On the other hand, there can be longer audio tracks where there is a development of sound in time, however, when they have a linear nature we risk keeping the audience at the site of the installation only a few minutes, missing then a possible dramatic outcome or conclusion. Last, there are artists that try to go further in the sound organization having a more organic conception of sound; these artists have chosen to use an open form (Eco, 1962). It is important to say that in these types of works the participation of the audience is often essential[17]. Moreover, there are different kinds of interaction between the open work and the public: there are works in which the individuals create the result, and others in which we find a balance in the interaction.

The development of computer music technology in the last decade has permitted the creation of interactive software[18], as well as sophisticated interfaces that use different kinds of sensors. This technology is now available for the public and many artists have been using it in the last few years. Besides, there are artists and musicians with a programming background that have developed non-interactive musical software, but with a high degree of complexity. These programs generate sounds in an automatic way by way of auto-generative processes. In this case, the sounds produced should always have the same global structure in order to maintain some coherence, although they will always be changing in time.

In the creation of a sound installation with the help of a computer, we have to contemplate the essence of the auto-generative processes, that is, the type of algorithms and sounds that we will use, but also the degree of interaction that we will have with the audience. The range of this type of processes goes from the auto-generative work that uses evolution algorithms (cellular automata, neural networks, etc), to chaos, and to other kind of processes that can be transformed by an external agent[19] and where the response of the program will influence the transformation that follows the agent[20] (Row, 1992). Finally, when we use the computer to create a sound installation, we have to be well centered in the

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[17] Nevertheless, there are open works in which the audience doesn't participate at all like in the auto-generative computer processes, but I will talk about this later.

[18] Like MAX MSP, a software that has became very popular since the end of the 90's.

[19] Evolution and Chaos algorithms can also be transformed by an external agent, yet, computer music researchers working with them have been so interested in the automatic processes that they have left sometimes aside interesting possibilities of braking the rules in order to create hybrid processes.

[20] In these retro-feeding processes we can find the highest degree of interaction.

balance we wish to obtain between the interaction process and the final product (Dannenberg & Bates, 1995)[21].

Using a computer tool for the generation of a sound installation may naturally have an open aesthetic character[22]. Nonetheless, due to the technical complications that this entails and to the economical difficulty of having a sophisticated computer system in a gallery or museum during one month or more, sound artists have been sometimes obliged to make use of other simple technological means to create their works[23]. For example, to realize a sound work with out a computer we could record various CD's with different tracks and then activate the Random function of the CD players. Also, we could record and play various cassettes in loop, letting them gradually get out of phase with each other and creating works that change in a continuous way[24]. Likewise, we can simply create several audio tracks of different duration's that are repeated, and because they are out of phase for a long period of time, we would have the impression of always listening to different sound combinations[25].

The experiences I've had using different sound structures for my installations have made me believe that the open work aesthetic is the most interesting one due to its complexity in terms of always changing sounds. I also conclude that the open aesthetic has a quantum character (Rocha Iturbide, 1999). In one hand because of the relation of determinist and indeterminist elements, and on the other because of the interconnection of these elements, since their organization in time will not be important as long as the open structure

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[21] There are art works in which the process is the goal, and others in which the result is more important than the process. “In some cases, the process of interaction is the art. In others, there is a clear product of interaction such as a music performance or an image. The ambiguity of ‘where the art is, for us, is one of the attractions of this approach” (Dannenberg & Bates, 1995).

[22] Because if we wanted to create a repeating fixed thing we won't necessarily need a computer.

[23] Museums and galleries don’t have often the means to buy or rent computers that use specific software, that need a specific sound card, etc. Then, the artist is obliged to lend his equipment and it is difficult that he will be willing to leave it there for long time since it constitutes he's daily working gear.

[24] In these two cases, the work becomes open because it changes continuously but there is no concrete interaction with the audience (in terms of sensors changing the parameters of the audio elements). However, in a good sound installation using electronic of mechanical devices without sensors, there will always be an important interaction with the public if we create sound phenomena that interacts with the acoustic space when we move around.

[25] My sound installation *Mechanisms for the absolution of waste* (*1997)*) is structured by way of three speakers placed in a bathroom. One in the WC, another one in the socket of the light bulb, and the third one in the sink. Each speaker has its own on/off *switch* in order to be activated, having then three different kinds of combinations of these sound mechanisms (number one alone, number 2 alone, 3 alone, 1 and 2, 1 and 3, 2 and 3, or 1, 2 and 3). Also, activating each mechanism at different time's throws out as a result 3 minutes looped sequences that will always be out of phase.

of the work is successful[26]. However, there will always be cases in which the simplicity of constant repetition of an audio track will be more wanted in a sound installation, and in this sense, this will always depend on the conceptual nature of the work[27].

Finally, it is important to say that even though the new technologies offer new possibilities of experimentation, many of the works created with these sophisticated media have resulted in lacking artistic content. This happens because the artists have paid more attention to the electronic interactivity programming mechanisms than to the aesthetic and conceptual theory in which these works are founded, or to the necessary equilibrium that should exist between form and content.

"If we subdue to the possibilities of technological means, which are only apparently unlimited, we risk of missing the necessary reflection about the conflictive relationships between the visual and the sound aspects concerning all interactive processes. Instead of a dissolution of the old artistic categories, we assist to an accumulation of gadget effects perpetuating the redundancy spirit and the parallelism that rules after various decades in most of the attempts for a dialog between the arts" (Bosseur, 1998).

The new technological means provide tools with a grate potential for the creation of new languages. However, we shall never leave aside our main objective: the successful communication of aesthetic ideas with an organization and disposition in space and time, which will conform into a complex and interesting **intermedia art work**.

Biblographie

[26] The perfect open work of art is a *Mobile,* a sculpture in which the elements change continuously in the space, but that keep a clear connection between them; this structure establishes certain movement boundaries giving it certain coherent organization.

[27] In my installation *Rebicycling* (2000) where I use five abandoned bicycles laying in the ground, four small preamplified speakers and two transparent CD players, I ended up making four synchronic sound tracks that are repeated every 12 minutes (with two minutes of silence in between). In this case, the audio is completely linear and it becomes a sort of composition that develops canon structured sound sequences built up from the noise of a bicycle wheel spinning. These sounds that grow and evolve continuously, simulate a noise machine that is generating energy in order to revive the dying bicycles. When the process is over, silence seems to be the result of an automatic regulator that turns the sound off when enough energy has been produced.

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