



# Urban sound: A cultural mapping tool for contextualising perceptions of city spaces

Cristiano Pacheco <sup>1</sup>

<sup>1</sup> University of Coimbra, Portugal and Federal University of Sergipe, Brasil.  
cristiano.pacheco@uc.pt

**Abstract.** This text addresses the perception of the urban environment, as a collective process in which identities are constructed and where the anthropocentric nature of the soundscape presents a sonic biography of both the place and the listener/subject. Therefore, it is necessary to consider perceptions of the sonorous environment by those (listeners/subjects) who live in the space, as an emerging approach for the correct assessment of the acoustic space and, consequently, to inform the understanding and co-creation of designing public spaces with optimal usability. To this end, the text begins by referencing cultural mapping processes as critical tools for the interpretation of urban audio drifts, which when combined with the analysis of local residents' daily sonorous events, constitutes a timely, contemporary method of investigating urban space. Finally, the text refers, in general, to the use of a model of perception of the city, which highlights the value of hearing and facilitates the ability to perceive the local listener/subject as an intrinsic possessor of urban sonorous identity, by combining material and impalpable elements for the co-creation of the city's soundscape<sup>1</sup>.

**Keywords:** Soundscape, Cultural mapping, Identity.

## 1. Introduction

When analysing contemporary society, it is undeniably clear that urban sounds inject musicality into the city and, even when produced by “invisible” actors (i.e. those not recognised for their personal or family attributes), they cumulatively build an imaginary of life stories, where everyone can listen to what the other produces. In this sense, this article intends to address the phenomenon of power attributed to sound; its jurisdiction in denoting place, delineating space and use in developing the idea of a sonic ecology [1]. The objective is, more precisely, to establish a relationship between the cultural aspects incorporated by the soundscape and the listener with their environment, that is, discovering the identity of the urban space experience [2].

We assume that the sounds of the city are an important contribution to the knowledge of city space, encompassed in a wider conception of cultural mapping as an instrument for planning and participatory development in “communal engagement and the creation

---

<sup>1</sup> According to music educator and environmentalist, Murray Schafer [10], the soundscape is characterised as the search for sounds that compose the environment, and can be of natural, human, industrial or technological origin, and concatenates, within it, a range of meanings.

of spaces to incorporate multivocal stories” [3]. This is an aspect of urban social and spatial demarcation, in which sonority constitutes a relevant dimension, in terms of analysing perceptions of the city and the dynamics of participation, relating to the design and use of urban spaces.

The formulation of the text was based on explanatory research underpinned by literature on the core phenomenon in question: the urban soundscape, cultural mapping and identity. Specifically, research shows that the connection of sound to people and urban spaces creates a sonic ecology, ordered by a spatial delimitation and a daily chronology that can denote place and, crucially, demarcate space. Methodologically, the work focuses on the contextualisation of the soundscape paradigm, perceiving it as composed of complex living systems, wherein individuals interact moment by moment with each other and the surrounding physical environment [4].

In this regard, both the identity of the city and the identity of the subject, over time, are susceptible to processes of continuous recomposition [5]. Furthermore, the urban environment is a collective process where identities are constructed and the human being assumes the role of protagonist [7]. The anthropocentric nature of the soundscape manifests as the sonic biography of the “place”, which intertwines with the listener/subject’s autobiographical memory [8].

## **2. A sensorial approach to urban space**

Soundscapes increasingly pertain to the sensory domain in everyday life in contemporary cities. In addition to the visual aspect, sound is also a relevant dimension, in terms of analysing the impressions of the city and the dynamics of participation related to the design and use of urban spaces. The truth is that sound is a complement to vision, as it gives it consistency and rhythm; the city is an awakening of the senses, where human beings engage with, produce and interpret content. This can be described as the natural pulse of the city [9], mobilising sensitive expressions from people’s daily lives and thus conferring the diversity of urban sounds and cadences that intertwine in the body’s relationship with the city [5].

In this aspect, by challenging the established interpretation of the city, as built from the canon of visual analyses, sounds emerge as catalysts that initially influence the exploration and appropriation of urban space, revealing forgotten and resonant soundscapes of the city [10]. When considering that occupying an urban space equates to inhabiting a sensorial realm, the need for debate regarding the apprehension of the emotive side of the urban becomes evident, since the city contains more than we are able to understand and present within either an intimate or unfamiliar relationship with the place [5].

That said, we turn our attention to the importance of the discussion regarding heuristic interpretations of the rhythms of everyday life, in accordance with Lefebvre’s (2004) precursory concepts of the sensitive city [12]. This thereby expands the possibilities for analysing the sensitive side of the urban [13], building bases for exploring the multiplicity of movements and identities that give a city voice, create history and exist economically and culturally [14].

Therefore, what is proposed here is a reflection that engages with the expressive rhythmic elements of urban identity, characterised by the notion of soundscape, especially when observing the multiple cultural flows that pass through the city, perceiving continuities and discontinuities in different urban experiences [2]. They are configured as aspects that focus on mapping the intangibilities of a place, the elements that are not easily counted or quantified (for example, tales, stories, etc.), those aspects that provide a "sense of place" and ground identity to specific locations [3].

This is an effective method of approaching urban sounds that is full of potential for implementing complex urban mapping, capable of highlighting what happens in the city throughout the day and night. It is a way of showing the sounds of urban life and, moreover, it provides an instrumentation of the auditory process, which reveals how sound is both a guide and a fundamental object of analysis in the process of understanding current urban environments [7]. Intrinsically, such an experience is nothing more than a search for another aesthetic reading of the urban landscape, to be achieved through a more intense approach to everyday urban sound. This process essentially involves developing new mapping methodologies that become broader as new theoretical frameworks are discussed and cartography readjusts to include intangible, emotional, social and cultural aspects [15].

However, physically or mentally representing a space presupposes mapping and charting, from a "traditional" viewpoint, whereby cartography would be supported by geophysical borders and representations of political control [3]. As a result of thematic awareness, this article addresses the importance of a humanistic conception that can reveal a topophilia written by the diverse individual and collective daily experiences of the lives and communities composing the places.

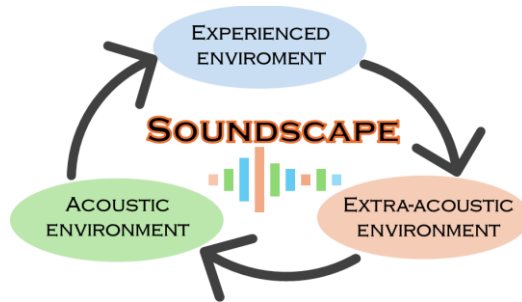
A mapping report of a soundscape composed of living systems, where individuals interact moment by moment with each other and the physical environment, is the highly illustrative work undertaken by Pablo Kogan, a Chilean acoustic engineer, who implemented a methodology tested in 86 case studies in the city of Córdoba, Argentina. The application of this novel methodology is organised through data collection techniques that include acoustic measurements, audio recordings, questionnaires, photographs and videos.

Kogan understands that a soundscape can be characterised by the combination of three entities, namely: the experienced environment, the acoustic environment and the extra-acoustic environment. As examples of the composition of these entities, one can cite: sociodemographic data, olfactory characteristics, visual and sound characteristics of the environment, familiarity with the environment, local experiences, among other aspects. The proposed methodology was tested, optimised and applied in various open environments, including squares, parks, fountains, university campuses, streets and pedestrianised areas.

The research revealed that incidences of environmental sound perceived by an individual not only depend on the physical properties of acoustic waves, but primarily on multiple other factors related to their lived experience of the soundscape. Furthermore, one of the main reasons why soundscapes continually change and never return to an identical state is because they are composed of beings in flux, interacting with each other and the environment. That is, interactors never exactly repeat the same

patterns of interaction, and each stimulus can lead to new and different responses, moment by moment [4].

**Figure 1:** Simplified summary graphic of the three essential entity variables for a soundscape, understood by Pablo Kogan.



Source: Appropriated by the author, 2024.

Therefore, considering place<sup>2</sup>, within the context of sound, introduces aural experiences as a central reference point in a discussion that examines different feelings and attributes related to the organisation of geographic space and its various material and impalpable layers<sup>3</sup>. Therefore, impalpability does not exist without the tangibility of factors associated with it, such as instruments, objects, artefacts, cultural spaces; it does not manifest in an empty space [15]. Furthermore, the city's spaces and the connections that develop between the character associated with a sense of place and the experience of the landscape, provide a representative synthesis of spatial values and meanings - individual, collective, local, global and universal. And these can be found in the physical state of spaces, their uses and affinities [16].

### 3. The soundscape and its symbolic aspects of understanding urban space

The values and meanings that act on the landscape are expressly related to what can be defined as a cultural construction [17]. The landscape cannot only be considered as an object of quantitative value, but rather as a non-reducible summation of its concrete

<sup>2</sup> It is the understanding of the place that leads to another conception of the landscape, that it is no longer a mere physical place, but an ensemble of ideas, sensations and feelings that are created from that place and its constituent elements. It is a global synaesthesia, in which sounds give character to the space and these humanise it, allowing for the interpretation of audible landscapes [8], which can be considered a form of identity heritage.

<sup>3</sup> The Convention for the Safeguarding of Intangible Cultural Heritage (UNESCO, 2013: Art. 2.1) classifies intangible cultural heritage as “the practices, representations, expressions, knowledge, skills (...) that communities, groups and, in some cases, individuals recognise as part of their cultural heritage.”

properties, that is, a relatively qualitative phenomenon. Therefore, to study it not only involves knowing the morphology of the environment in which it is located, it is also fundamental to understand its cultural, social and historical determinations of human perception. In other words, it means studying what builds human subjectivity, intertwined in the immateriality of social relations that concern physical space [idem].

This subjective impalpability is permeated with numerous meanings. Especially those introduced in the memories citizens hold about their relationships with certain parts of their city [18]. Consequently the landscape exists based on a combination of the subject's experience, their perception of reality, as well as personal and collective memories, essentially understood through the lens of their identity and how this impacts on their daily lives. In other words, the historicity of the soundscape means it is inscribed in a specific moment of time and space for a specific community of listeners and in a complex culture of symbolic representations and different sensibilities [19].

It was this line of thought that led Luís Antero, a Portuguese sound landscaper, to challenge the Coimbra, Portugal community to participate in the (re)construction of the city's collective memory, by steering and establishing a space that invites everyone's contributions, through participation in the construction of the Digital Archive of Coimbra's Historical Centre (adCHC). Notably, Coimbra's sound<sup>4</sup> archive revealed different ways of experiencing places. The project reinforces the desire for memory and the collection of records that allow the city's past to be reconstructed and revived in the present [20]:

- [...] yes, the sounds that are on the verge of extinction interest me greatly [...] I realised along the way that there is future memory, but there is present memory and there are many people, from my generation and from even older generations, who had never heard sounds and therefore the importance of sound is also present in my work for the simple fact that I make representations of reality heard. And there are people who otherwise wouldn't have paid attention. And you can pass by the same place every day and not notice that sound because, as I usually say [...], we often stop to see and rarely do it to hear, to listen.<sup>5</sup>

Arguably, Antero's justification is equivalent to shifting to the field of identity perception related to the landscape, in order to define subjective perceptions, feelings and memories that people experience in relation to their surroundings. The landscape emerges from the analysis loaded with symbolism, being responsible for the constitution of the social imaginary that guides the action of social actors, whilst at the same time mediating representations of the territory by these same actors. Consequently, it can be considered that neither the individual nor the collective are without place, suggesting that one of the functions of a landscape, and how we interact with it, is to situate our past, present and future [4].

---

<sup>4</sup> Coimbra's sound archive can be accessed at <https://arquivochc.ces.uc.pt/>.

<sup>5</sup> Luis Antero, sound landscaper, interviewed by the author on 09/21/2023.

## 4. Conclusion

Consideration of the acoustic well-being of those living in urban environments is a useful factor for effectively assessing acoustic quality and for improved usability design of public spaces. Therefore, when thinking about urban spaces, one cannot ignore the immersive aspects of the landscape that represent the environment as perceived by its subjects [22]. After all, the dynamic elements of a city, especially its people, are as, or more, important than its physical and immovable parts. People are not just observers of the spectacle of the landscape, but an active part of it, participating and interacting with others on the same and different stages [18].

The richness and validity of the landscape depends upon its ability to communicate with souls and psyches [5]. In other words, the landscape, understood as the juxtaposition of all the physical and cognitive elements that constitute geographic space, also shapes the spatial whole, as represented by the individual or collective interpretations of human beings and their diversity of lived experiences. Affective values associated with the landscape will be different for each individual and are closely associated with psychological factors. Therefore, each person always keeps a personalised memory of a landscape, which often has an emotional meaning. Individuals who moved from one region to another, in particular, always retain a mental landscape of their region of origin [23].

Auditory spatial consciousness of the soundscape includes all parts of the holistic experience: sensation, perception, and affect. Therefore, with emotionally active listening, the listener may burst into tears of sadness or feel overwhelmed with bliss [24]. In this space, the body is alluded to as a metronome, or as a barometer, for listening to the bodies of others in search of reciprocal integration of the “outside” and “inside” of these observed bodies. In other words, knowledge of the body is the foundation of rhythm-analysis [25], however, modern culture has little appreciation for the emotional feelings of hearing, attributing little value to the art of perception of spatial hearing [24]. It is a fact that in all societies, the process of disconnection of the sense of hearing has been felt and, in all of them, the primacy of vision asserted its logic. Overall, the world became more seen than heard [26].

All of this directly indicates that one must always talk about a multiplicity of sounds, their interaction with a location and the resonant network that they establish between the bodies that produce them, which reflect, absorb and are affected by them. This is also why each sound allows one to tell many stories [19]. In line with this, place-related cognitions have been shown to include both individual and collective information, functioning as autobiographical memory aids in identity and self-formation. Thus, soundscapes can act as reminders of important personal and collective experiences, events, traditions and memories, through which we defend and strengthen different types of identifications [21].

## References

- [1] R. Atkinson: Ecology of sound: The sonic order of urban space. *Urban Studies*, 44(10), 1905–1917 (2007).
- [2] L. Mendonça: Sonoridades e cidade. In C. Fortuna, R. Leite: *Plural de cidade: Novos léxicos urbanos*, pp. 139. Almedina, Coimbra (2009).
- [3] N. Duxbury: Mapeamento cultural. Enfrentar o desafio de políticas e planeamento culturais mais participativos e pluralistas. *Revista Luso-Brasileira de Artes e Cultura*, 3(2), 10–24 (2020).
- [4] P. Kogan, B. Turra, J. P. Arenas, and M. Hinalaf: A comprehensive methodology for the multidimensional and synchronic data collecting in soundscape. *Scienci Total Environment*, 580, 1068–1077 (2017).
- [5] R. Leite: Espaços públicos na pós-modernidade. In C. Fortuna, R. Leite: *Plural de cidade: Novos léxicos urbanos*, pp. 187. Almedina, (2009).
- [6] C. Fortuna, R. Leite: *Plural de Cidade: novos léxicos urbanos*. 1º ed. Almedina. Coimbra (2009).
- [7] A. Ribeiro: *Sonoridades Urbanas : A cidade da audição, construção de um arquivo sonoro de Coimbra* [master's thesis]. Universidade de Coimbra (2013).
- [8] F. Temtem: De la marginalidad del oído a la construcción auditiva del paisaje urbano. *Zarch Journal Interdisciplinary Studies in Architecture and Urbanism*, 7(21), 200–213 (2016).
- [9] C. Landry: *The Creative City*. 2º ed. Earthscan, London (2008).
- [10] M. Schafer: *A afinação do mundo*. 1º ed. Fundação Editora da UNESP, São Paulo (1997).
- [11] C. Landry: *The Art of City-Making*. *Australian Planner*, 43(4), 47 (2010).
- [12] H. Lefebvre: *Rhythmanalysis*. 1º ed. Continuum, London (2004).
- [13] C. Fortuna: *Destradicionalização e Imagem da Cidade: O caso de Évora*. In C. Fortuna: *Cidade, Cultura e Globalização: Ensaio de Sociologia*, pp. 231. Celta Editora, Oeiras (1997).
- [14] S. Sassen: *As narrativas da globalização. O Estado de São Paulo*, pp. J6. São Paulo, 06 de junho de 2010.
- [15] S. Cabeça: *Mapeamento Cultural: uma Metodologia Sustentada para o Património Cultural Imaterial*. *Memoramedia* 3(5), 1068 – 1077 (2018).
- [16] P. Monteiro: *Paisagem, lugar & espaço público: Presença e ausência nos espaços da cidade* [doctoral thesis]. Universidade Federal do Rio de Janeiro (2008).
- [17] A. Berque: *Thinking through landscape*. 1º ed. Routledge, London, and New York (2013).
- [18] K. Lynch: *A imagem da cidade*. 1º ed. Edições 70, Lisboa (1982).
- [19] N. Fonseca: *Temporalidade e Historicidade das Paisagens Sonoras: Os seus Sons e os seus Silêncios*. In E. Lessa, P. Moreira, R. Paula: *Ouvir e escrever as paisagens sonoras*, pp. 23. Universidade do Minho/Centro de Estudos Humanísticos, Braga (2020).
- [20] D. Silva: *adCHC: Memórias coletivas da cidade* [master's thesis]. Faculdade de Economia da Universidade de Coimbra (2019).
- [21] A. Butler, I. Sarlöv-Herlin, I. Knez, E. Ångman, Å. Ode Sang and A. Åkerskog: *Landscape identity, before and after a forest fire*. *Landscape Research*, 43(6), 878–889 (2018).
- [22] S. Luzzi, C. Bartalucci, A. Radicchi, L. Brusci, and G. Brambilla: *Participative soundscape projects in Italian contexts*. In: 48th International Congress and Exhibition on Noise

Control Engineering, Madrid (2019).

[23] É. Neves: Paisagem – conceito. *Paisagem e Ambiente* 4, 107– 112 (1992).

[24] B. Blesser, L.-R. Salter: *Spaces speak, are you listening? Experiencing aural architecture*. 1º ed. MIT Press, London (2007).

[25] F. Frehse: Quando os ritmos corporais dos pedestres nos espaços públicos urbanos revelam ritmos da urbanização. *Civitas Revista de Ciências Sociais* 16 (1), 100–118 (2016).

[26] C. Augusto: *Sons e silêncios da paisagem sonora portuguesa*. 1º ed. Fundação Francisco Manuel dos Santos, Lisboa (2016).

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

