

Investigating the Urban Soundscape of Athens through Soundwalks and Acoustic Measurements

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ABSTRACT

The soundscape of Athens has its own unique tonal character. The city sound is intertwined with its urban structure and society, creating a distinct environment to which individuals are intrinsically connected. Sound travels through the city, evolving as “the city speaks for itself” [21]. This relationship is explored through soundwalks, a method used to study the sonic environment. By following a specific route and employing an auto-ethnographic approach to the surrounding space, the unique auditory qualities of the city are revealed. Additionally, sound level measurements (dB) are taken during the process to assess and understand the noise pollution of the city. The primary goal, however, is to uncover the intriguing auditory nuances that can be experienced during the soundwalks.

ΠΕΡΙΛΗΨΗ

Το ηχοτοπίο της Αθήνας έχει το δικό του μοναδικό ηχόχρωμα. Ο ήχος της πόλης είναι στενά συνδεδεμένος με την αστική δομή και την κοινωνία, δημιουργώντας ένα ιδιαίτερο περιβάλλον με το οποίο ο άνθρωπος συνδέεται άμεσα. Ο ήχος κυκλοφορεί μέσα στην πόλη και εξελίσσεται, με αποτέλεσμα να «μιλάει» η πόλη από μόνη της [21]. Η μελέτη του ηχοτοπίου της Αθήνας πραγματοποιείται μέσω ηχητικών περιπάτων, που αποτελούν ένα σημαντικό εργαλείο για την κατανόηση του ηχητικού περιβάλλοντος. Μέσω μιας συγκεκριμένης διαδρομής και μιας αυτο-εθνογραφικής προσέγγισης, αναλύεται η μοναδικότητα της πόλης. Επιπλέον, κατά τη διάρκεια της εξερεύνησης, μετριοούνται τα επίπεδα έντασης (dB) για την ανάλυση της ηχορύπανσης της Αθήνας. Ο βασικός στόχος είναι να αποκαλυφθούν οι ενδιαφέρουσες ακουστικές αποχρώσεις που ενδέχεται να είναι αντιληπτές μόνο μέσω των ηχητικών περιπάτων.

Introduction

The city has always been a part of human nature. “*The urban fabric is a creation, a collection of essential actions for humans, who create and experience this structure (the city)*” [9]. The sound of the city is linked to the urban structure and society, creating a distinct environment with which humans are connected [1,14]. The variety of sounds constantly emanating from the environment (e.g., sounds of nature, street noise, industrial sounds, etc.) causes people to coexist in a chaotic soundscape created by the modern city [8]. The soundscape of the city shapes the human experience in the urban space and is a central element of the relationship between individuals and their environment.

1. Theoretical Framework

1.1 The Urban Soundscape

The expansion of cities and their populations, along with the increase in technological means in daily life, have led to the extension of anthropogenic sounds into the natural soundscape. The sound surrounding humans now seems to be a part of their everyday life, and to a large extent, humans are influenced by these sounds, simultaneously understanding their position within the auditory environment [18]. Jeziński [8] refers to these as the “*inherent components of human activity within the City,*” which have been largely assimilated. Residents often pay no attention to the acoustic environment around them due to habituation; however, this does not mean that these sounds are not connected to the environment, the city, and themselves [19].

The city is in a constant state of construction and reconfiguration. Human actions determine the levels of noise and quiet that permeate daily life. Nowadays, quiet has nearly disappeared, and noise has gained more ground, creating a continuous ‘drone’ (like an ‘*elevator music*’) [12] that eliminates opportunities for the human ear to rest. The “*tranquil areas*” [16] now seem to represent the oasis, that is, the infinitesimal points of silence in an ‘urban desert,’ far from the ‘invasions of civilization’. Furthermore, urban infrastructure does not support nature, which is at risk of being lost due to human activity [6,23]. On the contrary, within the urban fabric, humans become distanced from the sonic environment and fail to perceive the ‘erosion’ of their urban soundscape.

1.2 The Character of a City

The soundscape of nearly any environment, from rural to urban and industrialized, is largely shaped by sounds that are often unique to the given socio-cultural context (as it is the immediate social recipient of the space) [14]. The nature, extent, and distinctiveness of a city's characteristic sounds depend on the length of time spent in the city, who we are, and our relationship with the urban space [17]. Understanding a city and its landscape can be seen as a process of decoding, which heavily relies on recognizing the sounds (soundmarks) present in it and thus defining the urban environment [7]. This environment is further burdened by the tourism industry, biophilic urbanism [4], and other urban interventions that

shape a city's sound. It is also observed that the environmental burden is transferred to people [15].

However, as *Labelle* [10] notes, a city that permeates sounds within the urban landscape simultaneously becomes a "*musical instrument*" because inhabited areas are filled with a plethora of sounds, providing an acoustic experience, whether positive or negative, and the understanding of these experiences depends on each individual's perception [10]. City sounds are marked with local meanings and intentions [5], while a resident with an acoustic experience (a trained ear) has the ability to derive meanings from the presence of these sounds – the auditory events.

2. Research

2.1 The Soundwalk

As listeners, we are aware of our surroundings, yet through soundwalking, we can gain a deeper understanding and experience of both the natural environment and our connection to it [16]. What this process offers is the assured expansion and acceptance of the concept of Soundwalking as a valid method and means of self-awareness. This is because 'understanding' through soundwalking is achieved not only through the ears but also through the many ways we move and listen (interaction with the environment) [10]. Soundwalks can serve as a means to engage listeners, leading them to hear sounds (in specific soundscapes) where they exist (in nature), as opposed to the 'traditional' way of listening where music (or any auditory creation) is presented to listeners in a concert hall.

The process of soundwalking puts the walker into reflection and simultaneously leads them to a state of listening (*act of listening*) [10] with their entire body and all their senses (multisensorial) [5], making it a more refined process of thought and release from the ordinary [7]. In his text, *DeLaurenti* [3] quotes *Barry Traux*, who states that "*the best way, in fact, to engage with the acoustic complexity of the soundscape is Soundwalking.*" Additionally, according to *Labelle* [10], the act of walking can function as a method of connecting with the environment, perceiving the world, and addressing existing issues. Thus, the walker comes into direct relation with the environment and is led to a state of creation and co-creation [13]. The act of soundwalking can alter a person's perception of space and prompt the community toward a "*kinetic aesthetics*," i.e., designing their own city through minimal interventions but by walking [20]. It partly becomes an instrument of the body that seeks to awaken its own self to its environment.

2.2 Exploration

Soundwalking is the primary tool of this research. Exploring and navigating the city leads to observing the specific environment through sound. Sound is the central element, and each commentary focuses on it, revealing the diversity of the environment. This understanding is achieved not only through soundwalking but also through attentive listening, which is crucial for comprehending the environment. In this study, examines the soundscape of Athens, which significantly alters its sonic landscape, during various events and holidays.

Key days of soundscape variation include Easter week and August 15th, when a large portion of the city's residents leave, causing a noticeable decrease in the city's noise levels. This creates an opportunity to hear different sounds and events that are not audible on regular days due to the noise and commotion created by humans. This period allows citizens to walk and experience a changed soundscape, free from the sounds of horns, motorbikes, and car brakes. Instead, sounds like bird chirping, rustling leaves, sound reflections, and pauses in a constantly 'active' soundscape provide a different experience that is absent from daily urban life. Images of the quarantine period (of 2020) come to mind, evoking positive memories of ghost cities and highlighting the 'microscopic' nature of humans in relation to urban centers. This fresh, 'foreign' experience of an empty city may attract some individuals [8, 11].

A noticeable drop in noise levels can be also observed on November 17th, particularly in central areas of the city, which are clear of cars, offering the chance to explore blocked streets. At this time traffic is halted for safety reasons and various gatherings (*Polytechnic University protests*), leading to a change in the city's soundscape. During a protest, the dominance of human voices, expressing demands and objectives, leads to a significant disruption of the soundscape. Although the chants and noise of the participants prevail, imposing themselves on the environment, moments of silence occasionally break through, offering moments of calm. If a crowd blocks a street, it disrupts the flow and rhythm of daily life, while simultaneously reshaping the environment and its auditory experience. Thus, a silent protest can be a means to improve the environmental condition or at least allow participants to better hear their sound environment. On days like November 17th, the soundscape has the opportunity to 'rest' and be heard.

Another interesting possibility to experience an altered soundscape is during the *half-marathon* when authorities block central areas for runners. The interest in this case lies in the fact that runners do not produce 'excessive sounds,' unlike in protests, allowing the sound environment to be more prominent. Therefore, does noise always indicate human presence? Humans and modern industrial life have surpassed limits, disrupting balances and leading to a more burdened soundscape [2] that humans continue to overlook. This is evident from the tendency to play music everywhere, covering silence, which is perceived as unsettling [16].

2.3 Measurements

The measurements were conducted using a digital sound level meter in conjunction with recordings made with a ZOOM VR recorder. The recordings were carried out in parallel with the soundwalks, following the same one-kilometer (1 km) route each time (through one of the most central streets of the city), with a duration of 20 minutes. The return to the starting point was intended for a deeper reflection on the soundwalk and listening process, without further recording of sound. It should be noted that these are preliminary measurements serving merely as an additional element in the study and analysis of the acoustic environment.

The soundscape recordings were made during the Orthodox Easter holiday of 2024 and for two days in June. Additionally, the day of November 17th (2023) and the

Half-Marathon (2024) were used as material for examining and understanding the noise levels and the overall sound of Athens.

During the Easter days (specifically Easter Sunday and Monday), recordings and measurements of sound levels were conducted. Easter Sunday was a notable example of urban quiet, with the average sound level at 65,85 dB, especially in the afternoon hours, when citizen activity is higher (in the mornings, most people are at home after the Easter Vigil). Therefore, it is possible that the morning hours could have shown different results regarding lower sound levels. On Great Monday, due to the partial return of the residents, a certain degree of differentiation from the previous recording was noticeable. The afternoon time of the recording already contained more sound information and activity, though not at the levels of a typical day. The average measurement indicated 68,20 dB, revealing that the levels are not far apart, but the 2 dB (almost 3dB) difference observed is known to be perceptible to the human ear.

Regarding the days in June, which were ten days apart, the results were very similar. The first day showed an average of 71.20 dB, while the second day recorded 70.90 dB, demonstrating that the sound levels in everyday life do not vary significantly from day to day. A 'special event' is needed to cause any noticeable change in intensity levels. It is already observed that from the first measurement to the last, there is a difference of 5 dB, which represents approximately double the perceived intensity according to human hearing (5.35 dB). The issue lies in the fact that continuous exposure to elevated noise levels over an extended period will unavoidably have a significant impact on an individual's well-being, potentially affecting both their physical and mental health [23].

Therefore, based on simple measurements and field observations, it can be said that there is a noticeable difference, even though it is not large-scale. It affects a considerable portion of the population, who, although they understand the source, do not give it the necessary attention. Many citizens who choose to stay in Athens during the Easter holidays are aware of when the city feels deserted, and this understanding of the situation is certainly justified by the changes in sound. There is not only less traffic but also lower sound levels.

The experience of listening during the soundwalk was a process that initially required concentration, both for the purpose of gathering auditory information and for safety, as navigating the streets demands attention. One of the challenges encountered was managing both the recorder and the meter in hand, as the exploration depended on movement, which led to some physical strain. However, my focus remained undistracted from the listening experience itself. The soundwalk, especially during the holiday season, was particularly enjoyable due to the absence of traffic and noise, which emerged during the subsequent two measurements. This lack of noise made the soundwalk more pleasant and left my ears relaxed, as they were not exposed to an abundance of sounds.

3. Conclusion

This study examined the soundscape of Athens on specific days. The investigation was largely achieved through soundwalks and more attentive listening to the urban environment. The on-site immersion in the sound environment of these days was significant as it allowed for a better comparison of the city's acoustic conditions on different days. The experience of exploring and engaging in soundwalking can be considered one of the positive aspects of

this research, as it provided a more personal approach to the issue of urban soundscapes and served as an impetus for further study of Athens soundscape. Therefore, at least on a personal level, the goal of engaging with, if not fully understanding, the acoustic environment was achieved.

Regarding the soundscape of the capital, while changes may not be drastically noticeable on certain days, the uniqueness of sound on specific days brings a renewed 'life' to the sound itself. While it could be argued that such reactions to these events may seem excessive (especially for certain days of the year), it is undeniable that when the soundscape shifts, it provides an opportunity for other elements to 'breathe' and be heard. On the other hand, urban centers are designed to accommodate large populations, but the situation has progressed to the opposite extreme. There is no longer space for 'acoustic breathing.' Everything is packed together, struggling to escape the deep, omnipresent noise of the city, leading to the loss of both social and natural aspects of sound. The major issue is, of course, the listening to the environment by the residents and, more broadly, by people. If each person does not intend to listen to what surrounds them, they will not be able to perceive the various problems related to sound.

4. References

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