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# THE NOTION OF SOUNDSCAPE IN THE REALM OF SENSUOUS URBANISM: A HISTORICAL PERSPECTIVE<sup>1</sup>

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To play the city means that one day, when we see a man playing a gate with a long stick [...] we will not see a police man arresting him for breaching peace; rather, we will pass by and not care about him, and to the child who questions us we will answer: he is playing the gate and when you are an adult you too will be able to do so [...].<sup>2</sup>

This chapter deals with the notion of soundscape from a historical perspective and within the framework of *sensuous urbanism*. Sensuous urbanism is defined as practices related to experiential and sensory approaches to the city.<sup>3</sup> This definition may seem frivolous when we think of the numerous and muddled definitions of urbanism that have been proposed over the past years.<sup>4</sup> But sensuous urbanism can be considered as part of a significant cultural revolution that has occurred in the human sciences over the past two decades and led more widely to the emergence of *sensory studies*.

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1. This essay is a reviewed extract of chapters 1 and 2 of my doctoral dissertation published as Antonella Radicchi, *Sull'immagine sonora della città* [On the sonic image of the city] (Florence: Firenze University Press, 2012).

2. Giuseppe Chiari, “Suonare la città” (1969), *Il Metodo per suonare* (Turin: Martano editore, 1976); English translation by the author.

3. This definition is released as a tribute to Kevin Lynch’s theory and writings.

4. Rahul Mehrotra, ed., *Everyday Urbanism: Margaret Crawford vs. Michael Speaks* (Ann Arbor, MI: The University of Michigan A. Alfred Taubman College of Architecture + Urban Planning, 2005); Robert Fishman, ed., *New Urbanism: Peter Calthrope vs. Lars Lerup* (Ann Arbor, MI: The University of Michigan A. Alfred Taubman College of Architecture + Urban Planning, 2005); Roy Strickland, ed., *Post Urbanism and Reurbanism: Peter Eisenman vs. Barbara Littenberg and Steven Peterson—Designs for Ground Zero* (Anna Arbor, MI: University of Michigan A. Alfred Taubman College of Architecture + Urban Planning, 2005).

## SOME NOTES ON SENSORY STUDIES

Sensory studies<sup>5</sup> were born after a long series of turns in the human sciences. In the Sixties and Seventies, the “linguistic turn” was inspired by Saussure and Wittgenstein’s studies on “the idea of culture as structured like a language or text, and of knowledge as a function of discourse”.<sup>6</sup> In the Eighties, this turn was followed by the pictorial one, which highlighted the role of visual imagery in our civilization of the image and gave rise to the field of visual culture studies. The Nineties were characterized by two important changes: the “corporeal turn” which introduced the concept of “embodiment” as a paradigm for cultural analysis and the “material turn” which focused attention on the physical infrastructure of the social world, marking the birth of “material culture studies”.<sup>7</sup>

Although these turns represented significant changes in patterns of interpretation, the emerging focus on the cultural life of the senses brought with it something revolutionary, emphasizing the relational and dynamic nature of our being in daily contact with the world. As Howes writes, this “sensual revolution” has produced significant changes in the study of human geography, social history, urban anthropology, philosophy and architecture, and revealed how a focus on the senses has changed our understanding of the physical and built environment.<sup>8</sup>

In the field of human geography, the sensory revolution was carried out by the geographer J. Douglas Porteous, who points out in *Landscape of the Mind* that few researchers have attempted to interpret the environment in a comprehensive manner, despite the holistic nature of environmental experience.<sup>9</sup> He criticises planning theorists, because they focus mainly on theoretical speculation and on visual aesthetics and do not recognise the multisensory as a fundamental dimension of the urban landscape. In particular, he argues against the trend towards satellite-generated data produced by remote sensing, and advocates a return to direct exploration of the territory, which he calls “intimate sensing”. Porteous reveals in detail how our sense of space and the character of

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5. David Howes, “Architecture of the Senses,” in Mirko Zardini, ed., *Sense of the city. An Alternative Approach to Urbanism* (Montreal: Canadian Center for Architecture, Lars Muller Publishers, 2005) and David Howes, ed., *Empire of the Senses. The Sensual Culture Reader* (Oxford: Berg Publishers, 2004).

6. Howes, “Architecture of the Senses,” 322.

7. Ibid.

8. Howes, *Empire of the Senses*, 1.

9. J. Douglas Porteous, *Landscape of the Mind: Worlds of Sense and Metaphor* (Toronto: University of Toronto Press, 1990).

place depend on the diverse interplay of the senses: the perception of the same place varies in relation to the sense mainly involved.

In the realm of social history, “sensory history”<sup>10</sup> analyses the sensory practices and ideologies that in the course of history produced special sensitivities. One of the overriding themes of this literature is the separation of sight from the other senses in the sensory model of modernity. In Pre-modernity, the senses were considered as a whole and as contributing to the epistemology and ontology of the universe. During the Enlightenment this understanding of the architecture of the senses was lost and the progressive rationalisation of society brought with it the dominance of vision over other senses.

The social theorists James Scott and Richard Sennett both criticise society and architecture starting from a severe critique of how society and architecture deprive the senses. James Scott argues that modern statecraft “depends on rendering complex living realities legible through the use of cadastral maps and miniature models of towns and cities”<sup>11</sup> while Richard Sennett writes a history of the city from ancient Greece to modern New York told through the bodily experience of the people and bemoans the monotony, tactile sterility and opacity that characterises the modern urban environment.<sup>12</sup>

In philosophy, Gernot Böhme, aiming to bring aesthetics back to its etymological origin and meaning of an act of aesthetic perception (from the Greek *aisthánesthai*, “perception”), has developed a theory of aesthetics of the atmosphere, which deals with the experiences of everyday life.<sup>13</sup> The philosopher argues that, although the concept of atmosphere results from experiences and expressions of everyday life, it can become a scientific concept.

What is unique and also theoretically complex is that the term describes a typical in-between phenomenon. Atmospheres stand between subjects and objects: one can describe them as object-like emotions, which are randomly cast into a space. But one must at the same time describe them as subjective,

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10. Howes, “Architecture of the Senses,” 324.

11. James C. Scott, *Seeing Like a State: How Certain Schemes to Improve Human Conditions Have Failed* (New Haven: Yale University Press, 1998), quoted in Howes, “Architecture of the Senses,” 324.

12. See Richard Sennett, *Flesh and Stone: The Body and the City in Western Civilization* (New York: Norton, 1994).

13. Gernot Böhme, *Atmosphären. Essays zur neuen Ästhetik* (Frankfurt: Suhrkamp, 1995).

insofar as they are nothing without a discerning Subject. But their great value lies exactly in this inbetween-ness.<sup>14</sup>

Atmosphere is able to communicate the quality of an object, pushing feeling over physical properties and functional characteristics.

In the field of architecture, David Howes recalls that architects and planners gained awareness of the sensorial issue in the Sixties through the work of Marshall McLuhan and E. T. Hall, who introduced the concept of “sense-ratio” and “proxemics”.<sup>15</sup> However, it is only quite recently that a theory of the “architecture of the senses”<sup>16</sup> has been taken into consideration, thanks to studies and exhibitions such as *The American Lawn: Surface of Everyday Life*<sup>17</sup> and *Sense of the City / Sensations Urbaines*<sup>18</sup>, which took place at the Canadian Centre for Architecture in Montreal in 1998 and 2005, both curated by Mirko Zardini. More recently, the exhibition *Sensing Spaces. Architecture Reimagined*—and the related conference—both organized at the Royal Academy of Arts in London have focused on the sensory experience of architecture.<sup>19</sup>

As Howes remarks,<sup>20</sup> the sensorial revolution in architecture is apparent even in Witold Rybczynski’s most visualist of treatises *The Look of Architecture*,<sup>21</sup> which acknowledges that:

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14. Gernot Böhme, “Acoustic Atmospheres. A Contribution to the Study of Ecological Aesthetics,” trans. Norbert Ruesaat, *The Soundscape Journal* 1, no. 1 (2000): 14-18.

15. Howes, “Architecture of the Senses,” referring to Marshall McLuhan, “Inside the Five Sense Sensorium” (1961), in Howes, *Empire of the Senses*, 43-52 and Edward T. Hall, *The hidden dimension* (New York: Doubleday & Co. Inc., 1968).

16. Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses* (London: Academy Editions, 1996); Anna Barbara and Stefano Mirti, *Storia dell’architettura attraverso i sensi. Nebbia, aurorale, amniotico...* (Milano: Bruno Mondadori, 2000); Daniela Martellotti, *Architettura dei sensi* (Rome: Mancosu, 2004).

17. Mirko Zardini, ed., *Asfalto: il carattere della città* (Milan: Mondadori Electa, 2003), catalogue of an exhibition at La Triennale di Milano.

18. Mirko Zardini, ed., *Sense of the city. An Alternative Approach to Urbanism*, (Montreal: Canadian Center for Architecture and Lars Muller Publishers, 2005). See also Alan Nash, “Making sense of a city,” *Senses & Society* 1, no. 2 (2006): 283-286, and Michael Carroll, “Prière de ne pas toucher,” *Senses & Society* 1, no. 2 (2006): 286-288.

19. See <https://www.royalacademy.org.uk/exhibition/4> accessed May 10, 2014.

20. Howes, “Architecture of the senses,” 329.

21. Witold Rybczynski, *The Look of Architecture* (New York: The New York Public Library, 2001).

Although architecture is often defined in terms of abstraction [...] buildings are above all physical [...] [and] the experience of architecture is palpable.

Yet Juhani Pallasmaa, in his text “Architettura della corporeità”<sup>22</sup>, claims that our technological culture weakens hapticity, our sense of closeness and intimacy, and goes further in *The Eyes of the Skin*<sup>23</sup>, advocating a sensory architecture. A good architecture, recalls Pallasmaa, results from the art of reconciling the world and ourselves, and this mediation takes place through the senses. He points to the work of Alvar Aalto as an example of what he calls “sensory realism”<sup>24</sup> and as a precursor of the current aspiration for a “haptic architecture”.

Finally, Joy Monice Malnar and Frank Vodvarka in *Sensory Design*<sup>25</sup>—an interesting compendium of sensory research in aid of an architecture for the senses—state the importance of recovering a sensory approach to architecture.

Human geography, social history, philosophy, and architecture are fields of study that have been undergoing an unprecedented sensory revolution. According to Howes,

this sensualisation of theory, which resists the traditional identification of theorizing with gazing upon (in Greek, *theorein*) some object, opens up many avenues for sensing the city in bold and potentially liberating new ways.<sup>26</sup>

## SENSUOUS URBANISM: ITS ORIGINS AND DEVELOPMENT

Though the research of Kevin Lynch is mainly associated with visual aspects of the city, we attempt to demonstrate that in academia, the origin of a sensuous approach to the city can be traced back to the studies he conducted at the MIT during the 1950s, which led to the publication of *The Image of the City*.<sup>27</sup>

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22. Juhani Pallasmaa, “L’architettura della corporeità” (2004), in Daniela Martellotti, *Architettura dei sensi* (Rome: Mancosu Editore, 2004), 13-16.

23. Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses*.

24. *Ibid.*, 71.

25. Joy Monice Malnar and Frank Vodvarka, *Sensory Design* (Minneapolis: University of Minnesota Press, 2004).

26. Howes, “Architecture of the Senses,” 326.

27. The first manuscript is dated 1958. See Kevin Lynch, *The Image of the City* (1958), MIT Archives and Special Collections, Record Group MC208, Box 3 e Kevin Lynch, *The Image of the City* (Cambridge, M.A.: Technology Press, Cambridge, 1960).

The success of *The Image of the City* since its first issue in 1960 can be understood in the context in which the research that led to the writing of the book was conducted.

Lynch's most interesting elaborations come from a very particular cultural and political context—the United States during the late 1950s. [...] One of the challenges in this historical and social context was to find a way to explain to American urban society the meaning of the places in which they live. [...] For immigrants arrived from the U.S and from all over the world, and settled randomly in a city or a region, the symbolic values of the place where they live can not match the historical significance of some monuments, streets or squares and neighbourhoods. Often in American cities, history is not only marginal, it is incomprehensible to those who live there [...].<sup>28</sup>

Lynch had the extraordinary insight of identifying from direct experience which elements should be referred to in order to construct the meaning of places. Starting from his principle of “imageability”<sup>29</sup> and of the five elements (paths, edges, districts, nodes, landmarks)<sup>30</sup>, he suggests that the legibility of the city is related to some points of reference which are in some way universal.

However, in order to fully understand the disruptive power not only of Lynch's ideas, but also of the practice of his research team, it is necessary to analyse in greater depth the cultural context of Cambridge (Massachusetts) and compare the academic environments of the School of Architecture and Planning (SA + P) at MIT and the Graduate School of

28. Paolo Ceccarelli, “Quarantenni ancora molto attraenti e in ottima salute,” introduction to Kevin Lynch, *L'Immagine della Città*, trans. Gian Carlo Guarda, ed. Paolo Ceccarelli (Venice: Marsilio, 2008), 10 ff.

29. In the Italian translation of the term as “figurabilità”, an inconsistency occurs between the terms imageability and image.

30. Kevin Lynch, *The Image of the City*, 46-90. Lynch reported that users understood their surroundings in consistent and predictable ways, forming mental maps with five elements: 1) paths: the streets, sidewalks, trails, and other channels in which people travel; 2) edges: perceived boundaries such as walls, buildings, and shorelines; 3) districts: relatively large sections of the city distinguished by some identity or character; 4) nodes: focal points, intersections; 5) landmarks: readily identifiable objects which serve as external reference points. Lynch's city design theory inspired several urban design projects, such as those of the city of Dallas (*Visual Form of Dallas*, 1974) and San Francisco (*Existing Form and Image*, 1970). See Michael Southworth, “Shaping the City Image,” *Journal of Planning Education and Research* 5, no.1 (1985): 52-59, and Michael Southworth, “Theory and Practice of Contemporary Urban Design: A Review of Urban Design Plans in the United States,” *Town Planning Review* 60, no.4 (1989): 369-402.

Design (GSD) at Harvard, without focusing solely on the Joint Center for Urban Studies (JCUS).

Although research at both GSD and SA + P focused on the design of the public city on a human scale<sup>31</sup> and the interaction between the two research centres was very active,<sup>32</sup> their methods of inquiry differed significantly. Undisputed protagonists of the GSD at that time, such as Jose Luis Sert and Siegfried Giedion, continued to spread the ideals of the CIAM<sup>33</sup> in particular through the Urban Design programme, directed by Sert since 1960.<sup>34</sup> While Sert's methodology was based on the rigid framework of analysis and design typical of the modernist design process, Lynch's methodology was more experimental, based on first hand experience and interaction with people.

What was distinctive about Lynch's philosophy was that he dealt with the immediate experiential qualities of places—which he was fond of referring to as the “sensuous qualities”, or simply “sense”—and their importance in people's lives.<sup>35</sup>

Lynch and his team had decided to leave the ivory towers of academia to join the crowds, at the very heart of the city, in search of the experiential qualities of places. This interest in “sensuous qualities”, which marked all Lynch's subsequent theoretical work, was present in the earliest stages of his research.

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31. See Josep Lluís Sert, “The Human Scale in City Planning” (1944), in *Urban Design* (AA.VV.); a condensed report of an invitation conference sponsored by Faculty and Alumni Association of Graduate School of Design, Harvard University, April 9-10, 1956, both in Alexander D’Hooghe, ed., *Readings of The Ideal Forms of Contemporary Urbanism Course* (Cambridge: MIT, Fall 2007).

32. In a letter of 1<sup>st</sup> April 1955 to Reginald R. Isaacs. At that time Chairman of the GSD, Kevin Lynch states: “We intend to keep you and Dean Sert and Professor Sasaki fully informed of what we are doing, or what troubles we are running into, and will always be grateful for your comments and ideas.” See Kevin Lynch, “Letter to Reginald R. Isaacs” (1955), MIT Archives and Special Collections, Record Group MC208, Box 3.

33. The International Congress of Modern Architecture (CIAM).

34. Eric Paul Mumford, *The CIAM Discourse on Urbanism, 1928-1960* (Cambridge, MA: The MIT Press, 2000), 267.

35. Tridib Banerjee and Michael Southworth, *City Sense and City Design* (Cambridge, MA: The MIT Press, 1990), 6.

In 1954, Kevin Lynch and Gyorgy Kepes began *The Perceptual Form of the City*,<sup>36</sup> a ground-breaking research project funded by the Rockefeller Foundation, studying the relationship between sensuous urban experience and the capacity of individuals to use and enjoy the public spaces of the city. In its “Method of Attack” the study aimed at analysing the visual environment of the city, and developing principles and techniques for the design of an urban environment that would allow residents to feel the city as unique (“to sense the whole”), to orient themselves within it and to understand the relationship between the parts and the whole. Although the project subsequently decided to narrow the investigation down to the visual perception of the city, it retained a strong belief in the importance of a holistic view of the perceptual and experiential process of the city.

Attention to the experiential and sensory realms also characterised the three successful editions of *Site Planning* in which Lynch gave greater consideration to all five senses and expressed a more radical point of view about “sensing,” stating that it is an indispensable condition of existence.<sup>37</sup>

Furthermore, he introduced a list of “sensuous criteria” for environmental planning—“comfort”, “diversity”, “behavioural support”, “identity”, “temporal and spatial legibility”, “meaning” and “individual development”<sup>38</sup>—intended to support the design of stimulating and meaningful landscapes that would be easy to decipher through the senses. In 1981 Lynch published *A Theory of Good City Form*<sup>39</sup> where he developed a “normative theory” of the city, based on five “performance dimensions”—“vitality”, “sense”, “fit”, “access” and “control”—and two meta-criteria—“efficiency” and “justice”.<sup>40</sup> Amongst the five “performance dimensions”, he defined “sense” as “the degree to which the settlement can be clearly perceived and mentally differentiated and structured in time and space by its residents and [...] the match between environment, our sensory and mental capabilities, and our cultural constructs”.<sup>41</sup>

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36. Kevin Lynch, “The Perceptual Form of the City” (1954), MIT Archives and Special Collections, Record Group MC208, Box 3.

37. Kevin Lynch, *Site Planning* (Cambridge, MA: The MIT Press, 1962); Kevin Lynch, *Site Planning* (Cambridge, MA: The MIT Press, 1971); Kevin Lynch and Gary Hack, *Site Planning* (Cambridge, MA: The MIT Press, 1984).

38. See Lynch, *Site Planning* (1971), 224 ff.

39. Kevin Lynch, *A Theory of Good City Form* (Cambridge, MA: The MIT Press, 1981); Kevin Lynch, *Good City Form* (Cambridge, MA: The MIT Press, 1984).

40. Lynch, *Good City Form* (1984), 118 ff.

41. *Ibid.*, 118.

In Europe, at the same time as Lynch's earliest work, the Situationists developed a political though sensual theory on the city, opposed to ideals of the functional city. It aimed to create a project for an anti-utilitarian city, to make people move in pursuit of their pleasure and to observe the impact the urban environment had on their feelings with the possibility of modifying the environment itself. In 1950 the Situationists published in the journal *L'Internationale situationniste* the anonymous text “Urbanisme unitaire à la fin des années 50” in which Scudéry's *Carte du pays de Tendre* was reprinted, along with an aerial photograph of Amsterdam, in order to claim an intimate approach to the city and to make explicit what they meant by “human geography”.<sup>42</sup>

In the summer of 1953, the Situationists started elaborating “psychogeography”, which was developed by Debord in 1955: this theory aimed to study the rules and effects of the environment on the emotional behaviour of people, considering the city as a social expression of mankind. They theorised the *détournement* aimed at unhinging the cultural values and language forms of the *société du spectacle* and to free the imaginative power of people. These practices, which unbalanced usual mental associations, soon turned into tools for surveying urban transformations in progress.<sup>43</sup>

At the end of 1954, in the publication “Potlatch”, the drift was defined as being regular and clear in time as well as disinterested, social, and always compelling in space, overcoming the passive dimension of the *flânerie* and the randomness of the surrealist *promenade*.<sup>44</sup> Moreover, this practice was to contribute to the reform of cartography and to the creation of psychogeographic maps. The *Guide psychogéographique de Paris* for example, was designed in 1957 and, along with the *Naked City* map, played an important role in defining Situationist theory. The *Guide* was subtitled *Discours sur les passions de l'amour* to stress the reference to Scudéry's “tender map”. According to Giuliana Bruno in her book *Atlas of Emotion. Journeys in Art, Architecture, and Film*, these maps tracing the emotional geography of a city dweller reinvented the latter's investment in social interactive space.<sup>45</sup>

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42. Leonardo Lippolis, *Urbanismo unitario. Antologia situazionista* (Rome: Testo & Immagine, 2002), 63.

43. Leonardo Lippolis, *La nuova Babilonia. Il progetto architettonico di una civiltà situazionista* (Milan: Costa&Nolan, 2007), 84-107.

44. *Ibid.*, 93.

45. Giuliana Bruno, *Atlas of Emotion. Journeys in Art, Architecture, and Film* (New York: Verso, 2002), 238. The “tender” sound map of Florence—which I have drawn in order to investigate possible relationships between Florentine

Although both Lynch and the Situationists revived experiential and sensory values as a central element of the study and design of the city, it is essential to highlight the differences in their theoretical approaches. Lynch, introducing the concept of mental map, referred to Gestalt and cognitivist theories, as Jameson highlights.<sup>46</sup> According to Rosalynd Deutsche, Lynch's mental map is not able to support the pleasure brought about by disorientation and becomes a tool/means to organise space within an ideal of rationality, dismissing feminine and subjective interpretation.<sup>47</sup> In contrast, the Situationists, in reference to Scudéry's "tender" map, advocate an intimate representation of space that welcomes disorientation and defines a haptic and feminine approach to the city.

Besides Lynch and the Situationists, other important theorists and designers can be listed who, within the realm of sensuous urbanism, operated from different philosophical standpoints. In the Seventies, Christian Norberg-Schulz undertook research on the essential dimensions of the identity of places. In *Genius Loci, Towards a Phenomenology of Architecture*,<sup>48</sup> he expressed the concept of "genius loci" as representing the sense people have of a place, understood as the sum of physical as well as symbolic values in nature and human environment. Christian Norberg-Schulz's research as well as Kenneth Frampton's concept of "critical regionalism", have their roots in phenomenological thought, through the work of Gaston Bachelard and Martin Heidegger and their concept of "dwelling" as an existential stance.<sup>49</sup>

In the Eighties William H. Whyte, the American sociologist, published the book *City. Rediscovering the Center*,<sup>50</sup> in which he investigated what makes a city work, focusing on the sensory realm. He conducted observations in streets and squares and analysed the way in which these

soundscapes and emotional dimensions perceived by city users of Florence—refers to the Emotional Geography and to the first tender map by De Scudery. See Radicchi, 2012 and [www.firenzesoundmap.org](http://www.firenzesoundmap.org) last accessed in September 2016.

46. Frederic Jameson, *Postmodernism or The Cultural Logic of Late Capitalism* (Durham NC: Duke University Press, 1991); Italian transl. by Massimiliano Manganelli, *Postmodernismo ovvero La logica culturale del tardo capitalismo* (Rome: Fazi Editore, 2007), 66-67 and 412-413.

47. Bruno, *Atlas of Emotion*, 77-78.

48. Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture* (New York: Rizzoli, 1979)

49. Paola Gregory, "Teorie dell'architettura." *XXI secolo*, Treccani, [http://www.treccani.it/enciclopedia/teorie-dell-architettura\\_\(XXI-Secolo\)/](http://www.treccani.it/enciclopedia/teorie-dell-architettura_(XXI-Secolo)/) (2010), accessed June 3, 2016.

50. William H. Whyte, *City: Rediscovering the Center* (New York: Doubleday, 1988).

spaces were used, arriving at the definition of “sensory street”, which is a description of the street where people live their lives in a combination of sounds, smells, and visual attractions. According to Whyte—who was influenced by Ervin Goffman’s research on social and symbolic interaction in the form of dramaturgical analysis—the idea of the “sensory street”<sup>51</sup> remains effective for future projects: even though the cities we live in are rich in environments that stimulate all our senses, the visual element has certainly become predominant due to years of influence by professionals in the field of media, architecture, and advertising. Shopping environments, for instance, have a strong visual impact aimed at focusing attention and opposing social interaction.

Since the Nineties, the *Centre de recherche sur l'espace sonore et l'environnement urbain* (CRESSON) has also developed research into the identity of cities, which consists not only of visual, but also of sonic and olfactory features. Researchers at CRESSON, after years of studies focused on the auditory perception of the environment, have extended their research to other forms of perception and the concept of *ambiance*. This research culminated in 2008 with the first international congress *Faire une ambiance / Creating an Atmosphere*,<sup>52</sup> and was further developed in the second and third international congresses, respectively *Ambiances in action / Ambiances in act(es)* and *Ambiances tomorrow / Ambiances demain*.<sup>53</sup>

The CRESSON's approach aims at identifying potential “formers” that characterise and give rise to the experience of everyday perception. According to Grégoire Chelkoff, architect and former director of the CRESSON, although “formers” have their origin in sonic, light, tactile and thermal phenomena, they do not always match all the perceived stimuli; rather a “former” is a combination of energies in the environment, of built forms and active perception. Therefore, “formers” are crucial in a design process that aims at creating atmospheres in architectural and urban

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51. William H. Whyte, “L’idea della strada sensoriale | The Idea of the Sensory Street,” *Lotus*, no.118 (2003): 47-57.

52. <http://www.cresson.archi.fr/AMBIANCE2008.htm>.

53. The proceedings of these two congresses have appeared as Jean-Paul Thibaud and Daniel Siret, eds., *AMBIANCES IN ACTION | AMBIANCES EN ACTE(S)*, International Ambiances Network, Montreal (CA), 19-22 September 2012; Nicolas Rémy and Nicolas Tixier, eds., *AMBIANCES, DEMAIN, AMBIANCES TOMORROW*, International Ambiances Network and University of Thessaly, Volos (Greece), 21-24 September 2016.

spaces.<sup>54</sup> The theories developed by researchers at CRESSON owe much to Maurice Merleau-Ponty's phenomenological thought as well as to his immersive and immanent theory on human beings, who will prefer the haptic sense of space situated "at the end of a glance or of a sensory exploration which invests him of humanity".<sup>55</sup>

Throughout its development, then, sensuous urbanism, has suggested that the only way to produce projects that design the atmospheres and the character of places is to go beyond the visual aspects of buildings and cities. Developing a sensuous approach to the city, which refers to theories of emotional geography and surpasses merely visual and figurative visions of the world, opens up new conceptions of urban space.

## THE CONCEPT OF SOUNDSCAPE: A CRITICAL REVIEW

Within the frame of sensuous urbanism, the concept of soundscape has acquired a momentum of its own. The term "soundscape" was coined, and used for the first time by Michael Southworth in 1966, in his research *The Sonic Environment of the Cities*, then a few years later by the Canadian composer R. Murray Schafer. However, interest in the sounds of our environment is evident much earlier. In the 1910s, for example, the Futurist artist Luigi Russolo constantly referred to the sounds of the environment and reused such sounds, taken from their sources, for musical compositions. In the academic field, the first references to the acoustic environment can be found in the studies of the German psychologist Willy Hellpach, who wrote about the colours of the landscape and its elements "perceptible through hearing, smell, and touch", in his 1923 book *Geopsychische Erscheinungen*.<sup>56</sup>

In his text, Hellpach examines the contribution of a single sound element to forming the impression of a total landscape. Continuous sounds, such as the patter of rain or the gurgling of a brook, associate with and complete the experience of visual elements. In contrast, isolated sounds boost the environment, such as the sounds of animals, which to

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54. Grégoire Chelkoff, "For an Ecological Approach to Architecture: Perception and Design," in *First International Workshop: Architectural and Urban Ambient Environment*, Nantes, 6-7-8 February 2002, CERMA, 1-12.

55. Maurice Merleau-Ponty, *Phénoménologie de la Perception* (1945); Italian transl. (1965), 418, quoted in Gregory, "Teorie dell'architettura."

56. Quoted in Justin Winkler, "Paesaggi sonori," in Albert Mayr, ed., *Musica e suoni dell'ambiente* (Bologna: CLUEB, 2001), 16. Willy Hellpach, *Geopsychische Erscheinungen I* (Leipzig: Engelmann, 1923).

humans appear synonymous with nature, or the sound of disastrous events: “for the simple soul who feels threatened, they have no connection to ‘landscape’, but simply represent a danger”.<sup>57</sup> Hellpach’s approach to the world of sound implies that sound phenomena cannot be understood through traditional concepts and ways of thinking and that there is a conflict between intuition and traditional scientific culture.<sup>58</sup>

The Finnish geographer Johannes Gabriel Granö refers to Hellpach in his 1929 *Reine Geographie*,<sup>59</sup> when he states that:

The aim of this work is to demonstrate that the topic of geographical research is the human environment, understood as the whole complex of phenomena and objects that can be perceived by the senses.<sup>60</sup>

In his qualitative classification of phenomena, which operates according to the senses through which phenomena are perceived, he includes sound elements in the landscape (“A.I.b.2. Auditory phenomena: sounds”<sup>61</sup>) and attempts to represent them in maps. The analysis of sound phenomena is experimented in the Valoosari area and the material collected is classified in a legend that indistinctly includes sounds and noises. The criteria that select and order sounds are time, frequency, and the dichotomy between natural and artificial sounds.<sup>62</sup> For Granö, sound is also determined by the definition of proximity in the landscape. Additionally, sound phenomena can generally be localised, even when they do not provide sufficient information on distance. The geographer concludes that the sense of hearing, compared to other senses, is able to provide much more precise temporal information, and for this reason is referred to as the *sense of time*.<sup>63</sup>

After Hellpach and Granö’s pioneering research, many studies followed that focused on the sonic environments of cities and territories. We will refer here to those that are most closely related to urban design

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57. Hellpach, *Geographische Erscheinungen 1*.

58. *Ibid.*

59. Johannes Gabriel Granö, *Pure Geography*, trans. Malcom Hicks, ed. Olavy Granö and Anssi Paasi (Baltimore and London: The Johns Hopkins University Press, 1997). Originally published as “Reine Geographie”, *Acta Geographica 2* (1929).

60. Granö, “Reine Geographie”, 1.

61. *Ibid.*, 11.

62. *Ibid.*, 127.

63. *Ibid.*, 126.

and that aim at achieving an ideal synthesis in designing physical and acoustic space in contemporary city.

Michael Southworth can be credited with having conducted the first study of urban soundscape while pursuing a Master's degree in City Planning at the Massachusetts Institute of Technology. Southworth followed Kevin Lynch's courses and a course on environmental psychology with Steven Carr.<sup>64</sup> In the context of the latter, he began to study the concept of a sound environment and developed his first case study, which became the object of his 1967 thesis *The Sonic Environment of Cities*.<sup>65</sup>

In this study, Southworth analyses, experimentally, the soundscape of an area between Beacon Hill and India Wharf on the central peninsula of Boston, focusing on two aspects. First, he evaluates the "identity" of the sounds, considering both the "singularity" of the sounds emitted in the area and their "informativeness", that is to say the limits of the area within which a sound is able to communicate the activity of the area and its spatial form. Secondly, he analyses the "delightfulness" of the sounds, that is to say those qualities that make us consider whether a sound is more or less pleasant. In addition, Southworth evaluates the connection between visual and auditory perception in order to understand how much the spatial form or activity in an area affects the identity and appreciation of a particular soundscape, and vice versa, to what extent the sounds influence the perception of the urban form.

At the end of his research, Southworth reinterprets the results obtained from the analysis, with the aim of drawing meaningful conclusions for "city design". He focuses his attention on "sonic design", and suggests possible actions towards developing acoustic projects. First, according to Southworth, it is necessary to address the problem of noise pollution caused by traffic, for which he offers four solutions: to pay more attention to the location of noisy activities, to identify new solutions for the design of roads and highways, to design special vehicles, and to mask the existing noises through the addition of other sounds. Southworth also proposes

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64. Information gathered during a conversation/interview with Professor Southworth at the College of Environmental Design, University of California - Berkely (CA) on May 13, 2008. Southworth also studied cognitive psychology with Jerome Bruner at Harvard.

65. See Michael Southworth, "The Sonic Environment of Cities", *Environment and Behaviour* (June 1969): 49-70.

to provide several sound-and-climate controlled public oases in the centre of the city which would ensure quiet. City users would welcome the silence of such settings, particularly between stressful city trips.<sup>66</sup>

Then he suggests three areas where sonic design could be applied: *large open spaces*—which are often sonically ambiguous, such as the waterfront of Boston; *small sonically responsive spaces*—such as alleys and small hard-surfaced areas; and *sonic signs*—to create an informative environment, reveal hidden activities and reinforce the identity of neighbourhoods. In short, Southworth developed a theory on sonic design which aimed at reducing and controlling noise pollution, enhancing informative environments, developing a sensory awareness and creating “good” urban environments.

While Southworth’s work remained at the level of a master’s thesis, the first systematic research that created the field of study known as “soundscape studies” is attributed to the Canadian composer and theorist R. Murray Schafer,<sup>67</sup> who later became director of the World Soundscape Project (WSP). The research was undertaken at the Sonic Research Study of the Communication Department at Simon Fraser University of Vancouver in British Columbia, Canada, in the late Sixties and early Seventies. Schafer aimed at studying the acoustic environment in order to understand the impact sounds have on our lives and, on the basis of these findings, to design a healthier and more interesting sound environment. Additionally, he sought to unify the approaches of different sciences with the intention of combining the physical properties of sound, the mechanisms of perception, behavioural responses to sounds, and the ability to compose ideal soundscapes. To this end, an interdisciplinary framework was established, “soundscape studies”:

The home territory of soundscape studies will be the middle ground between science, society and the arts. From acoustics and psychoacoustics we will learn about the physical properties of sound and the way sound is interpreted by the human brain. From society we will learn how man behaves with sounds

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66. Ibid., 67.

67. R. Murray Schafer begins teaching at the *Simon Fraser University* in 1965 and, from 1970, together with four other scholars (Howard Broomfield, who was an anthropologist, Bruce Davis, Peter Huse, and Barry Truax, all three musicians), undertakes a comparative study of soundscapes in the world called *World Soundscape Project* (1970-1975). (For dates refer also to Justin Winkler, “Soundscape studies: outlines of a growing research field,” *IASA Journal*, no. 13 (1999): 7-13.

and how sounds affect and change his behaviour. From the arts, particularly music, we will learn how man creates ideal soundscapes for that other life, the life of the imagination and psychic reflection. From these studies we will begin to lay the foundations of a new interdiscipline—acoustic design.<sup>68</sup>

*The Vancouver Soundscape*, dated 1973, is the first research that Schafer and his team undertook in order to analyse the soundscape of the city of Vancouver.<sup>69</sup> The publication consists of a book and a record containing nine recordings made between September 1972 and August 1973, which include documentations of sounds of the oceans, of the entrance to Vancouver port, of the harbour, of sirens and whistles, sounds of nature, work, traffic in and around the city. In this first study we find also an introductory track on the art of composing soundscapes—entitled “On Acoustic Design” narrated by Schafer himself.

To record sounds is to put a frame around them. Just as a photograph frames a visual environment, which may be inspected at leisure and in detail, so a recording isolates an acoustic environment and makes it a repeatable event for study purposes. The recording of acoustic environments is not new, but it often takes considerable listening experience to begin to perceive their details accurately. [...] Each of the sequences on these recordings has its own direction and tempo. They are part of the World Symphony. The rest is outside your front door.<sup>70</sup>

*The Vancouver Soundscape* was followed in 1973 by the *Soundscapes of Canada*,<sup>71</sup> a cycle of radio productions transmitting recordings of soundscapes, which Bruce Davis and Peter Huse, WSP researchers, recorded during a cross-country trip through Canada, and in 1975, by the *Five Village Soundscapes*,<sup>72</sup> a project which aimed at comparing the

68. R. Murray Schafer, *The Soundscape. Our Sonic Environment and The Tuning of the World* (New York: A. Knopf, 1977), 3-4.

69. In 1996 *The Vancouver Soundscape* was republished together with *Soundscape Vancouver 1996*, a study undertaken by Barry Truax and Hildergard Westerkamp with the aim of highlighting the changes in Vancouver's soundscape over the course of twenty years.

70. *The Vancouver Soundscape 1973*, produced by the World Soundscape Project, Simon Fraser University, CD 1, Track no. 10, "On Acoustic Design".

71. See <http://www.sfu.ca/~truax/canada.html>

72. In 1998, Finnish ethnomusicologist Helmi Järviluoma, together with a group of researchers, began the project *Acoustic Environments in Change, Five Villages Revisited* (AEC), a comparative study on the soundscapes of villages, subsequently renamed *Six Villages* due to the addition of another study site (Nagu in Finland).

soundscapes of five European towns (Bissingen in Germany, Dollar in Scotland, Skruv in Sweden, Lesconil in France, and Cembra in Italy). The aim of this project is to extrapolate from their soundscapes the socio-economic characteristics of these settlements. The methodological approach practiced by Schafer is empirical in nature, using survey techniques consisting of “24 hour recordings”, the counting of time, photometric measurements, interviews with the people, the undertaking of *listening walks* and *soundwalks*<sup>73</sup>, and drafts of sound diaries.

Based on the results obtained from the work of the WSP, in 1977 Schafer published *The Tuning of the World*, a summary of his theoretical and methodological thought, which is still considered a landmark by researchers in the field of Soundscape Studies.<sup>74</sup> In the book, Schafer traces changing soundscapes over the centuries, describing and analysing the characteristics of the first natural and rural soundscapes, up to those of the period of the industrial and electrical revolutions. This reconstruction allows Schafer to highlight the shift occurring with the industrial revolution and to propose a link between the deteriorating quality of the soundscape and the evolution of technology which allows for the reproduction of sound and causes a break between the original sound and its electroacoustic reproduction, which Schafer names “schizophonia”.

This critique of the post-industrial soundscape reveals a position that aims to value natural sound environments for the quality of their natural and social (as well as symbolic and metaphysic) character, unlike typical studies on noise pollution, characterised by a reductionist approach that considers sound as mere quantitative data. Schafer takes this stance on natural sound from the school of thought that originated in the nineteenth century with the ideas of Henry David Thoreau and resulted in “Deep Ecology”.<sup>75</sup>

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See Helmi Järviluoma, ed., *Acoustic Environments in Change* (Tampere: TAMK University of Applied Science, 2009).

73. Schafer stresses that there is a difference between “listening walk” and “sound walk”. While the former is characterised by simply listening to a place, the latter pushes one to focus listening through the use of a map (“score”) that directs the attention toward unusual environmental sounds: “A listening walk is simply a walk with a concentration on listening. [...] The soundwalk is an exploration of the soundscape of a given area using a score as a guide.” (Schafer, *The Soundscape*, 212-13).

74. *The Tuning of the World* is the title of the 1977 hardcover edition. Here we refer to the paperback edition that came out also in 1977, but which is entitled *The Soundscape. Our Sonic Environment and the Tuning of the World*.

75. The influence on Schafer of the Norwegian philosopher Arne Naess, founder of “deep ecology”, is recognized by Gregg Wagstaff in his introduction to *Deep*

“Analysis”, the third part of *The Tuning of the World* contains a set of criteria that Schafer proposes for the study of soundscapes, including possible systems of notation, classification and perception of the soundscape, and criteria for interpreting the meaning that sounds carry. Schafer talks about the symbolic and metaphysical meanings of sound, referring on the one hand to the theory of myths and Jungian symbols and on the other to the research of *Ursound* (primordial sound) and the myths of cosmogony that refer to the dawn of human history when sounds possessed significance of a cosmic nature.<sup>76</sup>

Then, after a critical examination of the concept of “sound object”<sup>77</sup> developed by Pierre Schaeffer in the Sixties, Schafer proposes the concept of “sound event”. Starting from the definition of event, as something that happens in a certain place during a particular time interval, Schafer argues that a sound event is defined by the space-time continuum in which it is inserted and can be considered the smallest autonomous particle of a soundscape, similar to a sound object. But unlike Schaeffer's “sound object” that can be studied as an abstract acoustic element, the “sound event” requires a study that takes into account the symbolic, semantic, and structural relationships it establishes with the soundscape in which it takes

*Ecology* in North America at the end of the Seventies as well as by George Sessions and Bill Devall. See Gregg Wagstaff, “Quale ecologia per l'ecologia acustica?”, in Antonello Colimberti, ed., *Ecologia della musica. Saggi sul paesaggio sonoro* (Rome: Donzelli, 2004). Schafer released a definition of acoustic ecology as “the study of the relationship between living organisms and their environment. [...]” (Schafer, *The Soundscape*, 271); it was then extended by Barry Truax as “the study of the relationship between individuals and communities and their environment. [...]” in Barry Truax, *Handbook for Acoustic Ecology* (Burnaby, CA: Simon Fraser University, second edition 1999, first edition 1978). For the development of the debate on the term see: Albert Mayr, “Due ecologie per le basse frequenze,” oral presentation at CMES# 2 CONGRÈS MONDIAL D'ÉCOLOGIE sonore #2 17 -19 August 2012 Arc et Senans (F)— Saillon (CH); Johan Redström, “Is Acoustic Ecology About Ecology?—Reflections on the International Conference on Acoustic Ecology ‘Stockholm, Hey Listen!’” (1998); Gregg Wagstaff, “What is Acoustic Ecology's ‘Ecology?’”, *Journal of Electroacoustic Music* 12, London: Sonic Arts Network (1999): 16-19.

76. See R. Murray Schafer, “*Ursound*,” in Antonello Colimberti, ed., *Ecologia della musica*, 17-30 and Schafer, *The Soundscape*.

77. According to Pierre Schaeffer, the sound object is “an object of human perception and not a mathematical object or electro-synthesis.” This is the key concept of a new phenomenology of hearing proposed by Pierre Schaeffer in his *Traité des objets musicaux* of 1966, with which the musician confuses the academic classifications of noise, sound, and music. The concept of sound object is applicable to any sound in the environment more than that of musical object.

part along with other sound events. Schaeffer's sound object is an isolated sound, while in Schafer there is the idea of a collective sound that encompasses the individual.

Schafer also develops a terminology that has contributed to the structuring of Soundscape Studies and defines a soundscape by identifying the main features that make it up: “keytone sounds”, “signals”, and sound prints or “soundmarks”.

The “keytone sound” is

created by its geography and climate: water, wind, forests, plants, birds, insects and animals.<sup>78</sup>

Many of these sounds are important because they have an archetypal value and meaning and can be imprinted so deeply in the soul of the people who listen to them that life without these sounds could be perceived as an obvious impoverishment. Schafer relates the “keytone” to the background, with reference to Gestalt psychology:

The psychologist of visual perception speaks of “figure” and “ground”, the figure being that which is looked at while the ground exists only to give the figure its outline and mass. But the figure cannot exist without its ground; subtract it and the figure become shapeless, non existent.<sup>79</sup>

According to Schafer, again in relation to Gestalt psychology, the “signals”, however,

are foreground sounds and they are listened to consciously. In term of the psychologist, they are figure rather than ground.<sup>80</sup>

Schafer suggests that any sound can be considered a signal since any sound can be consciously heard. Further, he insists that inside the soundscape of a community, the signals are those sounds that carry an acoustic warning, like the sounds of bells, sirens or horns,<sup>81</sup> and mobile phones, as we would add today.

Finally, “soundmarks” are sounds that stand out and hold a special meaning for a place and its inhabitants, like a landmark, from which Schafer derives the term. “Soundmarks” must be protected, as their

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78. Schafer, *The Soundscape*, 9-10.

79. *Ibid.*, 9.

80. *Ibid.*, 10.

81. *Ibid.*, 10.

existence gives the community a unique character, a task he entrusts to acoustic designers.

During the discussion, Schafer also develops the concept of “acoustic space”, an intangible space of limits, fluctuating confines, and variables, yet as real as the “visual space”. To describe qualitatively the acoustic space, Schafer refers to Gestalt psychology and introduces the terms “high fidelity soundscape” and “low-fidelity soundscape,” which to date remain the best definitions of qualitative soundscape. A hi-fi soundscape

is one in which discrete sounds can be heard clearly because of the low ambient noise level.<sup>82</sup>

In a lo-fi soundscape, instead

individual acoustic signals are obscured in an overdense population of sounds.<sup>83</sup>

A clear sound, such as steps in the snow, disappears, as if it were masked, in a generic broadband noise, says Schafer. In a lo-fi environment, such as a busy crossroads in a modern city, any sense of distance dissolves; there is only presence,<sup>84</sup> and a break between the depth of the visual field and the acoustic one. The result is the collapse of the complementary relationship between visual and auditory perception: what we feel has little to do with what we see.

The last part of *Tuning of the World*, “Toward Acoustic Design”, is of particular interest to us, as it introduces the concept of acoustic design and announces the creation of a new discipline capable of designing the sound environment. Schafer illustrates the significance of acoustic design by using a metaphor in which the soundscape is likened to a single immense musical composition:

The best way to comprehend what I mean by acoustic design is to regard the soundscape of the world as a huge musical composition, unfolding around us ceaselessly. We are simultaneously its audience, its performers and its composers.<sup>85</sup>

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82. Ibid., 43.

83. Ibid.

84. R. Murray Schafer, *The Tuning of the World* (London: Random House, 1977), 43.

85. Ibid., 205.

From such a definition, therefore, emerges the concept of “open” acoustic design, one that would not be just the work of acoustic engineers, but that requires the collaboration of professionals, amateurs, youths, and generally anyone with good ears! And of course, of composers—the real architects of sounds. A practice of acoustic design as collective participation should therefore pursue the objectives of reintegrating all the senses and stabilising a meaningful hearing culture. According to Schafer, the unit of measurement in acoustic design is the “module”:

When architects organize spaces for human habitation, they use the human anatomy as their guide. [...] The basic modules for measuring the acoustic environment are the human ear and the human voice.<sup>86</sup>

In nature, in fact, there exist few sounds capable of interfering with our ability to communicate with the voice and virtually no sound that could damage our hearing. Therefore, according to Schafer, when the ambient noise reaches such intensity that it overpowers the human voice (as happens in cities) and sounds damage the hearing mechanism, the conclusion is that we have built an inhumane environment.

The first task of an acoustic designer is what Schafer calls “ear cleaning”, or leaning how to listen. He should also perform “soundwalks”, or the exploration of the soundscape with the aid of maps on which sound climates are marked. A soundwalk may also contribute to a better understanding of the “Eigentones” of rooms and corridors, and the exploration of different surfaces, such as wood, concrete, grass or gravel, experienced during the walk.

Schafer then explains that the main task of the designer is to recreate the sounds of “the acoustic community”, seeking a correlation between the dimensions of physical space and those of the sound space, and an eventual end to the disorder and the constant indistinct “cacophony” produced by current mega-cities. Modern acoustic zoning does not sufficiently take into consideration the characteristics of the sound space, because it operates strictly as a territorial division into areas based solely on a quantitative analysis of the sound.

According to Schafer, to prevent acoustic and physical space from coming into conflict, we should call back the building knowledge of the past, when architecture was considered the “art of positive acoustic design” and acoustics were not reduced to mere technique of insulation

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86. Ibid., 206-207.

and absorption.<sup>87</sup> In developing an acoustic design, Schafer suggests some principles that should be followed, such as:

1. *a respect for the ear and the voice*—when the ear suffers a threshold shift or the voice cannot be heard, the environment is harmful;
2. *an awareness of sound symbolism*—which is always more than functional signalling;
3. *a knowledge of the rhythms and tempi of the natural landscape*;
4. *an understanding of the balancing mechanisms by which an eccentric soundscape may be turned back on itself*.<sup>88</sup>

It is therefore necessary that the acoustic designer use alternate strategies to rebuild a new harmonic balance, through soundscape conservation and restoration projects<sup>89</sup> and through designs of utopian soundscapes. With regard to conservation work, the designer should seek to safeguard the soundmarks, as they distinguish a community. Moreover, acoustic design should not only respond to social needs, but also to needs of an aesthetic nature.

Concerning the soundscape of utopia, Schafer, in evoking the intuition of Charles Ives' *Universe Symphony*,<sup>90</sup> proposes again the metaphor of the soundscape as a large musical composition in which all participate, inviting those who are willing to shape the world of the future to imagine what sounds could be part of the soundscape of the future.<sup>91</sup>

In the end, acoustic design should cover the creation of what Schafer calls “soniferous gardens”, that is well-designed acoustic parks, with the aim of reinforcing natural sounds.<sup>92</sup> The “materials” that are available to the acoustic designer for the creation of such soniferous gardens are water, wind, birds, stone and wood, as well as synthetic sounds, which may be introduced provided they consist of sympathetic vibrations with the same tone as the original garden. Inside the soniferous garden, the acoustic

87. Ibid., 222.

88. Ibid., 238.

89. Ibid., 239.

90. The *Universe Symphony* is an unfinished spatial composition that Ives worked on between 1911 and 1928, designed for hundreds or thousands of performers, scattered along the valleys, slopes and mountain tops.

91. Schafer, *The Tuning of the World*, 244 ff.

92. Schafer, in the review he wrote for *Repertorio degli effetti sonori* (Lucca: LIM, 2010), recalls that the expression *Jardin sonifère* was not created by Bernard Lassus around 1980 (as is written in note 37 on page 15 of *Repertorio*), but was the title of one of the chapters (called “*Le jardin sonifère*”) of *Le paysage sonore*, a translation of *The Tuning of the World* that appeared in France in 1979.

designer may place descriptive panels or instruments or “public-instrumentarium”<sup>93</sup> which could consist of simple tools made from natural materials, allowing any number of people to play together, a practice to be encouraged, according to Schafer, as a fundamental process of building a community. A model given by Schafer is the Balinese Gamelan Orchestra, which simply consists of all the people in the community meeting after work to play together until late at night.<sup>94</sup>

Finally, in every soniferous garden, one should find what Schafer calls the Temple of Silence, designed with the aim to give everyone a place for meditation, because we should first recover the concept of positive silence in order to improve the acoustic state of the world.

Two decades later, researchers at the CRESSON argued that the interdisciplinary concepts of sonic object<sup>95</sup> and soundscape created for sonic analysis were insufficient to describe and define sonic environments. Furthermore, the CRESSON team diagnosed an imbalance between the methodologies of analysis available and the fast transformation of listening facilities and artificial environments. Their theory of “sonic effects” was intended to remedy this. In order to describe urban sonic environments and to assess the human dimension of acoustic phenomena, they compounded an inventory of lexical tools relating to qualitative factors, which can be used in addition to tools relating to quantitative factors.<sup>96</sup>

The information collected by the researchers was analysed as “effects”: these are phenomena related to a context and its own local organisation, which allow the sonic environment to be considered as something that can be played. The city itself becomes a sonic tool in the urban context, with

93. Schafer refers to the instruments designed by John Grayson, who, for the production of his own orchestra, provided a level of ambient noise below 45 decibels, since the volume of all the instruments played together was designed not to exceed 80 decibels. Not exceeding the level of the human voice is considered, according to Schafer, ecologically balanced. See Schafer, *HearSing*, Ontario, CA: Arcana Editions, 2005), 251.

94. *Ibid.*

95. Pierre Schaefer, *Traité des objets musicaux* (Paris: Seuil, 1966).

96. Jean-François Augoyard and Henry Torgue, eds., *Sonic Experience. A guide to everyday sounds*, (Montreal: McGill-Queen’s University Press, 2006). Originally published as *À l’écoute de l’environnement. Répertoire des effets sonores* (Marseille: Edition Parentheses, 1995). This theory was developed in a first research report by Jean-Luc Bardyn, *L’Appel du port. Recherche exploratoire pluridisciplinaire sur l’ambiance sonore de 5 ports européens* (Marseille: CRESSON, ARCHIMÉDIA, 1993).

its volumes and materials which are characterized by variable acoustic responsiveness.<sup>97</sup> Indeed, the majority of the most important sonic effects depends directly on the spatial context. The shape and organisation of space can determine the effect of “anamnesis”, “blurring”, “cut out”, “*creneau*”, “filtration”, “imitation”, “masking”, “repetition”, “resonance”, “reverberation”, “sharawadji”, “synecdoche”, “ubiquity” and “wave”. But though acoustics applied to architecture shows us how volumes, shapes and materials of a specific place influence the propagation of sounds, the urban environment, the structure of the street network, the distribution of socio-economic activities also define the nature of “sonic effects” and offer city dwellers further possibilities of sonic information and perceptive interpretation. The experiments conducted in the research project *Testologie architecturale des effets sonore*<sup>98</sup>, demonstrated that sonic effects are a precious tool for design interventions on an urban scale.

We conclude this survey of theorists of Soundscape Studies by looking towards Italy and the work of musician and composer Albert Mayr, whose research has focused on the concept of the space-time context of sounds.<sup>99</sup> Mayr, who in the Seventies collaborated with Schafer on the soundscape research of Cembra in the *Five Village Soundscapes*, has sought to reshape soundscape studies and “time geography”, in order to complete the theoretical basis on which the analysis of soundscapes is commonly founded.<sup>100</sup> His criticism is based on the fact that

soundscape studies have so far primarily examined places [...] which were easily accessible [...] or were chosen because they were believed to exhibit parameters which were appropriate for a comparative study [...].<sup>101</sup>

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97. Augoyard and Torgue, *Sonic Experience*.

98. Jean-Pierre Odion et al., *Testologie architecturale des effets sonores, prédictibilité de la qualité sonore*, research report no. 30, Cresson/Ministère de l'Environnement (1996).

99. In Florence in 1977, Mayr, along with the ZONA group, organised a series of events, debates, and concerts where for the first time issues regarding the study of soundscape, environmental music, and the medical and social aspects of noise pollution were addressed. See Albert Mayr, *Suono Ambiente*, DVD, a production - a new timeless sound. (CD produced with Giovanni Antognozzi, 2001)

100. Albert Mayr, “Soundscape Studies, Experimental Music and Time Geography,” in Helmi Järviluoma and Gregg Wagstaff, eds., *Soundscape Studies and Methods* (Turku: The Finish Society for Ethnomusicology, 2002), 27-38 and Albert Mayr, “The soundscape between experimental music and Time Geography,” in Colimberti, *Ecologia della musica*, 159-170.

101. Mayr, in Colimberti, *Ecologia della musica*, 165-166

But this type of approach, although it has produced significant results in the discipline of soundscape studies, is abstract and superficial if considered from the point of view of the inhabitants of those places, because people generally do not make a point of listening to their living environments for long periods of time. Mayr suggests, therefore, that we should refocus analysis of soundscape on the basis of the ways in which places are actually experienced, moving the object of study from the places where people live (neighbourhoods or villages) to the paths that people make, in other words from a place-oriented to a time-oriented approach.

Mayr points to the construction of real “sonic biographies”,<sup>102</sup> referring to theoretical and methodological aspects of the “time geography” of the School of Lund, that stress the temporal factor in spatial human activities.<sup>103</sup> He therefore proposes to borrow this methodology in order to

highlight the space-time distribution of sounds in relation to the paths—the ones that Torsten Hägerstrand<sup>104</sup> called *paths* and *trajectories*—of the persons observed [...].<sup>105</sup>

and to study the implications of such sounds. In other words, constructing “sonic biographies” means focusing on soundscapes which define and characterise our daily life, considering places where we live and work, commuter routes and, moreover, the amount of time we spend in each of these places.

Currently, Mayr is working on an innovative methodological approach to soundscape studies. Founding his work on the triangular model of the cartographers Xia Li and Menno-Jan Kraak,<sup>106</sup> he shows how new and

102. Ibid., 166.

103. Nigel Thrift, *An Introduction to Time Geography* (Norwich: Geo abstracts, University of East Anglia, 1977).

104. Torsten Hägerstrand (1916-2004) was a Swedish geographer, Emeritus professor at the School of Lund and founder of *Time Geography*. See Torsten Hägerstrand, *On Socio-technical Ecology and the Study of Innovations* (Lund: Lund Universitet Kulturgeografiska Institution, 1974) and Torsten Hägerstrand, “Time Geography: Focus on the Corporeality of Man, Society and Environment,” in Shuhei Aida, *The Science and Praxis of Complexity: contributions to the symposium held at Montpellier, France, 9-11 May 1984* (Tokyo: The United Nations University Press, 1985).

105. Thrift, *On Socio-technical Ecology and the Study of Innovations*, 167.

106. Xia Li and Menno-Jan Kraak, “The Time Wave. A New Method of Visual Exploration of Geo-data in Time-Space,” *The Cartographic Journal* 45, no.3 (2008): 193-200.

interesting interpretations of the soundscape can derive from an alteration of the sequence place-sound-time and of the top-down flow between these elements.<sup>107</sup> Xia Li and Kraak's triangular model has three vertices "attribute space, location space, time space" which are the constituting elements in what the authors call the "visual exploration of geo-data in time-space".<sup>108</sup> According to which element is on top of the triangle, the flow of questions will have a specific direction. For example, if "what" (attribute space) is on top and thus, after having chosen a particular phenomenon (p), one will ask where and when (p) happens. Xia Li and Kraak then rotate the model. If "where" is on top, the flow of questions will start from a specific location (l) and ask what happens when in (l), and so forth.

For his purpose, Mayr basically maintains the procedure described above, but replaces the triangle with a three-branched star and the "spaces" in the triangle with the four constituting elements of soundscape studies, i.e. place(s), sound(s), time(s) and actor(s) which, in turn, will be placed at the centre.

Finally, he believes that

by placing at the centre of investigation the constituting elements Time and Actor (often relegated in an ancillary position) the role and place of sound within the spatio-temporal fabric of settlements and its inhabitants becomes more evident.<sup>109</sup>

A qualitative definition of soundscape has been the common basis of the various approaches described in this historical survey. This qualitative definition considers the soundscape as "simultaneously a physical environment and a way of perceiving that environment",<sup>110</sup> as something

107. The thesis was proposed by Mayr during the convention SCIENCES AND SOUNDSCAPES, which took place in Catania in December 2009. See Antonella Radicchi, "*Sciences and Soundscapes*", daily review of the interdisciplinary study edited SSRG onlus, Catania 5 December 2009, <http://www.sounday-times.com/it/news/SCIENCES-AND-SOUNDSCAPES-ssrg-onlus%20.html> e in [http://www.ssr.it/italiano/index.php?option=com\\_content&task=blogcategory&id=1&Itemid=29](http://www.ssr.it/italiano/index.php?option=com_content&task=blogcategory&id=1&Itemid=29); Albert Mayr, "Place(s) <-> Sound(s) <-> Time(s) <-> Actor(s)", in *Ideologies and Ethics in the Uses and Abuses of Sound* (Turku: Finnish Society for Acoustic Ecology, Koli, Finland, June 16-19, 2010).

108. See Li and Kraak, "The Time Wave. A New Method of Visual Exploration of Geo-data in Time-Space."

109. See Mayr, "Place(s) <-> Sound(s) <-> Time(s) <-> Actor(s)."

110. Emily Thompson, *The Soundscape of Modernity* (London and Cambridge, MA: 2002)

that is not only outside us but also includes a “landscape” part in the metaphorical sense: an emotional and mnemonic landscape. Furthermore, it echoes the definition of “landscape” released by the *European Landscape Convention*, which defines a landscape as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.<sup>111</sup> Various aspects of this qualitative notion can therefore be tapped in an attempt to achieve a synthesis between designing physical space and designing acoustic space and to further an interdisciplinary dialogue between acousticians, urban designers and planners: Shafer's idea of “open” acoustic design and of the ears and the voice as basic modules to measure and design the sound environment; the relationship between urban morphology and sonic environment in the CRESSON's theory of sound effects; and finally Mayr's innovative approach to soundscape studies based on altering the sequence place-sound-time.

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111. See <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm> accessed on May 10, 2014.

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