

FIA 2020/22

XII CONGRESSO/CONGRESO IBEROAMERICANO DE ACÚSTICA
XXIX ENCONTRO DA SOCIEDADE BRASILEIRA DE ACÚSTICA - SOBRAC

Florianópolis, SC, Brasil

A proposal of criteria for evaluating music as an urban soundscape element

Sampaio, L. Y M..¹

¹ Programa de Pós-Graduação em Arquitetura, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brasil,
lucas.sampaio@fau.ufrj.br

Abstract

In urban soundscape studies, music frequently appears as a prominent sonority amidst multiple sonic stimuli perceived by individuals and collectives. In the contemporary city, music emerges from either acoustic or electroacoustic sources, of human or non-human origin, assuming different motifs in an almost ubiquitous disposition in the urban landscape. However, it is noticed that a frequent generalization of musical objects occurs when characterizing their insertion in the soundscape, as opposed to the possible cultural specificities and relationships with the listeners. On the other hand, musical elements produce different reactions in space, promoting attraction, integration, and separation, as a result of users' emotional reactions, cultures, and identities. Thus, to widen this discussion, it is necessary to extend urban soundscape research to fields such as musicology and cultural studies, delving into the reasons why determined musical elements induce different reactions in the city's ears. The main objective of the present research is to investigate the relationship between music and landscape, proposing and structuring criteria to evaluate the role of musical elements in the experience of different urban actors. As the basis for defining the respective criteria, a tripartite semiotic approach was chosen, which proposes the simultaneous analysis of the musical object in its materiality, the poietic process of actors involved in the musical (re)production, and the listener's esthetic process. This tripartite model is linked with a fourth layer, correlating the previous criteria with factors from the acoustic environment and landscape, thus inserting the musical element in the urban context. At this stage, the present work aims at exhibiting a general structure of the criteria, creating a discussion between the semiotic approach, the factors of influence, and the considered theoretical framework.

Keywords: soundscape, music, semiology, landscape, urbanism.

PACS: 43.28.Hr, 43.75.Cd, 43.75.-z, 43.75.St, 43.66.Lj.



1. INTRODUCTION

As a multidisciplinary field, soundscape studies has its origins both in urban planning [1] and music [2], as means to expand frontiers in the two subjects by taking on a more holistic approach. Since then, the field has centered discussions about sound, perception, analysis, and design of the acoustic environment [3] as well as contemporary practices of music listening and composition, especially electroacoustic and acousmatic music [4, 5]. In between these two branches, the soundscape approach has become prominent in different research fields, resulting in practical implications such as its international standardization [6] and its inclusion in governmental actions as in [7].

However, though in theory soundscape studies presumes a holistic approach to sound as a resource [3], it is, in reality, dependent on the background of researchers and professionals involved, which limits the epistemological boundaries of the specific approaches. Since there are different disciplines dealing with sound, pursuing an interdisciplinary approach implies traversing through distinct conceptual frameworks and terminologies [8]. In this sense, music presents itself not only as one of the most traditional disciplines to deal with structuring sound, especially in the western perspective but also as a very common sonic practice in most known cultures [9]. But even though music presents several cultural and structural particularities developed through history, when it comes to more recent soundscape approaches to the built acoustic environment, it is often generalized as an undetailed sound source, leading to superficial analyses of this common soundscape element.

It is the case of the suggested standardization of soundscape preference assessment described in [10], in which motorized transport is discretized into different categories, but music appears as a single possibility, or the suggestion that “music or music-like sound” can create stimulating soundscapes [11], when it could also achieve the complete opposite. Such assumptions of, firstly, considering music as a uniform type and label of the sound source and, secondly, suggesting that this labeled sound source produces certain effects

in the soundscape without further specifications, represent an interdisciplinary gap and may induce researchers and professionals to carry on neglecting or augmenting the impact of music on the soundscape.

Therefore, there is a need for detailing the specificities of music that impact soundscape perception, reactions, outcomes, and design. The objective of the present research is to achieve such task by elaborating a framework of criteria that are relevant to the listener by shaping his experience in the soundscape, as well as the characterization of the soundscape itself, thus avoiding further generalizations of music as a uniform sound source. To mend this interdisciplinary gap, two main epistemological axes are intertwined with traditional soundscape studies: one of musicology, ethnomusicology, and musical semiology [12–14], and one of the urban morphology and landscape [15–17].

In this article, an initial structuring of the criteria is proposed, in addition to a brief description and background of each criterion indicating its relevance to the analysis of music in the soundscape. The text is organized into three additional sections, where the first establishes the main structure of the criteria based on Nattiez’s semiological tripartition of musical analysis, the second justifies and describes the proposed criteria, and the third points out conclusive remarks and further developments of the methodology in question.

2. STRUCTURING THE CRITERIA

Before moving to any intentions of analyzing music in the context of the acoustic environment, it is important to conceptually establish what approach is taken when talking about music, as it is the object of the analysis. First and foremost, this work moves away from traditional Eurocentric perspectives such as music as an organization of pitches and durations and even its more general abstraction as an organization of sounds, as proposed by Varèse [18]. As soundscape has been defined as the “acoustic environment as perceived or experienced and/or understood by a person or people, in context” [6], a more contextual and less objectifying perspective for music

is preferred.

There are crucial two points from ethnomusicology that elaborate on this perspective: the fact that music is a culturally localized idea, as it has different values for each cultural group or society, being it impossible to establish a single definition [19], and the fact that music should not be considered an object, but an activity or a set of activities related to the sonic practice, appointed by the neologism “musicking” in [13]. Secondly, it is necessary to relate this perspective on music with its produced spatiality, as it is being analyzed in the soundscape. In its production of space, the musical activity is inherently mediated by different “aural, notational, visual, performative, corporeal, social, discursive and technological forms” as suggested by Born (2013) [20]. In this sense, music should be comprehended beyond sound itself, but through the combination of its different mediations that shape its production and perception.

This broader scope sets the conceptual realm of what is meant by music in the context of the soundscape, making it possible to avoid ethnocentrism and common misconceptions, but also presents the challenge of conceiving a methodology for analysis that is, at the same time, practical and thoroughly considerate. But just as this work does not aim at defining music, an important remark is that it also does not covet to establish a definitive set of criteria for evaluating music in the acoustic environment, just to provide the initial basis for analyzing how music conveys meaning that reflects on the experience of those involved in the processes. It should be clear that the “practical” criteria are to be constructed over time, considering the specificities of the following studies.

As the discussed conception of music goes further than its materiality, a higher-level framework for the criteria was inspired by the semiological tripartition of musical analysis proposed by French musicologist Jean-Jacques Nattiez [14, 21]. In his work, he borrows from Jean Molino [22] the subversion of the traditional schema for communication “producer to message to receiver” to the arrangement of producer and receiver directly constructing the message

through processes of creation and perception, and not necessarily depending on each other. This draws from Molino’s own attempt to describe music, which demands the analysis of the acoustic object itself, its production, and reception. In this sense, he defines two processes: the poietic, related to the production, and the esthetic, related to reception, as well as the neutral level, representing the material trace of the music.

Each of the three mentioned dimensions corresponds to its own analysis and though directly related, they are fairly independent. The poietic analysis refers to the symbolic universe of the producer, his creative process, and cultural and historical background, just as the esthetic analysis refers to the receiver, his perception, codes, construction of meaning, and background. The neutral level *per se*, is recognizable by a material trace, a document, whose symbolic form can be independent of the poietic and esthetic processes, thus demanding its own method of analysis. Nattiez summarizes by affirming that the analysis of the neutral level is descriptive, whilst the two others are explicative [14].

By applying the tripartition to the context of music in urban environments, it is then possible to correspond the poietic process with sonic production or reproduction of music (which shall here be shortened to (re)production), the “musicking” in urban environments; the esthetic process to the sensory reception of the trace by other actors, chiefly by listening but also through other senses; and the neutral level to the material traces of music such as acoustic information via performance or recording. Since the proposed criteria relate to the soundscape scale, besides concerning themselves with who and how (poetic), to whom (esthetic), and what (neutral), the “where” is also essential, thus resulting in the proposal of a fourth dimension, to be named landscape level, to have its own analysis. This level considers landscape morphology and social, demographic, infrastructural, economic, cultural, and historical aspects of the urban environment that stage the other three dimensions. It is established as related to all of them, instead of directly relating to a single one, and configures a bidirectional process which is in itself the soundscape, affect-

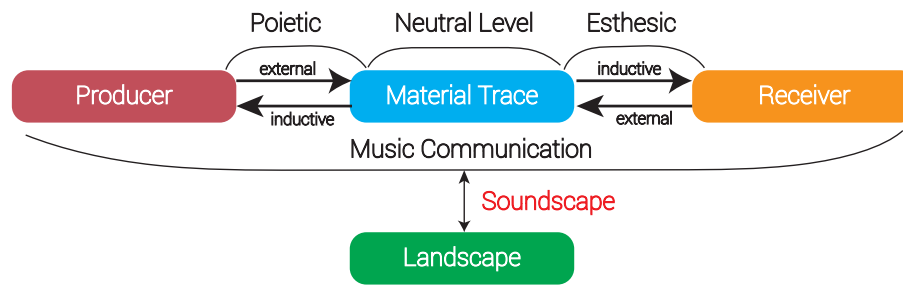


Figure 1: Methodology of semiological analysis of music in the urban environment (adapted from Nattiez [14]).

ing and being affected by producer, trace, and receiver.

This grouping characteristic relates to the proposal of “music communication” as a goal for a complete analysis [21], in which one considers the three original dimensions equally, for instance realizing a material analysis, as well as an inductive or external poietic and esthetic analysis. Inductive means analyses parting from the trace and external, the opposite direction. By establishing a relationship between music communication and the urban landscape, a complete soundscape analysis of the musical fact shall be realized. A scheme summarizing the considered dimensions and analyses is shown in Figure 1, illustrating the “geography of analysis” [14] for the methodological framework.

Some important remarks and assumptions about Nattiez’s original tripartition need to be considered at this point. Firstly, he defines sheet music as the identity-defining trace of musical production, the one which guides all different interpretations and thus the object of material analysis, except some antique music or music of oral traditions [21]. However, by addressing the context of music in the environment, it is assumed that the relevant trace for analysis corresponds chiefly to the field recording, despite its poietic sense of the recording process, assisted by the original studio recordings of the perceived music and their own sheet music, when appropriate. By shifting focus from sheet music to recording, not only western music’s limitations are deemphasized, but also other sonic aspects of the “musicking” are considered. Secondly, in consequence of this assumption, the performer, originally included in the esthetic process by Nattiez, shall here be

considered a part of the poietic process, as part of the construction of meaning, as explained further. At last, the metalanguage point of view of the researcher [14], as his experience does not correspond exactly to the receiver’s, is considered very important in this work. Even though the material analysis tends to mitigate this issue, it is recommended that the researcher recognizes his non-neutral position to the analysis, as suggested by the “incorporated observation” method in [23], which highlights the empiric and experiential nature of the analysis.

It is relevant to mention that few works have sought to analyze the soundscape in general through a semiotic approach of considering meaning construction through sonic signs, especially concerning sound in the context of urban environments, as already noticed in [24]. Kang and Zhang (2010) [25] pursued a semantic differential analysis through determined adjectives that could characterize a soundscape and traditional evaluation methods, such as the soundwalk, thus relating verbal meaning related to soundscape perception. Nielbo (2015) [26] proposes a biosemiotics and ecological approach to the meaning construction of the soundscape, which he called “meaningscapes”. Yorukoglu and Onur (2019) [24] come closer to this work’s approach, as they analyze three different urban environments by describing the sound sources, the listening modes, and landscape factors, but in a more general analysis. This lack of literature relating sound, meaning, and environment depicts the novel characteristic of the present work, which seeks to conceive a structured methodology that parts from already discussed music and meaning considerations to its reverberation in

the environment.

However, as already pointed out by Nattiez [14], even though this schema sounds simple, it is in reality a very complex consideration of different dimensions simultaneously. But more than stimulating this multidimensional analysis, this methodological structure illustrates the limitations of partial analyses, for instance, esthetic inductive analyses, which are common in soundscape studies, taking the form of soundwalks, or poietic inductive analyses, also common when classifying sound sources heard in a recording. In order to instigate researchers to extend these limitations, analyzable criteria for each of the four dimensions have been proposed, facilitating the soundscape analysis of music communication. It is obvious that the criteria are in itself limiting, but the focus here is to establish a theoretical basis to be tested experimentally in posteriority and then adjusted with particularities for different urban settings. Common ground is then sought, whose details are clarified in the next section.

3. CRITERIA SETS AND THEIR DESCRIPTION

The criteria for each dimension: poietic, neutral level, esthetic, and landscape, were chosen from references in music, psychology, acoustic ecology, sound studies, landscape architecture, and urbanism. They are considered to be relevant in every situation in which music is present in the urban environment so that further comparative studies can be grounded in a common methodological structure. This means that the criteria are, in some sense, general and chosen to provide a broader perspective of the role played by music in the environment that surrounds it. Particularities that appear to be relevant during or after the analysis of these criteria can and should be included in the methodology for the considered scenario, due to the mentioned empirical nature of this approach.

3.1 Poietic criteria

Before displaying the criteria related to the producer and his poietic processes, an important remark is necessary regarding the previous assump-

tion of extending the producer to beyond the composer. Naturally, when dealing with performed music, he represents the first level of poiesis, which is then articulated by a second level, the performers. However, since not only music production but also reproduction is here considered to be an object of analysis, this (re)productive chain complexifies itself, with cases in which the composer is not even traceable by the average listener. Moreover, other urban actors involved in the “musicking” can impact the poietic process, even without direct relation to the sonic part of the music itself. Another remark is that by performer, not only the one which acts through a musical instrument is meant, but every individual or group responsible for a sonic reproductive medium, for example, a loudspeaker. The medium here shall be considered a part of the neutral level, as it also defines acoustic characteristics such as timbre and intensity, but the performers, composer, and actors responsible for “musicking” are analyzed in the following poietic criteria.

The first two criteria are then defined as *actor identity* and his *chain of (re)production*. The former refers to what configures the determined actor in music (re)production unique in terms of sociohistorical and cultural aspects, and the latter to the concatenation of different actors between the conception of the musical idea and its sonic (re)production. In practical terms, it was deemed useful to categorize the *actor identity* into three types: individual, collective and institutional. The individual represents the solely mediating actor, the busker on the street or the driver with loud music in his car, whereas collectives group individuals that are culturally bonded, similar to the idea of cultural identity proposed by Hall (1990) [27], in which it reflects “the common historical experience and shared cultural codes” with continuous and stable frames of references and meanings. This is the case in a musical group performance, as well as a private party in which music is central. Institutional actors represent a conglomerate, such as a business or a government, and are present on a restaurant’s loudspeaker or in political jingles and propaganda.

The *chain of (re)production* can and possibly will

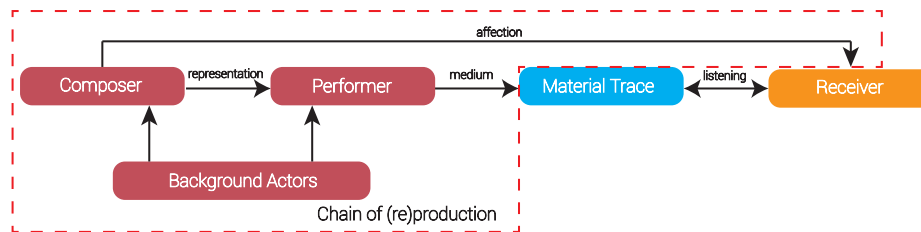


Figure 2: Chain of (re)production of the poetic process.

involve actors with distinct identities. It refers to the multiplicity of actors involved in “music-making”, which contribute to the poetic process of realizing a musical idea. Traditional chains would have the order composer (via score) to the performer (via performance) to music (via listening) to the receiver. In order to contemplate a scenario aligned with the proposed methodology, the schema indicated in Figure 2 is suggested. The link between performer to trace is thought as via medium, which derives from the “inherently mediated” music from [20]. The performer is thus the one who somehow activates or acts upon a medium that excites acoustic energy. The second level of the composer to the performer is kept between parentheses, as it not necessarily is perceived by the listener, and the score is substituted by any representation of the musical idea, to correspond to different possible ways of transmitting a musical thought. The composer can also bypass the performer by the affection of the listener, which can directly relate the perceived music to the composer instead of directing attention to the performer. Naturally, composer and performer can also be the same in particular cases. In relation to both composer and performer, there are a set of possible background actors, which correspond to investors, hirers, and sponsors, for instance. These can drastically change the poetic process, as they can determine which musical ideas are (re)produced, and can also influence the esthetic process, as listeners may be or not in accordance to determined sponsor, for example.

A third criterion refers to the *(re)production objective*, the purpose, and intention of each actor in the chain. These objectives take the form of the possible functions that music occupies in society, with the suggested possibilities being adapted from the social functions of music originally proposed in [28] and later summarized in [29]. The

recommended objectives for this criterion are activism, communication, commerce, control, corporeal expression, education, entertainment, emotional expression, esthetics, heritage, and religion. Multiple objectives can be imbued in the same musical *praxis* through different actors and even by a single one.

A last important criterion is the presence or absence of a *performative gesture*, not only related to gestures on traditional musical instruments, but also to ones displayed by performers which activate sources that produce schizophrenia (taken in a non-pejorative perspective) [2]. This factor relates to the synesthetic *poiesis* of music, the way extra-acoustic information delivered by corporeal manifestations conceives meaning to the trace. Western society has historically lingered on vision for its main perception of the environment [30], but other senses have an impact on our experience, even taste, smell, and touch [31]. When present, be it through a conventional musical performance or corporeal movement accompanying a loudspeaker, the *performative gesture* enriches the phenomenological construction of the musical meaning and thus is relevant for analysis.

3.2 Material level criteria

As stated before, the material trace considered as a neutral level in this proposal of analysis extends on the original proposal by Nattiez, considering the field recording, assisted by the reference studio recording and musical score when relevant and available, as the physical manifestation of music in the environment. Field recording refers to the one realized by the researcher in an uncontrolled environment, thus representing, to some extent, the real acoustic characteristics of sounds in that environment, whereas studio recording

represents the sounds recorded in a controlled environment, previous to their emission in the acoustic environment [8]. Naturally, in field recording the researcher also positions himself in factors ranging from microphone choice, arrangement, and positioning, as well as where and when to record, but such positioning was already present in the musical score, especially in prescriptive music-writing, as pointed out by Seeger (1958) [32], assuming that every musical (re)production always fits western music tradition in order to be represented by sheet music. The non-neutrality of neutral level analysis is always present and shall be addressed according to each analysis. The material criteria proposed for this analysis are composed of three branches, which aim to consider three levels in which the trace expresses itself: *musical genre*, *musical structure*, and *(re)production medium*.

Musical genre, as the most general from this set of criteria, is of complex definition. In music and other media, genre classification is highly debatable and dependent on who classifies and how. However, as appointed by Chandler (1997) [33], more contemporary theorists regard genre as fluid and dynamic, changing over time with social, economic, and technological factors, and should be studied as historical phenomena. Also, genre can function not only as an embodiment of values and ideologies, influencing and being influenced by social conditions but also as an instrument of social control, especially in the context of mass culture. Most importantly, the *musical genre* represents, in a semiotic perspective, the shared code between producer and receiver [33], whose analysis in the material trace can uncover hints about music communication, such as expectations of the producer or receiver embedded in the trace. Moreover, this criterion indicates the social aspect of the neutral level, since the presence or absence of shared codes in the material trace alter significantly music communication.

Musical structure refers to the most usual aspects of musical analysis, divided in western tradition into: frequency analysis, via melody and harmony; amplitude analysis, via dynamics; temporal analysis, via rhythm and tempo; and spectral analysis, via timbre, as well as more general as-

pects, such as instrumentation, lyrics, texture, acoustical and electroacoustic parameters, which are mostly listed as objects of analysis in [34]. These factors have been combined into different methods of analysis through history [35], which depend, for instance, on the type of music, the culture, and the level of detail desired. However, as a middle ground between different disciplines is sought by the proposed methodology, limiting the analysis of the *musical structure* to traditional methods can also be anti-democratic, as only those literate in the music vocabulary would be able to perform it. Tagg (2011) [36] offers an insightful approach to this conflict, presenting contradictions between the value of music in society which lead to problems in musical analysis. These center around focusing on the poietic competencies of musicians without consideration of esthetic processes of analysis, and limit how those illiterate in music could describe it. He offers an alternative methodology of musical analysis based on the esthetic process that could be realized by every listener, thus presenting a more democratic approach. In conclusion, there are different methods for analyzing *musical structure*, but the suggestion for the proposed methodology is to choose the one that comprises the most salient factors for possible listeners in that environment, hence being of empirical nature. This means that when analyzing determined music (re)production in a certain environment, one must not rush to transcribe and analyze every detail of that piece of music, but first seek which elements of it are relevant for analysis, knowing that those present were the listeners.

The last criterion, *(re)production medium*, refers to the mediational characteristic of music [20] mentioned before. The focus is on how combinations of these mediating forms impact and appear on the material level, that is, on the field recording or other representations since they normally affect musical practice. The same musical piece played in a modern arrangement by a pop band, played according to the score by an orchestra, reproduced on the radio of a local store, or used as a ringtone for someone's cell phone certainly displays different sonic qualities, but also will have different relations to producer and receiver. Just as genres, that are certain patterns in which



these mediations occur according to musical culture and historical period, which Born (2005) [37] defined as musical assemblages. Analyzing encountered (re)productions in the environment in reference to these assemblages can help position the determined music between producer, receiver, and landscape, as the used media articulate a desire of the producer to reach a determined receiver under conditions of a certain environment.

3.3 Esthetic criteria

Despite focusing on listening by the ear, it is first reaffirmed that music in the environment is also experienced by other senses, especially sight and touch, in a synesthetic way. Touch relates primarily to low-frequency sound, whose vibrations in infrasound and bass range are possibly felt by the body [8], but also to the perception of space, even though more commonly associated with sight [38], which is hegemonic in western society. Tuan (2013) reinforces this point affirming that synesthesia, touch, and sight correspond to the senses which allow humans to have intense feelings for space and its qualities. These remarks indicate that the esthetic process, and thus its criteria, involves complex sensory processes and their relation to spatial experience. That said, the proposed criteria synthesize important spheres of the receiver's musical experience in the environment, with each sphere having its particular complexities that can be addressed according to the study.

The first criterion is similar to its relative poietic criterion, defined as *listener identity*, which is important to contextualize the listening process. Cultural, socioeconomic and historical context as well as preferences and expectations play a role in perception, as when Rocha (2017) [39] mentions Pauline Oliveros' statement that listening is a practice that depends on accumulated experiences related to sound. These contextual and previous experiences of the receivers may not simply be obtained by interviewing or questioning, since the own listeners may not be aware of their sonic background, or may not be able to express it verbally. Thus, when analyzing this aspect in the field, a careful choice of method should be undertaken to avoid superficial imag-

ing of the subject. However, when faithfully described, the *listener identity* enriches the analysis of the esthetic process, enabling the correlation of certain traits of the receiver to his reactions.

A second criterion, specifically related to ear listening, is the *listening mode* of the receiver, a concept originally proposed by the seminal work of Pierre Schaeffer (1966) [40], who categorized different forms of listening practice. It is clear at the present that individuals not only hear and have heard differently through history, establishing what is now defined as aural diversity [8], but the same individual can listen in different modes according to context (hearing generally refers to the passive practice of receiving sonic information, whereas listening to its active counterpart [41]). It is thus relevant for analysis to determine how receivers listen by investigating which modes are chosen or induced in the research scenario, as it defines the relationship between receiver and music in the instant of perception.

Different authors have suggested distinct sets of listening modes that can be taken as a theoretical basis for this criterion. Schaeffer (1966) [40] divided the sound perception into four parts, to listen (*écouter*), to perceive aurally (*ouïr*), to hear (*entendre*), and to understand (*comprendre*), and dichotomized between ordinary listening, which is the everyday unfocused listening, and specialized listening, denoting special focuses on the listening process, which includes reduced listening, especially focused on the characteristics of sound itself without context. Tuuri (2012) [41] mentions Chion's appropriation of Schaeffer's work in defining three main listening modes: causal, intended to perceive causal relationships; semantic, directed to conceive meaning to sounds; and reduced, equal to Schaeffer's. Another important perspective on listening modes refers to the attention given to listening, and is proposed by Truax (2001) [42] as three modes: listening-in-search, when the receiver is most attentive for sound cues; listening-in-readiness, when he is ready, but not actively searching for sonic information, and background listening, when little attention is directly shifted towards audition. There are other taxonomies for listening modes, some of which can be found in [41], but another important remark is that whichever framework is estab-

lished, receivers can quickly shift between listening modes according to the perceived sounds, so these shifts are also significant for analysis.

A third criterion relevant for music in the environment is *sensory cohesion*, especially between sight and hearing for non-deaf, non-blind receivers. This relates to coherence between auditory and other sensory stimuli, which may induce different esthetic impressions besides those expected of the separate stimuli. It is relevant since by analyzing music in the environment, most receivers are simultaneously subjected to those range of stimuli, which are processed in a “multimodal system overarching a single sensory component” [3]. Implications depend on the salience of the sound source and its relation to other stimuli, for instance, if music is played quietly, if there is no visual reference it can pass as unnoticed by the receiver. In another scenario, if loud music is played without any visual cue, it can attract the receiver via curiosity or repel him, due to possible annoyance or fear. Moreover, the cohesion may affect which *listening mode* the receiver chooses to use.

The last criterion for this analysis relates to the *listener's reactions* to music in the studied environment. The soundscape standard [6] separates possible responses into responses, which are short-termed emotional and behavioral reactions due to the instantaneous stimuli, such as moving towards or away from a concert; and outcomes, which are long-term reactions of how the users deal with the specific environment after being subjected to its sonic content, such as stop visiting a spot due to the constant music of the neighboring shop. Three categories of reactions are used in the semiotic analysis in [24] borrowed from Schafer: affective, related to feelings provoked by sonic experience, such as annoyance, comfort, and pleasure; cognitive, related to obtaining information; and behavioral, that is, action is taken. Naturally, behavioral reactions are more easily observed but are usually a product of the other two types. Whyte (1980) [16], whilst analyzing the sociability of urban spaces, also points out the importance of the interactions between listeners when he defines triangulation by musical performances, that is, the ability of music to form increase sociability in an urban space.

Though that is not always the case, reactions that produce interactions between the receivers are important for the analysis.

3.4 Landscape criteria

Even though the soundscape has been regarded as an auditory construct of the acoustic environment [6] due to its perceptual basis, it should not be excluded from other dimensions that influence sound in either a material or cultural way when it spreads through the urban environment. Additionally, landscape analysis can provide a multi-scaled perspective on socio-spatial and ecological characteristics of the considered soundscape.

The first criterion corresponds to *landscape morphology*, which by addressing the physical form of the urban environment can indicate its influence on sound propagation, as well as particular cultural significance to urban elements. Lynch (1964) [15], for instance, defines five elements that influence the imageability of the urban landscape: paths, edges, nodes, districts, and landmarks, whereas Lamas (1993) [17] describes eleven morphologic elements of the urban environment, between pavement, buildings, façades, streets, squares, monuments, vegetation, and others. As mentioned, these elements normally influence sound propagation not only through reverberation, reflection, and attenuation but also through masking, as paths or streets tend to imply traffic. Furthermore, landscape morphology also indicates the cultural relevance of the place, the *genius loci*, as music (re)produced in a square, an arborized area, and a street are intrinsically different by how the urban actors regard that place. Lastly, morphology can indicate limits and intrinsic territories of the analyzed soundscape, which can be compared to the territorialities provoked by musical (re)production itself.

Another important criterion in this set is *socioeconomic and demographic indices*, which can be obtained by data surveys from determined censuses and researches. These characterize the community that inhabits the studied soundscape, which may not necessarily take part in either poietic or esthetic processes, but are generally affected by music (re)production in their living



environment. They have a direct relationship with the urban landscape and its morphology, and their analysis can assist in describing the ground for poietic and esthetic processes in a particular soundscape.

The third criterion relates to the *publicness and privacy* of the space, whose interrelations have a direct impact on music communication. Born (2013) [20] offers an extended discussion on the reflections of music in space in terms of public-private relations, and indicates that these can take different forms, as music can originate in a public space and invade a private one, or the opposite, or go from private to public to private. This flow of *publicness and privacy* and how it is conceived either by the landscape or the own music practice itself is very relevant for analysis, as it fundamentals debates about whether determined musical (re)productions are legitimate or not and to whom. It is important to notice that the author does not approach these concepts in a dualist way, so both *publicness and privacy* coexist in space according to appropriations.

A fourth factor to be considered is *mobility*, which includes urban rhythms, accessibility, and modes of transportation. These are relevant to music (re)production since they are important keynote sounds of urban environments, for instance, squares near large avenues and squares only accessible by foot pose different bases for the (re)production. They also indicate how urban actors, producers, or receivers, transverse the space, which can give cues to where music (re)production occurs and if it is mobile or static.

To conclude, *legislation* is a crucial criterion when dealing with music in urban environments. Firstly, there is land use, which legally determines which activities take place in specific urban zones. These designations are interesting to cross-analyze with music (re)production, for instance, the poietic criteria (*re)production objective* can or not match the designed land use, or is there (re)production that infiltrates land use as an ecological reserve? Moreover, noise-concerned legislations are now common in several countries, though they take different forms, even from town to town. Are there prohibitions to music (re)production in certain areas? Which sorts of

“musicking” are prohibited? Sometimes, determined (re)production media are prohibited, or sometimes even determined genres are. These legislative aspects give cues of historic cultural practices related to music (re)production in its related community and have a direct impact on music in the environment.

4. CONCLUSIONS

A table summarizing each set of criteria is displayed in Figure 3. The proposed methodology, which corresponds to the evaluation of each criterion in their research context, should then provide a thorough analysis of music in the environment, avoiding generalities and false assumptions. However, even though having a limited number of criteria seems simplistic, each criterion has its complexity, which should be dealt with its own tools, and when crossed with the others may result in a very dense multilevel analysis. Since the present work concerns itself solely with the proposal of the criteria, practical considerations to crossing them into a robust analysis of music in the environment is left for further publications.

Since this work is inserted in ongoing doctoral research, the important empirical application of the methodology and eventual considerations to specific cases are yet to be realized. Nevertheless, the approach to applying this methodology shall be made in three steps, after the definition of the studied territory: data survey, especially for the landscape criteria; fieldwork, through soundwalks and ethnographic observation; and critical analysis, of the field notes and recordings and to cross the multiple sets of criteria.

As to possible implications, besides the stated objective of giving proper consideration to music in the urban context, this methodology should assist not only urban designers, who would better consider how music fits in their designs, but also academics such as musicologists, anthropologists, and sociologists, who could better understand the effects and relations between music and society in the contemporary urban setting.

Poietic actor identity chain of (re)production (re)production objective performative gesture	Material musical genre musical structure (re)production medium	Esthetic listener identity listening mode sensory cohesion listener's reaction
Landscape landscape morphology socioeconomic and demographic indices publicness and privacy mobility legislation		

Figure 3: Summary table of all proposed criteria.

5. ACKNOWLEDGMENTS

The author thanks the Coordination of Superior Level Staff Improvement (CAPES) for financing this work through the PROEX program, grant number 88887.661461/2022-00, as well as the Post-Graduate Program of Architecture (PROARQ) from the Federal University of Rio de Janeiro (UFRJ).

REFERENCES

- [1] Michael Frank Southworth. *The sonic environment of cities*. PhD thesis, Massachusetts Institute of Technology, 1967.
- [2] R Murray Schafer. *The Soundscape: Our Sonic Environment and the Tuning of the World*. 1977.
- [3] Jian Kang and Brigitte Schulte-Fortkamp. *Soundscape and the built environment*, volume 525. CRC press Boca Raton, FL, USA:, 2016.
- [4] Hildegard Westerkamp. Linking soundscape composition and acoustic ecology. *Organised Sound*, 7(1): 51–56, 2002.
- [5] Barry Truax. Soundscape composition as global music: Electroacoustic music as soundscape. *Organised Sound*, 13(2):103–109, 2008.
- [6] ISO 12913:2014. Acoustics — Soundscape — Part 1: Definition and conceptual framework. Standard, International Organization for Standardization, Geneva, CH, September 2014.
- [7] Welsh Government. *Noise and soundscape action plan 2018-2023*. 2018.
- [8] Barry Truax. *Handbook for acoustic ecology*. Cambridge Street Publishing, 1999.
- [9] Josh McDermott. The evolution of music. *Nature*, 453(7193):287–288, 2008.
- [10] AL Brown, Jian Kang, and Truls Gjestland. Towards standardization in soundscape preference assessment. *Applied acoustics*, 72(6):387–392, 2011.
- [11] Kang Sun, Bert De Coensel, Karlo Filipan, Francesco Aletta, Timothy Van Renterghem, Toon De Pessemer, Wout Joseph, and Dick Botteldooren. Classification of soundscapes of urban public open spaces. *Landscape and urban planning*, 189:139–155, 2019.
- [12] Philip Tagg. Analysing popular music: theory, method and practice. *Popular music*, 2:37–67, 1982.
- [13] Christopher Small. *Musicking: The meanings of performing and listening*. Wesleyan University Press, 1998.
- [14] Jean-Jacques Nattiez. *Music and discourse: Toward a semiology of music*. Princeton University Press, 1990.
- [15] Kevin Lynch. *The image of the city*. MIT press, 1964.
- [16] William Hollingsworth Whyte et al. The social life of small urban spaces. 1980.
- [17] José Manuel Ressano Garcia Lamas and Universidade Técnica de Lisboa. *Morfologia urbana e desenho da cidade*. 1993.
- [18] Christoph Cox and Daniel Warner. *Audio Culture, Revised Edition: Readings in Modern Music*. Bloomsbury Publishing USA, 2017.
- [19] Bruno Nettl. *The study of ethnomusicology: Thirty-one issues and concepts*. University of Illinois Press, 2010.
- [20] Georgina Born. *Music, sound and space: Transformations of public and private experience*. Cambridge University Press, 2013.



- [21] Jean Jacques Nattiez. O modelo tripartite de semiologia musical: o exemplo de la cathédrale engloutie, de debussy. *DEBATES-Cadernos do Programa de Pós-Graduação em Música*, (6), 2002.
- [22] Jean Molino, JA Underwood, and Craig Ayrey. Musical fact and the semiology of music. *Music analysis*, 9(2):105–156, 1990.
- [23] Paulo Afonso Rheingantz, GAN Azevedo, A Brasileiro, D Alcantara, and Mônica Queiroz. *Observando a qualidade do lugar: procedimentos para a avaliação pós-ocupação*. PROARQ/UFRJ, 2009.
- [24] Papatya Nur Dokmeci Yorukoglu and Ayse Zeynep Ustun Onur. Semiotic interpretation of a city soundscape. *Semiotica*, 2019(226):73–87, 2019.
- [25] Jian Kang and Mei Zhang. Semantic differential analysis of the soundscape in urban open public spaces. *Building and environment*, 45(1):150–157, 2010.
- [26] Frederik Laigaard Nielbo. From soundscape to meaningscape. *Proceedings of the EuroNoise, Edinburgh*, 2015.
- [27] Stuart Hall et al. Cultural identity and diaspora. 1990, pages 222–237, 1990.
- [28] Alan P Merriam and Valerie Merriam. *The anthropology of music*. Northwestern University Press, 1964.
- [29] Júlia Maria Hummes. Por que é importante o ensino de música? considerações sobre as funções da música na sociedade e na escola. *Revista da ABEM*, 12(11), 2004.
- [30] Juhani Pallasmaa. *Os olhos da pele: a arquitetura e os sentidos*. Artmed Editora, 2009.
- [31] Yi-Fu Tuan. *Espaço e lugar:: A perspectiva da experiência*. SciELO-EDUEL, 2013.
- [32] Charles Seeger. Prescriptive and descriptive music-writing. *The Musical Quarterly*, 44(2):184–195, 1958.
- [33] Daniel Chandler. An introduction to genre theory. 1997.
- [34] Philip Tagg. Analysing popular music: theory, method, and practice. *Reading pop: Approaches to textual analysis in popular music*, 1982:71, 2000.
- [35] Nicholas Cook. *A guide to musical analysis*. Oxford University Press, USA, 1994.
- [36] Philip Tagg. Análise musical para "não-musos": a percepção popular como base para a compreensão de estruturas e significados. *Per Musi*, pages 7–18, 2011.
- [37] Georgina Born. On musical mediation: Ontology, technology and creativity. *Twentieth-century music*, 2(1):7–36, 2005.
- [38] Michel Chion. *Sound: an acoulogical treatise*. Duke University Press, 2015.
- [39] Claudia Maria de Holanda Rocha. *Escutando a cidade: Cartografia de Sonoridades*. PhD thesis, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, 2017.
- [40] Pierre Schaeffer. *Traité des objets musicaux*. 1966.
- [41] Kai Tuuri and Tuomas Eerola. Formulating a revised taxonomy for modes of listening. *Journal of new music research*, 41(2):137–152, 2012.
- [42] Barry Truax. *Acoustic communication*. Greenwood Publishing Group, 2001.