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POLYPHONIES, DISSONANCES, AND RHYTHMS: LISTENING IN ORDER TO BUILD CITIES

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Abstract

This paper aims to bring together the fields of Sound Studies and Urban Space, from the characterization of the concept of acoustic environment as an intrinsic element of the city, influenced by concrete space and also capable of reconfiguring its spatial relationships. An acoustic environment is deemed to act through different aspects that affect listening relationships and, as a result, the way the city is apprehended. This article focuses primarily on understanding more direct relational aspects between sound and space, caused by the movement and influence of the built environment, and subsequently elaborate on the relationships between the acoustic environment and listening, and finally the relationships made possible by the use of sound interfaces.

Keywords: Sound; Listening; City; Digital Media.

Reverberations

Resulting from vibrant material elements, sound has a causal relationship with movement. Although there are many types and forms of vibration, only a small frequency range can be perceived by the human ear and interpreted by the brain as sound. Notwithstanding its physiological aspects, it is important to note that sound is perceived and produced symbiotically with cultural and social processes.

In light of these aspects, it may be claimed that sound is directly related to movement as well as to concrete space and time. Since time is linked to dynamicity and ephemerality, an acoustic environment is a mutable phenomenon, manifested in continual association with the listener. Due to its physical characteristics, sound may derive from varied sources and be altered by concrete space through physical phenomena (e.g., diffusion, absorption, reflection, and reverberation). For that matter, an acoustic environment should not be construed as a single object, but as a system resulting from several elements.

Urban sonority is related to movement; sounds produced in the city express the actions circumscribed by the same, which in turn are associated to lifestyles and social relations and productions. An unmediated acoustic environment results from active and mobile elements, which behave as sound sources and affect sound production, whereas, on the other hand, physical and concrete elements influence acoustic characteristics, i.e., cause sounds to reverberate or disperse, dwindle or stop.

Henri Lefebvre (2004) claims that it is possible to find rhythm in city works, urban life, and movement. According to him, the city is the platform on which space, time and energy interact: repeated actions, situations, and differences; interference from cyclic and linear processes; beginning, development, peak, decline, and end (Lefebvre, 2004, p. 12). In this context, cyclical city processes refer to social organization, of large and simple periods, qua linear processes for everyday practices. Rhythms vary according to temporal (day or month) and spatial (public or private) organization, thereby typifying a social time. Therefore, Lefebvre considers

that this social time is built upon existing social relations in conjunction with diverse temporalities.[1]

> In line with Lefebvre, this "city music" mobilizes an assortment of sensitive expressions of public life and confers meaning to the multiplicity of everyday sounds, colors, odors, rhythms, and paces of people and groups of people in diverse streets; some streets are crowded and noisy whereas others are deserted and noiseless; some display dense memories and histories whereas others have none (Fortuna, 2009, p. 88-89).

Carlos Fortuna's elaboration on Lefebvre's concepts indicates that there is a direct relationship between sound and the actions that take place in the city. Hence, the transformations undergone by the acoustic environment derive from movement itself as well as reflect social characteristics of spaces, even without employing mediation technologies. Urban sound is also the result of city growth, its territorial expansion in conjunction with its lifestyles and the use of different means of transport to optimize physical dislocation. If the city can be considered a human intervention in natural landscape, then relationships circumscribed by it can also encompass its acoustic environment.

Even though the issue of sound in the city has been directed by many studies to its silencing, an acoustic environment reflects characteristics of actions in spaces, as previously proposed. Thus, two neighborhoods do not sound exactly alike. Albeit lost in the loudness of its streets, a city possesses sound elements that portray different cultures and ways of expressing themselves. An acoustic environment can influence how the city is apprehended as well as how its spaces are used by its inhabitants use.

In order to study sound in the city, it is mandatory to adopt the concept of soundscape. Soundscape has been investigated by researchers from distinct fields of knowledge, e.g., Architecture and Urbanism, Engineering, Environmental Studies, Ethnomusicology, Anthropology, Communication, from different perspectives.

The perception of urban environment or cityscape implies the possibility of apprehending concepts of place and several features composed of a serial vision (Cullen cited in Mendes, 2006, p. 34). Consequently, the perception

[1] Although it is generally assumed that some cities have their repetition cycles, it is important to acknowledge that this does not apply to all places.

itself entails trajectory and temporality, which result from the combination of several elements. In the same way as the term *landscape* refers to what eyesight is capable of encompassing within a given time, soundscape refers to every acoustic environment, whether close to the sound source or mediated by sound interfaces, comprising all acoustic events that constitute "real environments or abstract constructions."[2] Originated in other fields of knowledge, the concept of soundscape is useful in comprehending an acoustic environment and its events, in spite of simplifying the diversity of sound elements in order to achieve unity. When investigating the historical development of soundscape, Murray Schafer (2001) identifies two key antagonistic concepts deriving from characteristics of soundscape: high fidelity and low fidelity (abbreviated by the author as hi-fi and lo-fi). A hi-fi soundscape, as defined by Schafer, is that in which sounds can be clearly heard, attributing perspective to listening, i.e., a place with low sound intensity. In this hi-fi context, sound can propagate further due to low intensity, which enables listening to a broader sound spectrum (composition of frequencies of a sound) and the set of physical phenomena that affect sound. When sound is identifiable and directly associated to a place, then it is possible to attribute a sense of place to it.

On the other hand, sounds in a lo-fi soundscape are obfuscated due to their intensity. The signal-noise relationship is less favorable in a lo-fi soundscape, there being an "overpopulation" of intense sounds (Schafer, 2001, p. 107). In this context, listening is encumbered, the listener needing to be close to the source of sound, especially when technological mediation is not employed. Sounds are so intense that they get jumbled up with background noise, thereby putting up a "sound wall" that hinders sound perspective and spatiality, which ends up further isolating the listener. When several elements produce high intensity sounds, listening is reduced. However, it is important to note that these soundscape categories proposed by Schafer (2001) are not mutually exclusive: sounds typical of each

[2] Schafer (2001, p. 366) makes this distinction by considering real environments as sounds originated from a given place and abstract constructions as compositions, e.g., a musical composition or TV sounds. Nevertheless, this study adopts the difference between mediated and unmediated acoustic environments.

soundscape are naturally mixed together; there is no such thing as an absolutely hi-fi or lo-fi soundscape.

Despite the usefulness of the concept of soundscape to understand the acoustic environment and the fact that it is widely employed in many fields of knowledge, a critical reflection about it is much needed. By adopting an ecological stance as regards acoustic environments, Schafer stigmatizes and polarizes them. On the one hand, he considers a soundscape without human intervention to be positive. On the other hand, he criticizes its opposite: the soundscape that inevitably comprises the sounds of all contemporary cities, permeated by noisy technologies. Schafer operates within a range of values delimited by concepts of stability and chaos.

In his book *A Afinação do Mundo* (*Tuning the World*, originally published in 1977), Schafer (2001) proposes the ordering of soundscape. Is "tuning the world" really necessary, possible or even desirable? The sound produced by the city is deemed to reflect its social and cultural characteristics and values. This reflection is conducive to understanding the city and, even though a soundscape is considered lo-fi, its inhabitants may still perceive its features and meanings differently, either positively or negatively.

According to Raimbault and Dubois (2005, p. 341):

> "[…] if the intensity of noise due to traffic, airport or highways is responsible for stress and other health effects, its consequences are generally lower than hearing loss due to amplified music. Nevertheless, the fact is that, in one case, the noise is widely considered as an unwanted and unavoidable pollution and, in the other, as intended entertainment […] In other words, the judgment concerning the effect of noise on health cannot be made independently of the social value given to the activity under consideration (e.g., necessity of transportation versus pleasure)."

Sound intensity interferes with listening not only in physiological terms, since listening is also related to social and cultural processes. This factor confers a bilateral characteristic to sound, between well-being and expressivity. That which is intentional and inevitable in listening problematizes this issue, as it brings individual choice into play, also derived from cultural and social processes, which in turn constitutes a multifaceted context with regard to sound and listening practices.

Diffusion: how does it sound?

For Jean-François Augoyard and Henry Torgue (2009, p. 131-7), urban and architectural spaces may cause sound ubiquity, since their conditions favor sound propagation and dislocation. Sound ubiquity can also be accentuated by the city's background noises and a host of sound sources. However, when seen from a different angle, an acoustic environment itself is ubiquitous: sound never ceases; there is no possibility of preventing the ear from hearing in the same way as we close our eyes to prevent seeing.

As argued by John Cage (1961, p.22-23), silence is formally defined as the pause between two sounds from a traditional musical perspective in which silence becomes sounds that are not produced by instruments. However, these sounds can be found in all places and times. One of Cage's best-known personal accounts can be cited to illustrate this point (Cage, 1961, p.8, p. 13, p. 23): the composer entered an anechoic chamber — a room as quiet as technology allows — and noticed two frequencies: a high frequency related to the operation of the nervous system and a low frequency caused by blood circulation. Thus, it follows that complete silence, i.e., the total absence of sound, can only take place in inaudibility.

Bearing in mind this ubiquity of sound, it is important to take hearing and listening aspects into account when addressing the acoustic environment as a building block of the city, in spite of its being an elusive and extensive subject.[3] Therefore, this article briefly presents some concepts of auditory perception that contribute to the perceptive construction of the city itself.

Roland Barthes (cited in LaBelle, 2006, p. 158; Barthes, 1991) draws a distinction between hearing and listening: they are modes of paying attention to sound at different levels of consciousness, passive and active actions. Barthes distinguishes the physiological phenomenon of hearing, done passively, from the psychological act of listening, in which human beings' appropriation of space is also connected to sound. Brandon LaBelle (2006, p. 158) claims that the act of listening is decisive; it is an externalization and internalization process that encompasses environments and audibility. LaBelle's claim suggests that the act of listening, qua the

[3] To this end, some concepts that inform this article are briefly presented below.

psychological act advocated by Barthes, implies relationships among hearing, acoustic environments, and space.

In his studies on hearing types and modes, Pierre Schaeffer[4] (1988) proposes a terminology different from Barthes's, but he identifies a listening mode that is also passive, capable of taking shapes that do not extend the process of hearing. According to this author, hearing (*ouïr*) is a continual act, given that human hearing never ceases, nor does the acoustic environment. To Schaeffer (1988, p. 62-3), hearing is perceiving through the ear, i.e., one hears whatever is given to perception; hearing is not necessarily intentional. The awareness of what is heard is a process that occurs by means of reflection or memory.

> I instinctively adapt to it [sound], raising my voice when its level increases, without even noticing it. Nevertheless, there are accounts of people that live near train stations who take notice when trains are off time (Schaeffer, 1980, p. 63).[5]

In spite of Schaeffer's argument sounding radical or overstated, individuals' adaptation to their acoustic environment may occur as hearing numbness due to lack of variability, when a given sound is only consciously perceived when it ceases or when it causes discomfort. Without necessarily being intentional, everyday listening can adapt to a common acoustic environment by reducing its sensitivity to less conspicuous sound characteristics. Katharine Norman (1996, p. 5) calls *referential listening* that which happens when we first hear sounds and try to relate them to events and objects, looking for a visual correspondence to a given sound. It is a way to supplement hearing and, according to the author, this visual correspondence can be considered an attempt to bring sound experience to temporal reality, defining what happens in our presence. Based on this brief overview, it is possible to differentiate attentive, active, and reflective listening from listening that is not necessarily knowingly or intentionally internalized.

[4] We are well aware of the complexities in Schaeffer's hearing theory; however, we believe an in-depth analysis is not relevant to this article due to several issues to which it correlates.

[5] "Me adapto instintivamente a él, elevando la voz cuando su nivel se eleva, sin siquiera darme cuenta. Sin embargo, se conoce el ejemplo de gente que, vivendo cerca de uma estación, se despierta cuando el tren no passa a su hora"

Thus, an acoustic environment deriving from the combination of varied sound elements — technology-mediated or not — refers to one of the elements through which it is possible to perceive the city by listening more closely to it. The perception of the acoustic environment may intersect other characteristics of space, thereby acting relationally. Sounds can relate to and at the same time reconfigure or dissolve space. Therefore, an acoustic environment is considered a relational element, which acts in conjunction with and by means of space.

Dislocation

To Lynch (1982, p. 12), the city is a perceivable object, the product of a multitude of constructors, there being no end result but a succession of phases. When these affirmations are transposed, it is possible to understand that acoustic environments imply similar dynamics: a succession of phases, which in this case confers ephemerality and mutability to acoustic environments, reflecting actions, movements, and lifestyles, whose perception depends on the listener.

It is through the space and action relationship that meaning is attributed to space, engendering symbolic and practical relationships with social places and giving rise to the "social construction of space" and "spatialization of social actions" (Leite, 2001). According to Leite, space should be considered "more than mere contingency for the structuration of public sociabilities" (Leite, 2001, p. 220). After all, the reflective nature of public space derives from its social, cultural, and historical dynamics, which are not always obvious, as well as from its physical conditions for the construction of places of coexistence.

On the word of anthropologist Edward Hall, space usage is a specialized elaboration of culture (Hall, 1977, p. 13). Culture is responsible for the use and organization of space, the human sense of space being the result of various sensory syntheses. Therefore, in line with this view, space is heterogeneous and apprehended according to cultural filters, whose various features sometimes go unnoticed. Space varies culturally, from individual to individual, and acts as the basis for sensations, activities, and institutions.

Based on the knowledge that space is heterogeneous, its processes and dynamics are thought to be organized in a characteristic manner.

A qualified space is a place that sponsors — not necessarily imposes — relationships of belonging and appropriation with people or groups of people, i.e., where people bind with space (Firmino & Duarte, 2010, p. 30); "a fragment of space laden with affectivity and symbolism" (Duarte, 2002, p. 115) in which sound can also participate. However, traffic sounds can be perceived in several contemporary cities, thereby hindering the establishment of a possible sound place. The proliferation of sounds seems to be closely associated to population and technology issues, bearing in mind that human and technological agents matter the most.

With respect to the quality of public spaces, qua spaces that enable social activities, spaces with high levels of sound intensity — mostly caused by automobiles — seldom provide the necessary conditions for people to converse and get involved, i.e., they reduce the locus of communication. This aspect may contribute to public places and streets being assigned as passageways, where only indispensable activities take place, as pointed by Jan Gehl (1980).

According to Augoyard and Torgue (2009), research on city sounds should be of a trans-disciplinary nature. Neither should it merely focus on their physical signs; on the contrary, it should also consider collective and individual sound representations of the city as well as social conflicts and interactions.

The use of mobile sound technologies and the development of sound communication have given rise to several urban life transformations that transcend the physical and acoustic aspects of sound. Besides bringing foreign sounds to the listener, mobile, mediated listening concurs to different spheres intersecting: public and private; collective and individual; and virtual and concrete. Through sound interfaces, sounds are added and superimposed.

The most common example of this intersection refers to the individualization of listening. Joshua Meyrowitz (1985, p. 115) claims that electronic media have dissociated the physical place from the social place,

disconnecting the place we are physically from that we are socially. This disjunction between physical place and social place is illustrated by William Mitchell:

> When you open a book, get in a movie theater or use an iPod, your attention is instantly directed to another place or space. The dense incorporation of these media spaces to the urban fabric produces a city that — like a movie laden with jump cuts and flashbacks — is experienced and apprehended as a sequence of fragmented scenes, some of them expressions of real lives and actual places and others ephemeral media constructions (2005, p. 15).

Today's listening, due to the use of digital media and headphones, is more susceptible to the listener's choosing than to these technologies. Individual use of portable sound-reproducing equipment leads to personalized listening, i.e., it allows a private sphere within the city's public sphere. Headphones and mp3 players are particularly influential for creating a private acoustic environment, due to their portability and ability to provide an escape from city sounds, the sounds of the other. A person, through individual listening, can remain aloof, isolated, despite being surrounded by people.

Reproduction processes have enabled storage and repetition, allowing the listener to control of the flow of time, also resulting in a possible fragmentation (Iazzetta, 2012, p. 14) in that listeners find plenty of opportunities to stop listening whenever they want. In individualized listening, sound is directed to the listener who then customizes it by choosing, for instance, a desired music genre instead of listening to the surrounding acoustic environment. Road-traffic and work-related sounds are complemented by those engendered by amusement and entertainment activities, thereby becoming an escape and abstraction alternative to this dislocation situation and reestablishing intimacy (Bull, 2000); or else, as indicated by Hall (1977), a way of depriving the senses in order to cope with agglomerations. According to Sterne (2005), individualized listening is a bourgeois mode of listening as listeners can opt for listening to their own acoustic spaces. This turns the listening space into private property where listeners reside by themselves, thereby alienating their surrounding environment. By using these individual sound reproduction devices,

personalized and exclusive environments are created in detriment to a non-mediated acoustic environment.

Listening together

Albeit these aspects related to personalized listening, there is a possibility of qualified use of sound interfaces that promote collective listening through practices known as sound installations in public places. With the purpose of defining sound installation, LaBelle resorts to Max Neuhaus's seminal study:

Often credited to Neuhaus, sound installation brings together sound and space in a provocative and stimulating manner, often drawing upon architectural elements and construction, social events, environmental noise, and acoustic dynamics, in and out of the gallery, while drawing upon musical understanding. In this way, sound installation replaces the insular domains of musical performance with spatial geographies, the investigations of electronic system (which Neuhaus was well-aware of) and their subsequent noises with the conditions of urban space and its planning, positioning a listener inside a greater geographic field (LaBelle, 2006, p. 151-152).

These sound works derive from the association of sound to space, instead of time. According to Max Neuhaus (1994), his works propose the creation of a new place by transforming the existing one. It is important to remark that Neuhaus construes a place not only as a physical location; he also takes into account its users, social relationships, and visual and aural aspects.

Used directly and consistently with space, sound can enhance previously unnoticed characteristics of space. Therefore, the use of sound interfaces contributes to these works, enabling dialogue between virtual and concrete cases. Generally speaking, sound interfaces may be perceived as mediating elements that alter structures in the "sound source-environment-listener" chain, making communication channels among these elements more intense and complex. In a broad sense, sound interfaces enable connections between sounds and listeners and help to superimpose virtual and concrete levels and, thus, form hybrid environments.

The hybrid case is given by the use of digital media in everyday life and can be verified at an increasing rate (Santos, 2008, p. 23). Architectural space becomes denser, also composed of virtual cases that confer a hybrid character to its concreteness (Tramontano, 2007, p. 49). Hybridization of virtual and concrete cases, made possible by the use of electronic and digital media, can also be deemed as promoting the process of bringing forth imperceptible features of these spaces, transforming perceptions about urban spaces by creating other communication channels.

Contemporary changes caused by these uses transcend the issues of remoteness and presence of electronic or digital images, digital equipment, and sound interfaces. These changes relate more closely to the use, adaptation, and persistence of these media than they do to technological advances, for they act on communicative relationships, including people and creating dialogue and communication channels. It is worth considering these actions and reactions as interdependent because they allow a lower delimitation of boundaries between virtual and concrete cases. Bearing in mind that the continuum between concrete and virtual cases is not so precise due to the increasing everyday use of communication and information technologies, chains of actions and reactions are created between these two cases, which become superimposed. Although issues such as remote communication are not novel, the intense use of digital and electronic media confers a state of reconfiguration and dialogue between virtual and concrete cases, which can no longer be seen as diametrically opposed.

Therefore, hybrid environments constitute this relationship of mutuality and interdependence between concrete and virtual cases, derived from intrinsic relations between these levels, aided by the use of digital and electronic media that display uses and appropriations increasingly present in everyday activities.

Other ears

Finally, in order to generate insights about the development of hybrid environments in relation to sound, it is interesting to understand its creation

process as a set of actions and reactions that lead its elements to influence one another. Sound, as an element of space, is also implicated in these dynamics. In sound practices, e.g., sound installations, sound plays a central role and has its relations with the whole modified by the interfaces in addition to being affected by them. Both physical and acoustic environments constitute an arena where sharing occurs by means of interfaces, which can also become interlocutors of human agency. These environments can behave as interfaces, thus contributing to the establishment of dialogue channels, producing other meanings and constituting a medium. It implies bringing elements together and setting them in action and reaction, exposing previously unnoticed features.

Sound interfaces are enabling elements of a conversation between sound cases and are responsible for the development of hybrid environments. They make diverse relationships and processes possible, giving shape to the medium. They also determine the relationship between sound production and listening, facilitating other modes of creation and reception, providing a wide range of possibilities. Besides interfering with the relationship between the listener and sound, by providing the medium, sound interfaces promote interactions among concrete objects, virtual cases, and people.

In practices such as sound installations, it is worth deeming the assortment of sound interfaces as windows and mirrors in the sense argued by Jay David Bolter and Diane Gromala (2003). Like windows, sound interfaces can encourage other perspectives on the noisy "sound wall" built in an everyday acoustic environment. Like mirrors, sound interfaces help listeners to understand their contexts during their participation, allowing other relationships in the physical space where they are and their acoustic environment.

In light of these aspects, in sound installations, sound constitutes a triggering element that draws attention to contexts in which interpretation takes place, thereby fostering listening as a key element to better perceive the city.

References

AUGOYARD, J.F.; TORGUE, H., 2009. **Sonic Experience***: a guide to everyday sounds*. Montreal: McGill-Queen's University Press.

BULL, M., 2000. **Sounding out the city**: *personal stereos and the management of everyday life*. New York: Berg Oxford International Publishers.

BARTHES, R., 1991. *Listening. In: BARTHES, Roland.* **Responsability of forms**. Tradução Richard Howard. Berkeley, CA: University of Callifornia Press.

BOLTER, J.D.; GROMALA, D., 2013. **Windows and mirrors**: *interaction design, digital art, and the myth of transparency*. Cambridge: Massachusetts Institute of Technology Press.

CAGE, J., 1961. **Silence**. Middletown: Wesleyan University Press.

FIRMINO, R.; DUARTE, F.; ULTRAMARI, C., 2011. The Rising of the Ubiquitous City: Global Networks, Locative Media and Surveillance Technologies. In: FIRMINO, R.; DUARTE, F.; ULTRAMARI, C. (eds.). **ICTs for mobile and ubiquitous urban infrastructures**. Hershey: Information Science Reference.

FORTUNA, C. *Imagens da Cidade: sonoridades e ambientes sociais urbanos*. ***Revista Crítica de Ciências Sociais***, no. 51, jun. 1998. Disponível em < https://estudogeral.sib.uc.pt/jspui/bitstream/10316/11567/1/Imagens%20da%20Cidade%20sonoridades%20e%20ambientes%20sociais%20urbanos.pdf >.

GEHL, J., 1980. **Life between buildings**: Using Public Space. New Yorl: Van Nostrand Reinhold.

HALL, E., 1977. ***A Dimensão Oculta***. Tradução de Sônia Coutinho. Rio de Janeiro: Francisco Alves Editora.

IAZZETTA, F. *Da escuta mediada à escuta criativa.* ***Contemporânea – Comunicação e Cultura***, vol. 10, no. 1, jan-abr. 2012. Disponível em: <http://www.portalseer.ufba.br/index.php/contemporaneaposcom/article/view/5786>. Acesso em 24 set. 2012.

LABELLE, B., 2006. **Background noise**: *perspectives on sound art*. New York: Continuum International Publishing.

LABELLE, B., 2010. **Acoustic Territories***: Sound culture and everyday life*. New York: Continuum Insternational Publishing.

LEFEBVRE, H., 2004 **Rhythmanalisys**: *Space, time and everyday life*. London: Continuum books.

LEITE, R. P. S., 2001. ***Espaço Público e Política dos Lugares****: usos do patrimônio cultural na reinvenção contemporânea do Recife Antigo*. 2001. 393f. Tese (Doutorado em Antropologia) – Instituto de Filosofia e Ciências Humanas, Universidade de Campinas, Campinas..

LYNCH, K., 1982. ***A imagem da cidade***. Tradução de Maria Cristina Tavares Afonso. São Paulo: Editora Martins Fontes.

MITCHELL, W., 2005. **Placing words**: symbols, space, and the city. Cambridge, MA: Massachusetts Institute of Technology.

MENDES, C. F., 2006. ***Paisagem Urbana****: uma mídia redescoberta*. São Paulo: Editora Senac.

MEYROWITZ, J., 1985. **No sense of place**: the impact of electronic media on social behavior. New York: Oxford University Press.

NEUHAUS, M. **Excerpts from a conversation between Maus Neuhaus and Gregory des Jardins**. Disponível em: <http://www.max-neuhaus.info/soundworks/vectors/place/evocare/Evocare.pdf>. Acesso em 24 mai. 2013.

NORMAN, K. Real-world music as composed Listening. **Contemporary Music Review**, v.15, 1996. Disponível em: <http://www.novamara.com/KNpage/writings-sound/NORMAN-CMR.pdf>. Acesso em 24 mai. 2013.

RAIMBAULT, M.; DUBOIS, D., 2005. Urban Soundscapes: Experiences and Knowledge. **Cities**, v. 22, n. 5, p. 339–350.

SANTOS, D. M. ***Espaços híbridos na cidade: interfaces computacionais para comunidades locais*****.** 2008. 452p. Tese (Doutorado em Arquitetura e Urbanismo) – Escola de Engenharia de São Carlos, Universidade de São Paulo, São Carlos, 2008.

SCHAEFFER, P., 1988. ***Tratado de los objetos musicales***. Madrid: Alianza Música.

SCHAFER, M., 2001. ***A Afinação do mundo -*** *uma exploração pioneira pela história passada e pelo atual estado do mais negligenciado aspecto do nosso ambiente: a paisagem sonora*. São Paulo: Editora UNESP.

STERNE, J., 2003. **The audible past**: Cultural Origins of Sound Reproduction. Duke University Press.