FROM THE WORLD OF SENSATIONS AND SOUNDS TO THE SENSE OF SPACE

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Abstract

Today's dominant trends of global economic growth, combined with relentless market strategies, and constant technological development, suggest a radical shift in everyday human reality. Space, as a place, and as the locus of human habitat, is failing to conserve the special features that shape its physiognomy and ensure the distinctive traits of its identity. In this new kind of landscape, specificity no longer has value; human perceptual characteristics are altered, memory, emotions and moods are being undermined and devalued; individual representations of the world that are formed through the senses, motion and emotion, now constitute an entirely new sensory perception of place, making it increasingly difficult for individuals to adapt and function in their new environments.

If vision can be considered as our primary spatial sense, hearing could be considered our primary temporal sense. Sound, like light, is the medium for the establishment of perception, of a notion of object, of representations of the environment, of a sense of identity. All the sounds of a place form a sonic timespace. "Listening" to space, humans develop experiential and imaginary relations that unfold in time, forming a spatial interiority, a subjective image.

In the passage of time, auditory references have been lost and balances overturned. Noise, introduced in greater and greater levels after the industrial revolution, created a new kind of environment, and subverted the relationships between signal and noise, reaching intolerable levels. Today, in response to the dominant impact of technological environments - the internet and virtual reality - on human life, it is imperative to discuss the sensory design of space, in order to re-connect and re-attune the body and individual senses with their environment. Designing space through sounds includes not only the pursuit of sonic balances for the achievement of sustainable environmental conditions, but also the conservation of environmental sounds that are considered significant for a place's identity, the composition of natural and life sounds, the highlighting of auditory memory paths, the construction of enhancement of sonic landmarks, and the construction of interactive sonic environments through experiential or technological media.

The aim of this paper is to discuss ways to secure, recompose and reconstruct the environment, not as ecosystem and a financial, social and cultural system, but as a place with its own "imaginary dimension", that which belongs to the sphere of experience, memory, emotion, affect, symbols, logos and mythos, in order to achieve sustainability in the environment through an ecology of the senses and an acoustic ecology.

Keywords: *Senses, Sound, Soundscape, Environment, Auditory Design.*

Introduction

Today, the constant development of technology and the global economy that have formed in the passage towards globalisation, are causing the economic, social and cultural structures of society to overturn. The environment, both natural and anthropogenic, is gradually losing the basic assets that it used to have: air, water, earth and nature. Patterns, attitudes, relations, habits, and behaviours are changing rapidly, and also affecting changes in the organisation and the aesthetic outcome of space. Cities start losing those characteristics on which the distinctiveness of their identity relies and so their physiognomy alters. Then the individual can no longer recognise his points of reference and his body loses its familiar associations, its known sensual experiences, and its memories that tied him to his place. His bond with the place ruptures.

This bond initially developed through the empirical and experiential relationship of man with the environment, where the senses and the movement of the human body, as part of his own self, played a crucial role in the strength of the relationship. The sense of hearing through the ear, an organ of observation, an organ of time and the main 'gate', allows sound to carry the full range of emotions, to reach the soul. By hearing space, man develops relationships with it, both experiential and imaginary, that form a representation of the external environment; clearly this is a subjective overall perception. All the sounds of a place establish a sound space-time - a sound entity with a symbolic, semantic and structural value, which surrounds the individual, who is part of that entity. In the passage of time, through social changes and developments in technology, the perception of the environment, and therefore the relationship of hearing-environment, differentiates. This differentiation highlights the dimension of subjective perception and interpretation of sound, which essentially refers to the relationship of man-sound-environment, or otherwise of man-perception-environment through sound, which can structure but also destroy a space.

The noise that invaded our lives after the industrial revolution created a new, unbearable environment and since then, health and safety research has focused on interventions dealing with sound pollution in the environment and the balancing of sound intensities. The real dimension of the problem - the overall approach to the sound environment as an entity, real and symbolic - remains exposed. Another parameter must be added to the first investigations into this subject. The new technical means and the invasion of image raised the issues of alteration, temporality, the ephemeral and the fragmentary. These issues become more intense with the technological environment that is formed later on, which includes the parallel course of the real and the virtual, experiential and intangible body, and the participation of the body in a intangible reality of multiple worlds. These are all issues that influence the perception of the individual.

Today it is imperative to design a space with sounds; one that will contribute to the maintenance, emergence and formation of the physiognomy of places, one that will reconnect and harmonise the body and its senses with its environment. There is a need for research that will aim, through an experiential and interactive dimension, to maintain viable sound balances, but also to create sound environments that will enhance and will provide an identity to man's space. What are required is the reconnection of man with his space and the rediscovery of his place (a place that is part of his memory, his feelings, his emotion and his symbols) through an ecology of senses and an acoustic ecology that will allow for the sustainability of his environment.

Aims

The aim of this paper is to elucidate the importance of the senses, with an emphasis on the role of the sense of hearing in the perception of the environment and the necessity of

designing a space with sound, as an essential element of the identity of place - an element associated with the mnemonic records, feelings and emotions of man.

1. Senses and the Environment

Humans perceive the environment through their senses, and the rather complex system of human motion as part of the human as an entity, considering also the biological, neuro-physiological and mental parts of it (Maggini, 2011), (Morin, 2001). Our environment, which could be natural or social, structured or unstructured, is perceived by humans through their landscape, which is nothing other than the perceptive image of the environment. The image of various elements, and their relationship within the place, obtains meaning. Meaning is perceived by the individual through experience and through the evaluation of the perceptive elements of the environment and experienced by him as a feeling, as a sentiment and as an emotion (Kotsi, 2008). The experience of the environment as an emotion is a result of a perceptual process that preconditions the participation of the human body, both through its sensory-motor system and through mental engagement. What develops, through this experience of the environment as an emotion, is an existential relationship with the environment. This relationship is automatically connected with the emersion of feelings and can reconstitute, as a form of memory, the entirety of this perception, where senses play an important part. This relationship is also significant for the degree of engagement of the individual with the environment, depending directly on the discovery of references within it, the recognition of elements that have a personal significance, which are an “internal territory” of his own existence. The environment becomes friendly and familiar and it also acquires a meaning and value, it becomes transformed into a personalised reality, becomes part of the individual’s own entity, depending on the degree of agreement with his subjective reality. In this way it becomes his *place (*Stefanou & Collaborators, 2001), an experienced space with its own distinct natural, social and cultural characteristics. The environment becomes registered in memory as a natural environment, as a civilization and as history, which allows for the time reversal phenomenon and the distinction between present and past, a vital condition for the realisation of time, the function and development of individuals and societies, together with the shaping of their own identities.

This continuous process of engagement which evolves within time is directly linked with human emotions. It is an existential relationship, where man and the environment, “as dynamic participants in a systemic entity” (Gibson, Pick, 2005). are part of a continuous interactive process during which the human body is active and accepting, influential and influenced. The body is part of the environment and is part of the world’s “flesh”, whilst at the same time the environment intrudes into the body not as a merger of the two, but as a rupture of boundaries and of their mutual layers Banakou-Karagouni, 2002) (Merleau-Ponty, 1964), through the function of the human senses, the body's proceedings and the body's relations with the environment.

Our senses register everything; there is no information that can possibly be missed. Not even the information that is considered neutral or zero in physics can be missed. Through a process of choices, relations or contradictions, the information alerts the spirit, reaches the soul, awakes memories, becomes imprinted as memory and turns into knowledge. The undefined now has substance; the internalisation of the exterior environment takes place and the representation of the outside world, a clearly subjective reality, takes shape. There is an uninterrupted alternation of internality and externality that allows each individual, as a subject and in parallel as an object, to form the inner image of his own self, the nature of his relations and his own subjective opinion on the environment as an entire form, in its ontological significance. This has to do with a process that ends with the establishment of a relationship

with the environment, and with the functioning of the individual within the place, in which each sense plays a much wider role, than that of a simple communicator.

Touch, which is considered a basic sense that brings man in direct contact with the environment and in coexistence with it, is the sense that follows him from his prenatal stage until the last moment of his life. His entire body, as a means to touch and an object of touch, functions as a continuous communicator of the characteristics of his own self, but also of characteristics and elements, attributes and qualities, of the environment. At the same time, however, the sense of touch functions as a receiver and conveyer of emotions. This process, at the same time neuro-physiological, biological and experiential, determines the mode of perception and the relationship with the environment. The sense of touch, together with the sense of hearing, is the senses that develop primarily, before the development of the other senses. They are also the senses that convey the first signs from the environment which create the first psychological space and spiritual world. The sense of taste transfers the characteristics and qualities of the environment, but also its habits and cultural patterns. The sense of smell, through indications of natural, spatial, chronological, local, cultural and also personal specifications, "is sliding from knowledge to memory and from space to time, undoubtedly from the things to the existing**"** (Serres, 1985).

The sense of sight is the conveyer of the greatest amount of direct information through distance and through the relationship between the body and the environment. Within the environment, the body is both a viewer and a visible object from itself and from the outside world external to the environment; it is an observer and an object of observation. In each role, the body holds a prominent place in the processes of the identification of the individual, of the foundation of interpersonal relationships and of the building of space. It recognises forms, shapes and distances. It is fulfilled by the harmony and the rhythm of forms. It looks for a visual symphony of lines, proportions and distances of forms. It becomes interested in creations "dressed in imaginary forms and characteristics almost musical,/…/ masterpieces that sing by themselves,/…/ types of monuments the form of which shares in a direct way the clarity of the musical sound, or is required to transfer to the soul the emotion of an endless chord" (Valéry, 1993). The senses of sight and hearing "meet" through the properties of forms of the space.

If the sense of sight transfers the greatest amount of information and can be considered the primary sense of space, then the sense of hearing can be characterised as the basic sense of time and mainly of rhythm. Rhythm is time. "Rhythm contains repetition and repetition contains frequencies, frequencies contain wavelengths and wavelengths are distances and distance is space. Therefore rhythm is a space-time" (Tsinikas, 2009).

The sense of sight recognises rhythm from a distance through the visual attributions of the structure of space. The sense of hearing understands rhythm through the permeation of the sound to the ear, through the characteristics of it. The ear is an organ of observation, an organ of time and the main "gate" from which the range of emotions pass, allowing sound to reach the soul. Sounds, music, noise, a voice, all become emotions, a precondition and basis of relations, of social linkage and communication. The primary sounds in the relationship between mother and child become communication codes and build the foundations of the process of socialisation. This process of socialisation is a cognitive process, directed by the ear, which continues in time through the various sound characteristics of every-day sounds.

2. Listening to space

Sound, like light, cannot be considered the subject of perception. It is the medium for the establishment of perception, of a meaning of object, of the representation of the environment (Ingold Tim, 2013). Since sound is directly linked to the sources of its cause and the conditions of its production it becomes a characteristic linked to the identity of its place of origin. As

Chion argues, "the sound is always the sound of…" (Chion, 2010) lated to a source and a cause; furthermore, the sound is related to time, we can add. Sound is a medium of union between man and the world, but also the element holding together the space-time dimension, directly connected to memory. All the sounds of a place compose a sound space-time, that is, a sound entity with a symbolic, significance and structural value that surrounds the individual and that has its own soundscape, part of which is the individual itself. Through these distinctive sounds, the space "speaks"; it might even "sing". It reveals its character and its differentiation, it promotes the every-day life, it signals its own directions, it narrates its history and its past. Through the sound phenomena (echo, reverberations, reflections) it reveals its dimensions, its distances, its volumes and its depths. By "listening" to space, man develops experiential relations with space, as well as imaginary and emotional relations that unfold in time, creating a space internalisation of the outside environment, a subjective image, and a representation based on external references and subjective interpretations. He also develops social links and new relations with the people with whom he shares the same hearing space, through the particularities of the sounds of every-day noises of others and through the recognition of similar sound references. It is a process of socialisation directed by the ear.

During the alteration of societies, the different changes, and the evolution of technology, the balances in sound were overturned. The hearing references changed, were lost, or were replaced by others, encouraging the individual to look for older or discover newer references, in an effort to create, re-establish or redefine his relations with the environment. The perception of the environment and therefore the relationship between hearing and the environment differed, influencing the reproduction and the methods of reproduction of sounds. A journey, with a variety of pursuits and sound expressions, with different approaches to space through sound and through interactive relations with it, was omitted. The music expression before the 19th century pursued an organisation of sounds in order to challenge emotion and create a musical result that will speak for itself. In the 19th century it sought out a form that is harmonious as a sound, "beautiful" and right, based on rules. At this time the form is disconnected from the sensation. At the start of the 20th century the music composition moved to the use of sound-noise. The environment of the modern man changed. The new urban reality excites. "The world is enriched with a new beauty: the beauty of speed. The steam engine/ /is more beautiful than the Nike of Samothrace", Marinetti (Belgiojoso, 2010) argues. The modern man has no need of his "moderate" past. Sound, for the futurists, functions as a reproduction of the new urban reality of the emerging metropolis, and its noises, today synonymous to nuisance, the aggressive and the parasitic, become an interesting element for the composer. The sounds produced by the environment and a wide range of noises, natural and artificial, invade the music composition. The pursuit to control and organise sound and noise followed after (since 1940) the disruption of form, the confrontation with the incomplete, the unexpected, the fragmentary and the undefined. In 1952, J. Cage, in his work *4'33''* (Stefanou Dan., 2004), instructed any instrument or combination of instruments to pause; in an effort to abolish the boundaries among sound–noise–music, he brought forward the matter of listening to music, or rather of listening to silence, as an aggregation of unexpected sounds and he wonders: "Is there such a thing as silence? Is there always something to hear, never any peace and quiet?" (Cage, 2013). In essence, it has raised the question of redefinition of the relationship of individual–listening–composition, highlighting at the same time the dissociation of the subjective intake and interpretation of sound that essentially sets a new basis for the relationship of individual–sound–environment, or in other words the relationship of individual–perception–environment through sound. This is a matter that will always remain current and will seek an answer, since life moves on, evolves and the media change constantly challenging new information.

The matter of the relationship of individual with the sounds of the environment was at first established by introducing different noises from the environment into musical expression, aiming to create an imaginary sound landscape for the individual. Later, around 1970, this matter was expressed through the search for a sound landscape that surrounds the individual. The first approach to the matter was a result of the introduction of noises in the orchestral score (figure 1) and afterwards through experimentations of recording practices of "sonic objects", (Stefanou Dan., 2004, p.p. 30-37) with the help of new media technology. This fact allowed the separations of sound from the cause and the repetition of the sound several times. The following approach focused firstly on the individual and then in the quest for safeguarding and creation of sound facts, as a total approach of the auditory environment. This concern was brought out after the industrial revolution with the invasion of noise and the overthrow of the relations signals–noises that reached intolerable levels. The relationship of individual–sound–environment focused on health and safety research to protect the individual with interventions for the reclamation of noise pollution that focused entirely on the balancing of sound tensions. This fact is characterized by R. M. Schafer as a negative approach; he suggests a wider overall approach for the improvement of "sound orchestration of the world" based on the principles of *conservation, reinforcement, multiplication*. (Murray Schafer, 2010) A total approach of the sound environment, a "soundscape" according to Schafer, may be considered a field of interplay, a unity both real and symbolic. Scientific research into this topic requires the collaboration of many scientific fields and moves within the boundaries between observation of societies and art.

Ever since the decade of the 1960s, the possibility of recording the sound of environment allowed for the meeting and collaboration with the visual arts of the time, for the creation of an overall experience of space based on the senses. This experience was created through interactive expressions to produce a sensation of change, of the temporary and of the ephemeral (Land art, happening…) linked with the natural and the social environment, and with life itself: the life of the big changes of this time. These changes and transformations, in nature and society, drift along the ways of function of the individual, of his perception and his expression, but also a system of ideas, values and representations. Between the consequences and the results of industrialisation, and the forthcoming developments in technique and technology, between the problems and the hope of solving them from the new media, a "new" world arises: one with the power of image and technology. A new environment starts developing, where its basic characteristics are speed, distance and the virtual. A new system that becomes synonymous to progress provides the possibility or the illusion of a total freedom: freedom in communication, in information, in every type of exchange and transaction. Technology tends to impose itself as the environment, as a material and non material space, as a space of information and socialisation. A new space, the governing space, tends to impose its own rules, its own directions. It is a social network of relationships that creates new ways of approaching, managing and experiencing the environment. Societies and people, through relationships of acceptance, doubt or break ups, will finally function in the conditions and rhythm of a new environment, where the real moves in parallel with the virtual. Through the TV screen, in a relationship of spectator–spectacle, the individual participates through projections of his own self and the representation of his body, in a virtual reality of multiple worlds, of patterns and values, real and constructed. The material body with its proportions is being lost in journeys within the internet; vision blurs through the multiple pixel analysis, while an image-oriented perception of space and time tends to displace the experiential.

An enquiry of escape starts, into the codes and formulas of expressive directions. Sound now comes to supplement the image. Does this have to do with a sounded image or with an iconic sound? Sound and image have entered a tight embrace in an effort for the image to gain volume and for the image to depict, to specify or to entrap some dimensions of the sound. Philip

Glass commented, “Bob Wilson made drawings of my sound” regarding the opera “Einstein on the beach” (figure 2). The artistic pursuits meet the new technology. An audiovisual environment is created, depending on the intentions and interpretations of the creator, aiming for the marriage between, or the passage from, action to virtual reality. Then the word interactivity becomes a key word to declare interaction, assisted by the use of the computer. An interplay of the users with texts, images , sounds and artificial environments, which preconditions the intermediation in “real time”, or almost real time, with a totality of numerical information that primers a specific kind sensation - motor and cognitive (Sauvageot, 2003) (figure 3)

Today societies live in a time of internet, but also of a global economy and of globalisation of information, imposing institutional and structural changes. Patterns, concepts, relations, habits, and behaviours change now at an outrageous speed, also affecting changes in the organisation and the aesthetic outcome of space. Cities start losing those characteristics on which the distinctiveness of their identity depends and so their physiognomy alters. Furthermore, the passage to globalisation, under the new economic–social conditions, leads to changes and rearrangements at a geopolitical, social and cultural level. The large migration of people that is taking place now creates problems for the countries of entry in both language and adjustment, bringing additional changes in patterns and models, in relations and in culture, forming new attitudes in ideas, values and communication needs. In this new environment, in the way it is formed today, changes exceed the load-bearing capacity of places. Their structural, symbolic and semantic value is getting lost; the individual cannot recognise his references, his familiar sensory experiences, his memories that connected him with his place. This raises a variety of questions in the individual and provokes a search for solutions to the disturbance of the relationship between man and his environment.

3. From Sound to Space or Designing with Sounds

Man’s senses, as primary to his experience, must be inevitably employed for the reunion of man with his environment and his place. Sound, as one of the first attacks of the environment, a plague to listening and also to the relationship of man-place, must be called now to become the healer of this relationship. Sound, an element of a place’s entity, related to the source, the time and the conditions that were created, integrated within a place's perceptive image, namely its landscape, may contribute to reconstitution of contact or of quality contact with the environment. An attempt is made to restore the sounds of a place and its sound balances, and also to create new sound environments, using research and applications, aiming to create soundscapes in an effort to improve the living conditions of man.

Without moving to methodological approaches and typological analyses and propositions of research into the physiognomy of the place, (Stefanou J. & Collaborators, 2000) he soundscape and the auditory design of the environment, which a number of researchers and artists have been involved and are involved with, we will limit ourselves to a general categorization of approaches. These include:

A. *The management and formation* of a soundscape throughgh the sounds of the environment (natural, urban, rural and architectural) that will contribute, through acoustic ecology, to the safeguarding of the sustainability of a place. This could involve:

   1) Interventions for the reduction of noise and the restoration of sound balances.

   2) Management of the sounds which are elements of the physiognomy of a place - sounds that should be maintained to promote or to convey its identity (creation of sound environments, landmarks…). Schafer (Murray Schafer, 2010) who has essentially contributed to these approaches, and developed an extensive methodology, investigates the

subject through the reconstitution of the historical development of sounds, the enhancement and strengthening of their historical, social and cultural elements. He approaches sounds through their perceptive, morphological, symbolic and archetypical dimensions and he proposes the confrontation of a sound environment through a musical composition of sounds. Another study into the formation of a soundscape for the purpose of reconstituting mnemonic imprints connected with the past, suggests the exploitation of sounds connected with feelings and emotions, through sounded signals, sound-definitions and sound-directions (Schine Jen, 2013). Interventions have been made to revive the of sounds characteristics of urban events, such as events to do with social life or significant social activities (historical concerts, acoustic synthesis with the sound of sirens from ships, with the sounds of steeplejack …) (Belgiojoso, 2010), or to exploit sounds from nature.

3) Creation of sound events or sonic objects in a living space, through transformation or exploitation of sounds from the urban environment, through transformation tools of noises in music. Techniques have been applied to transform the negative energy of noise into sound-signals through resonances. These techniques transform noise into harmonious sounds in real time by intervention in resonances by means of the filtering and coating sounds (figure 4) and by the exploitation of properties of elements from the built environment by means of acoustic structures. (figure 5)

B. *Creation* of a soundscape through the exploitation of elements from nature (figure 6, 7), and sounds from nature, the creation of sound experiences in order to discover the urban environment (figure 8), or the creation of a sound-interactive environment with the use of a computer, in an effort to form a reality of action, or to create a sense of action or a substitute for reality. (figures 9, 10)

The up-to-date approaches to sound design demonstrate efforts to manage, exploit and utilise sounds in order restore or create interesting and sustainable environments for man. This raises a wide range of questions to be addressed by research into the meaning of the role of sounds in the relation of man with his environment, and the evaluation of the significance of their change or loss. Research is required that will contribute essentially to the maintenance, the emergence and the formation of the physiognomy of places. This research will use an experiential, interactive and open dimension to pursue the creation of sound environments that will enhance and also provide an identity to man's environment. Today it is an environment that is getting lost in a bombardment of the same norms and models that is being threatened by homogeny, flattening and loss of the distinct character and the "atmosphere", namely of *Genius Loci* according Schulz (Norberg-Schulz, 2009), that will connect the man to it and will make its place.

Conclusions

The senses, an essential factor of the process of perception and of internalisation of the external actions of man, contribute to his contact with the environment. The internalised actions no longer constitute acts, but emotions that merge with the world. Sound, an essential element of the identity of a place, connected to the cause that challenges it, the source of origin and time, is integrated within the 'entity' of the experienced space, of place. As an element of a place's identity, sound contributes to the formation of its physiognomy and the opinion people have of it, and this opinion defines their degree of connection with the place. Sound, through the ear (an organ of observation, an organ of time and the main "gate") transfers emotions which reach the soul and connect us with the world. A change of sounds means a change in the physiognomy of a place, in the representation of space and in the dialogue with the environment. A loss of sound means a loss of a range of emotions, of a space dimension, but also a loss of time. Sound is not limited to simple medium of contact with the natural and

organised environment. It becomes a social sign and a cultural object with a structural, symbolic and semantic value.

Today is a time of globalisation, of the dominance of a technological environment, of the internet and of virtual reality. Distinctiveness as a value is losing ground, the experiential way of perceiving space is being removed and the memory, the feelings and the emotions of the human being are underestimated and devalued. The changes in the living conditions and the physiognomy of places, apart from their *bearing capacity,* alter the conditions of 'living' alienating the individual from his environment. The reunion of man with his space, as a place and a way of experiencing others, through a design incorporating sounds for the safeguarding and creation of sound environments becomes essential."

The aim is the protection, the reconstitution and the reconstruction of the environment, not only as ecosystem, as an economic, social and cultural system, but also as a place with its "imaginary dimension", the dimension that belongs to the sphere of existence, of memory, of emotions, of feelings, of symbols, of speech and "mythos", for the achievement of the sustainability of the environment through an ecology of the senses and an acoustic ecology.

Figures

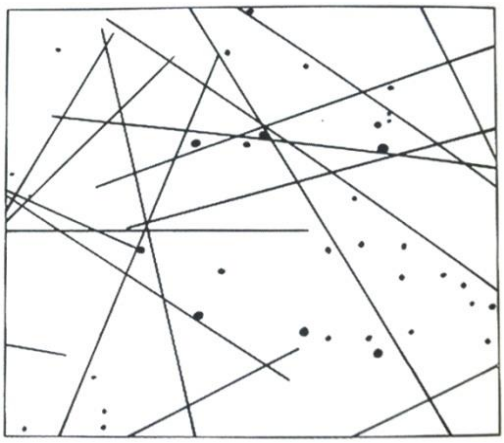

Figure 1: J. Cage, Music scores with lines and points from his work "Variation I", 1958 (source: Tsinikas N. p40)

Figure 3: Rain room, artificial rainfall that stops around the body with sensors, that are placed on the floor http://random-international.com/work/rainroom/

Figure 2: *Einstein on the Beach*, lyrics by Philip Glass and Robert Wilson, 1976 (Source: Rigopoulou P., *Το Σώμα: ικεσία και Απειλή*,Plethron, 2003. p563)

Figure 4: *Harmonic Bridge*, by O+A (Odland Bruce+Auinger Sam). An installation converts sounds from the traffic into music that is recorded through microphones and transferred to both sides of the of the road which it overlooks. Appeared in 1998 in North Adams, USA, http://www.massmoca.org/event_details.php?id=150

Figure 5: *Brooklyn Bridge*, by Bill Fontana. A steel installation under the road surface transformed the vibration of the passing vehicles into sound adjustable to the frequency of their speed. This sound was transmitted through microphones to loudspeakers behind the facade of the One World Trade Center and was broadcast over the plaza below. Appeared in 1983, http://resoundings.org/Pages/Oscillating.html

Figure 8: *Times Square, by* Max Neuhaus. An interactive event, sounding the passage of passengers through speakers under the metal vents of the NY metro, http://art-nerd.com/newyork/max-neuhaus-times-square/

Figure 6: *Wind Flutes,* an audiovisual experience by Max Eastley. Conversion of win http://www.timbarnesstudio.co.uk/eastley.html

Figure 9: *Ekko*. An interactive installation by Thilo paths, which are then sent to the speakers placed into the construction and listened to as music

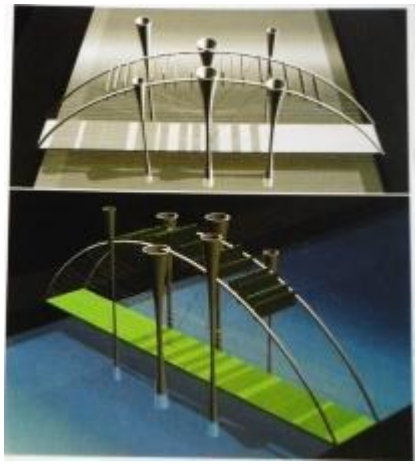

Figure 7: *A sound bridge* (2006). Sounds from percussion, bass and strings and metal strips are activated by the air, the water and the man and they create a sound environment (Source: Tsinikas N. p. 55)

Figure 10: *Ekko*, by Thilo Frank, another view http://www.dezeen.com/2012/10/29/ekko-installation-by-thilo-frank/

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