

The Urban Soundscape Identity: Defining a City's Unique Acoustic Character

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ABSTRACT

Cities are often described through their skylines, architecture, cultural landmarks, and bustling streets. However, an equally significant yet less visible aspect of urban life is its soundscape. The unique combination of sounds in an urban environment plays a crucial role in defining a city's acoustic identity, known as urban soundscape. These auditory elements create a backdrop that influences the daily experiences of its inhabitants and contributes to the city's overall character. Understanding and managing urban soundscapes can enhance the quality of life for residents, strengthen cultural connections, and preserve the unique auditory character that defines each city. As urbanization continues to increase, it is essential to integrate soundscape considerations into city planning and development, which becomes ever more crucial, ensuring that cities' sounds continue to enrich citizens' urban experiences. Therefore, this research paper will explore and understand cities' unique sonic identity, focusing mainly on Istanbul's two main tourist attractions sites the sounds of the Bosphorus and the open public space between the Hagia Sophia and the Blue Mosque.

Keywords: Urban soundscape, City's acoustic identity, Sound archive, Istanbul acoustic distinguished identity.

1. Introduction

Ubiquitous in daily urban lives, Sounds constitute an essential part of intangible cultural identity. Sounds are also crucial identifiers for cultural memory, including emotions and cultural identity. Each community has its own distinctive acoustic identity and unique sound signature [1]. Every city's sonic character is shaped by the unique combination of sounds, as shown in Figure 1. The specific blend of these sounds, as shown in Figure 2 plays a crucial role in defining each place's exceptional sonic signature and its significant impact on shaping the city's identity, economy, and health. Understanding this distinctive soundscape identity and observing its evolution over time should be a standard part of planning. To achieve this, the acoustic assets that contribute to the city's unique identity must be collected.

This research paper will split its content into two main sections, as shown in Figure 3. The first part will delve into a comprehensive literature review to establish a foundational understanding of the topic and set the stage for the subsequent analytical study. The second part will focus on conducting an in-depth analysis of the subject matter based on the insights gained from the literature review.



Figure 1. The Sonic Synonym of The Surrounding Environment [2].

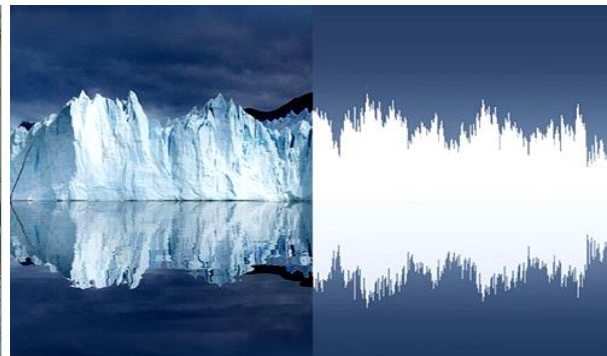


Figure 2. Unique Combination of Sound [3].

2. Literature Review

This section will conduct a comprehensive review of the existing literature on the acoustic identity of cities. The aim is to gain a deep understanding of this topic, which will serve as the foundation for the subsequent analytical study.

The study will commence by providing a comprehensive definition of the urban soundscape and its sonic identity. It will delve into the various sound sources within the acoustic environment, discussing how these elements shape the city's unique acoustic identity. Additionally, the study will address the specific challenges that designers may encounter within this context and explore potential strategies to mitigate these challenges. Furthermore, the study will present several detailed case studies conducted by various countries to provide practical examples and insights into this complex subject.

2.1. Urban Soundscape and Sonic Identity Definitions

The ISO 12913 defines *Soundscape* as an “acoustic environment as perceived or experienced and/or understood by people in context” [4]. Barry Truax writes “The soundscape, which we define as the relationship of man and sonic environments of any kind, any analysis of it will be based not only on physical parameters but rather on what may be called perceptual and cognitive primitives” [5]. The term *Urban Soundscape* refers to “the acoustic environment of a city, encompassing all the sounds present in an urban area” [6], as shown in Figure 3. Urban soundscapes are dynamic and continuously changing, reflecting the ebb and flow of city life, time of day, and seasonal variations. While, the term *Sonic Identity*, in the context of an urban environment, refers to “the unique auditory character that distinguishes one city from another, which is a specific combination of sounds that encapsulates the essence of a city's culture practices, traditions, history, social interaction behavior, and daily life” [7]. A city's sonic identity is integral to its overall identity, influencing how it is perceived and remembered by both its residents and visitors. It cooperates with the senses and other influences to create the character and atmosphere of urban spaces, offering a sense of continuity and place-specific uniqueness.



Figure 3. Surrounding Sound [8].

2.2. The Sound Sources Categorization

In an urban environment, the soundscape is a rich tapestry of diverse auditory sources that create a unique sonic atmosphere. Each of them weaves together to shape the city's sonic environment, creating a distinctive auditory signature that sets each urban center apart [9]. Identifying and distinguishing between the present sound sources is imperative to studying, comprehending, and analyzing the acoustic environment. These sound sources will be explained as shown in Figure 4.

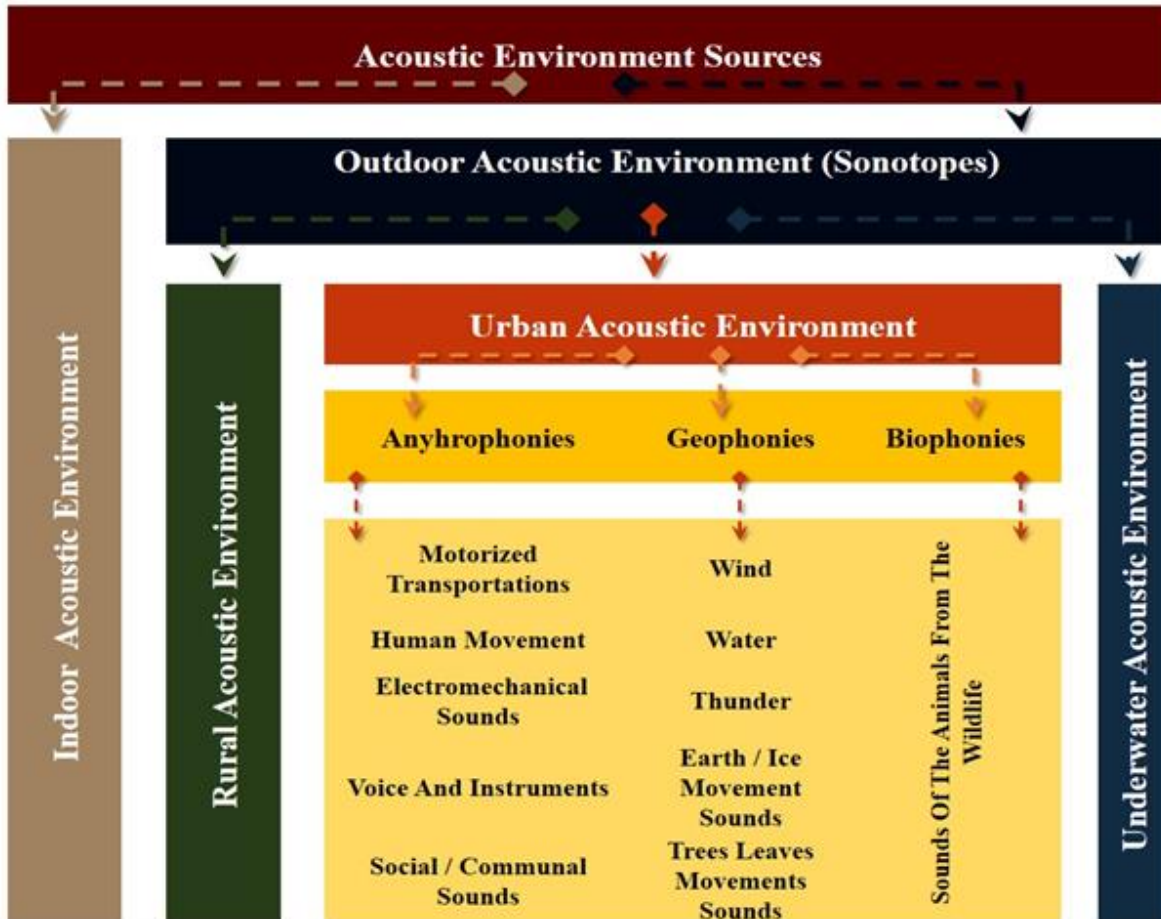


Figure 4. The Acoustic Environment Sources.

Author adapting from Lex Brown, Truls Gjestland, Danièle Dubois, Acoustic Environments and Soundscapes, December 2015, 10.1201/b19145-2.

As shown in Figure 4, the acoustic environment is initially categorized as outdoor or indoor places[10]. Then, outdoor locations are further classified as urban, rural, or underwater areas. Sound sources within these areas are divided into Geophony, Biophony, and Anthrophony sounds[11]. The geophony sounds are all the sounds produced by nonbiological natural agents such as wind, thunder, rain, or rippling streams [12]. Kindly, scan the QR Code to listen to geophone sounds. The Biophonies sounds are the nonhuman emerging sounds produced by living organisms in a given biome [13], like bird songs and cricket chirps. Kindly, scan the QR Code to listen to biophony sounds. The Anthrophony sounds refers to the sounds produced by human activity, including their movements, social interactions, and the artificial devices they create [14]. Kindly, scan the QR Code to listen to anthrophony sounds. Therefore, the urban acoustic environment can be defined as all sounds, including those of biophony, geophony, and anthrophony, emanating from a specific landscape setting to create unique acoustic patterns across various spatial and temporal scales [15] . Kindly, scan the QR Code to listen to anthrophony sounds.



2.3. The Role of Urban Soundscapes in Identity Formation

Urban soundscapes are not just background noise but integral to a city's identity and cultural fabric[16]. They influence how residents and visitors perceive and interact with the urban environment. Here are several ways in which soundscapes contribute to a city's identity:

1-Cultural Expression and Traditions: The unique sounds associated with spoken languages, local traditions, music, and festivals significantly reflect a city's cultural heritage and social dynamics[17]. For instance, the infectious rhythms of samba permeating the streets of Rio de Janeiro capture the city's passion and energy, as shown in Figure 5. At the same time, the soulful jazz tunes echoing through the historic neighborhoods of New Orleans embody the city's rich musical legacy and vibrant cultural tapestry, as shown Figure 6. These cultural assets are integral to these cities' identities, shaping residents' and visitors' experiences and perceptions[18]. Kindly scan the attached QR Code to listen to the sounds sample in sequence.



Figure 5. Samba Carnival Permeates The Streets Of Rio De Janeiro [19].



Figure 6. New Orleans Jazz Culture [20].

2-Emotional Connection: Residents often form strong emotional connections to familiar sounds that create a sense of belonging and comfort[21]. For example, the chimes of Big Ben in London, as shown in Figure 7, the foghorns in San Francisco, as shown in Figure 8, and the sea waves crashing on the shore of Alexandria as street vendors pass by selling Fresca are iconic sounds that evoke nostalgia and a deep sense of connection to these places. Kindly scan the attached QR Code to listen to the sounds sample in sequence.





Figure 7. Chimes Of Big Ben In London [22].



Figure 8. The Fog Horn at The Golden Gate Bridge in San Francisco [23].

3-Historical Context: Certain sounds can remarkably evoke historical memories and narratives, creating a profound connection to the past [24]. For instance, the clattering trams traversing the streets of Lisbon, as shown in Figure 9 and the gentle swaying of canal boats in Venice, as shown in Figure 10 serve as auditory links to bygone eras, enriching the captivating narratives of these cities' histories.





Figure 9. Trams Traversing The Streets Of Lisbon [25].



Figure 10. The Canal Boats In Venice [26].

4-Spatial Orientation (Way of Finding): Soundscapes help people navigate and understand their environment [27]. Neighborhood's soundscapes play a crucial role in shaping people's perceptions and experiences of their surroundings. For instance, the vibrant and lively sounds of the bustling markets in Marrakech, as shown in Figure 11 create a unique and energetic atmosphere. In contrast, the tranquil and peaceful sounds of the serene parks in Tokyo, as shown in Figure 12 contribute to a sense of calm and relaxation. These distinct auditory environments greatly influence each city's spatial identity and character, enriching the overall experience for residents and visitors alike.



Figure 11. The Bustling Markets In Marrakech [28].



Figure 12. peaceful sounds in Tokyo parks [29].

2.4. The City Acoustic Portrait

At the end of the 19th century, August Strindberg emphasized the importance of acoustics in outdoor environments to describe a space at a specific time in Södermalm, Stockholm, Sweden [30], as shown in Figure 13. He used sounds to convey information and establish the central theme of the scene. Kindly scan the QR code to listen to the acoustic atmosphere of Stockholm city.



August Strindberg Said *“Far below him rose the clamor of the newly awakened town; down in the harbor the steam cranes whirred, the bars rattled in the iron weighing machine, the lockkeepers’ whistles shrilled, the steamers at the quayside steamed; the Kungsback omnibuses rattled over the cobblestones; hue and cry in the fish market, sails, and flags fluttering on the water, screams of seagulls, bugle-calls from Skeppsholm, military commands from Söder Malmstorg. Workmen in wooden shoes clattered down Glasbruksgatan, and all this gave an impression of life and movement. Now the bells of Santa Katrina chimed seven and were echoed by Santa Maria’s reedy treble, the Abbey and the German Church joined in with their basses, and soon the whole air vibrated with the city’s seven bells. And as, one after the other, they fell silent, the last one could still be heard in the distance, singing its peaceful evensong. This had a higher note, a purer ring, and a swifter tempo than the others – yes, indeed it had. He listened,*

trying to make out where the sound came from, for it seemed to wake some memory. The Klara bell stopped, and he was jerked from his thoughts by the sound of a footstep on the gravel path”.



Figure 13. Acoustic Portrait of Södermalm, Stockholm at The End of the 19th Century by August Strindberg [31].

The previous quote describes the landscape's character through the sounds heard. Various environmental elements can be experienced as comfortable or uncomfortable, but they always convey information [32].

2.5. Challenges and Opportunities

While urban soundscapes contribute positively to a city's identity, they also present challenges. Noise pollution from excessive traffic, construction, and industrial activities can negatively impact residents' health and well-being [33]. Managing and balancing the urban soundscape to reduce noise pollution while preserving its cultural and social value is a significant urban planning challenge [34]. Innovative approaches are being employed to enhance and manage urban soundscapes:

1-Sound Mapping: Cities like New York, as shown in Figure 14 and Berlin as shown in Figure 15 are using sound mapping techniques to identify and understand the distribution of different sounds across urban areas. This helps in creating strategies to enhance cheerful sounds and mitigate noise pollution.



Figure 14. New York Sound Map [35].



Figure 15. Berlin Sound Map [36].

2-Sound Design: Urban planners and architects increasingly integrate soundscape design principles into developing public spaces to create more pleasant and functional environments for people. This can be seen in Figure 16, where various strategies for managing sound are employed. These strategies include incorporating quiet zones where people can escape from noise, using acoustic barriers to reduce sound transmission, and implementing sound-enhancing features to create a more engaging auditory experience for visitors. This thoughtful approach to sound design contributes to public spaces' overall quality and usability.

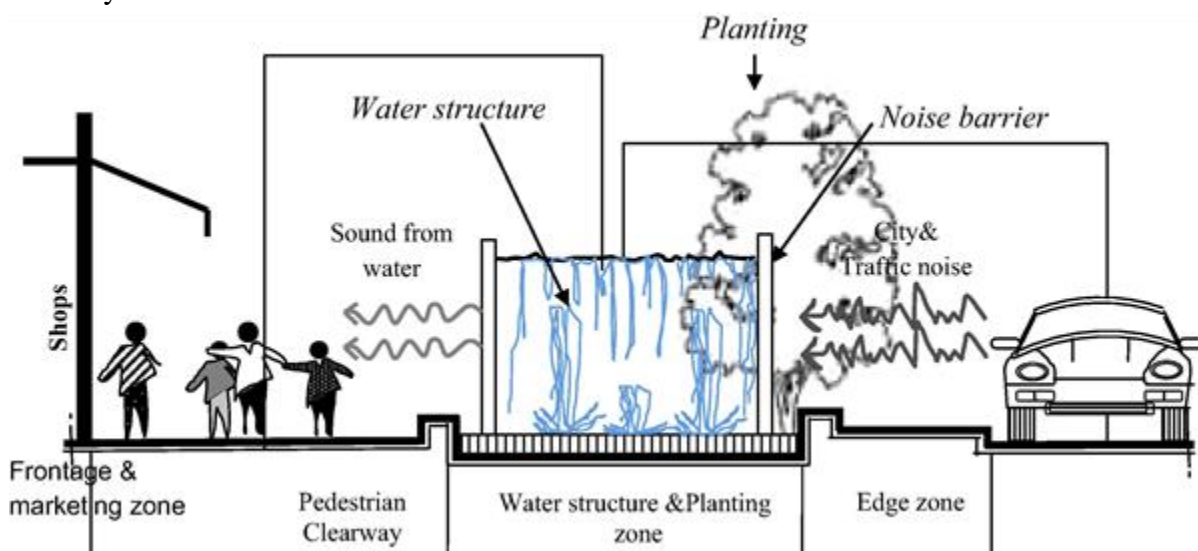


Figure 16. Incorporating Soundscape Design to Develop Public Spaces [37].

3-Community Engagement: Participatory initiatives that involve residents in soundscape planning help ensure that the soundscape reflects the community's needs and preferences [38], as shown in Figure 17. Examples include public art projects, community concerts, and local noise regulations.



Figure 17. Community Involvement In Soundscape Planning [39].

3. Analyzing The Acoustic Atmosphere of Istanbul City as A Successful Model for The City's Soundscape Identity

In numerous cities worldwide, urban planners and policymakers have implemented creative strategies to improve and enhance a city's urban soundscape, but this paper will focus on Istanbul's acoustic identity as one of the internationally recognized models[1].

As previously mentioned, the unique sound characteristics of a community are integral to its identity and set it apart from other locations [40]. To illustrate, one can compare the distinct urban soundscapes of Hong Kong and Paris, as depicted in Figure 18. The acoustic identity of a place is shaped by a complex interplay of factors, such as the sounds generated by surrounding activities, structures, and inhabitants. Additionally, elements like the predominant language spoken, the governing rules and regulations, and the cultural and social values of the community all play a role in shaping its acoustic identity. In essence, the acoustic identity reflects the distinctive features and traits of the surrounding environment, creating a clear distinction from other spaces [41]. Kindly scan the following two QR Codes to listen to the audio identity of the two cities[42] [43].

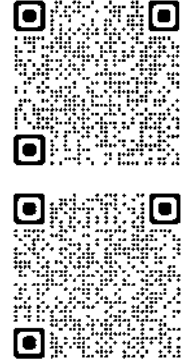


Figure 18. Hong Kong, And Paris Obvious Discrepancy Soundscape Identity.

As previously discussed, urban soundscapes are integral to forming and reinforcing a city's identity. Istanbul's soundscape plays a crucial role in cultural expression and emotional connection, as the sounds of the city evoke a deep sense of place and belonging. The call to prayer, for instance, is not just a religious ritual but also a powerful auditory marker of the city's Islamic heritage and cultural identity. Similarly, the vibrant sounds of street vendors and bustling markets reflect Istanbul's dynamic social life and rich traditions, fostering a solid emotional connection among its inhabitants and visitors. These sounds contribute to the city's identity, making it a living, breathing entity with its unique character. This will be analyzed following. Kindly scan the following QR Code to listen to the some city sounds in Istanbul [44].



3.1. The Soundscape of Istanbul Project

The city of Istanbul provides a compelling case study for understanding how urban soundscapes contribute to a city's unique identity[45]. Matthias Morgenroth said (2010), "You can feel the energy in Istanbul. The city has its unique sound because it is situated on the water. It is a massive city with a mixture of many cultures, historical monuments, and various activities"[46]. Urban and cultural sounds are considered intangible cultural heritage elements[47]. Due to rapidly changing life conditions, daily traditions also evolve with a fast rhythm. Therefore, it is necessary to safeguard urban sonic heritage, which means keeping it alive in daily social life. Once a society stops practicing a particular tradition, it becomes lost in daily life. It would be hard to regain, and safeguarding would not work with an already-gone tradition. For this, the Soundsslike archive, which is part of "The Soundscape of Istanbul" project, was created by Pınar Çevikayak [48], as shown in Figure 19. The Soundscape of Istanbul project focuses on gathering and preserving the city's diverse cultural and urban sounds. On the other hand, the Soundsslike project is an online platform that encourages people to capture and share significant urban sounds. Kindly use the following link so you can access the project <https://soundsslike.com/>. This crowd-sourced initiative allows individuals to contribute to the online sound archive and utilizes an interactive tabletop interface for a comprehensive user and contributor experience. The aim is to enhance the archive's content and public awareness of the multitude of urban sounds.



Figure 19. The Soundsslike Archive[49].

3.2. Analyzing Sultan Ahmed Square and Bosphorus Strait Soundscape Identity

In the first seven months of 2024, Istanbul welcomed an unprecedented 10,467,313 foreign visitors, breaking all previous records for July and the year-to-date period[52]. This impressive achievement represents a 7.06% increase compared to last year and highlights Istanbul's growing appeal as a premier travel destination. Therefore, the study and analysis points were determined

based on the tourism data of Istanbul's most attractive tourist sites. First Sultan Ahmed Square (Sultanahmet Square) which is adjacent to Hagia Sophia Mosque and the Sultan Ahmed Mosque (Bule Mosque), as shown in Figure 20, secondly the Bosphorus Strait, as shown in Figure 21.



Figure 20. Sultan Ahmed Square[50]



Figure 21. Bosphorus Strait[51]

The first studying site is Sultan Ahmed Square adjacent to Hagia Sophia Mosque and the Sultan Ahmed Mosque. The public space is located on the European side in Istanbul, Turkey, as shown in Figure 22. As shown in Figure 23 the study area is surrounded on the upper side by the harem El Sultan Hamam, the ruins of the Grand Palace, the Istanbul Art Bazaar, and the tomb of Abd al-Rahman al-Siyami. On the right side is the Sultan Ahmed Mosque, or what is known as the Blue Mosque, and the Sultan Ahmed Foundation in Istanbul. On the left side, it is surrounded by the Hagia Sophia Mosque and Church, Sultan Mehmed III's tomb, Sultan Selim II's tomb, the princes' tombs, and the Hagia Sophia armored police station. As for the lower side, it is surrounded by the Sultan Ahmed I Tomb, the Sultan Ahmed Bus Station, the Haj Agha Bashir Fountain, the Million Stone, Diwan Street, Boma, taxi services, Gulhane Tram Station, some public baths, and finally the Cistern Church[32].



Figure 22. Location of The Study Areas at The European Side of Istanbul, Turkey[32].

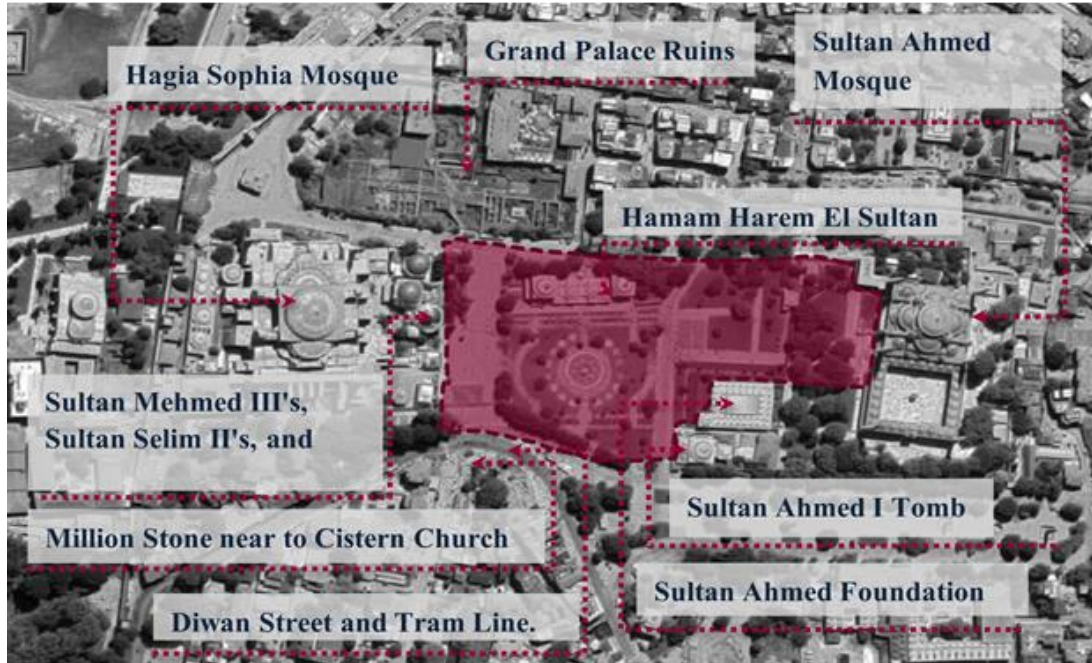


Figure 23. Sultan Ahmed Square Urban Surroundings [32].

The second study site is the soundscape of the Bosphorus Strait and its surroundings. The Bosphorus or Bosphorus Strait is a natural and internationally significant waterway in Istanbul, Turkey. The Bosphorus connects the Black Sea to the Marmara Sea and serves as one of the continental boundaries between Asia and Europe, as shown in Figure 24. The Bosphorus has 30 km long with a maximum 3.7 km width at the northern entrance and a minimum 750 meters width between the Ottoman fortifications of Rumelihisarı and Anadoluhisarı. Its depth varies from 36.5 to 124 meters in midstream. The strait's enduring significance lies in its dual role as a maritime special area under the International Maritime Organization, crucial for global trade and maritime navigation, and a major tourism hub, as shown in Figure 25.



Figure 24. The Bosphorus connects the Black Sea to the Marmara Sea.



Figure 25. The Bosphorus as a major tourism hub.

The researcher visited and observed the two study points twice, once for exploration and once for monitoring to extract the distinctive sounds at the two points. The first point, which is related to Sultan Ahmed Square, was visited on 20-8-2022 and 22-8-2022. The second point, related to the Bosphorus cruise, was visited on 25-8-2022 and 26-8-2022. The two sites were recorded and photographed with the same tools and methods. An audio recorder was used with a microphone and a windshield, and the two points were photographed with a 360-degree camera.

At the observation point as shown in Figure 26 the soundscape of the Sultan Ahmed Square is characterized by the sound of different calls to prayer and Tawshih. In addition to the sounds of various transportation movements, whether from buses, cars, trams, etc. Also, the loud voices of street vendors and the voices of tourists from different world cultures[32], as shown in Figure 28. Kindly, scan the QR Code to listen to Sultan Ahmed Square 's soundscape scene [53].



Figure 26. Sultan Ahmed Square recording and observation point.

At the observation point as shown in Figure 27 the soundscape of the Bosphorus Strait is characterized by the sound of the strait, the chirping of seagulls, and the sound of air movement. In addition to the trumpet sounds of ships, yachts, and fishing boats, with the background of city noise [32], as shown in Figure 29. Kindly, scan the QR Code to listen to Bosphorus Strait soundscape scene [54].

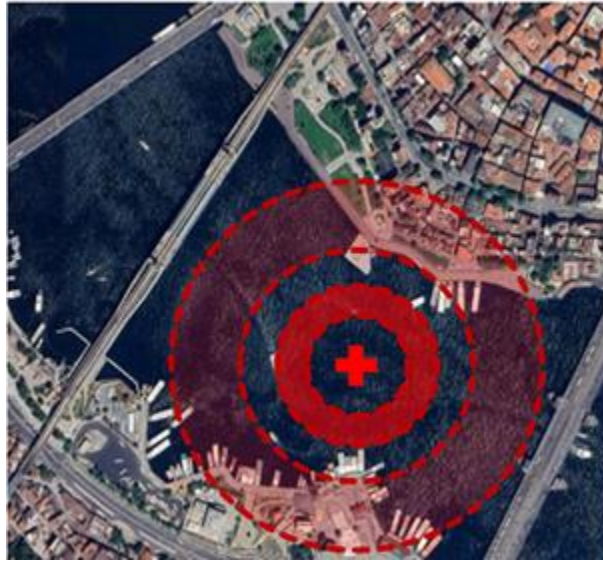


Figure 27. The Bosphorus recording and observation point.



Figure 28. Sultan Ahmed Square Soundscape Scene (adjacent to Hagia Sophia Mosque and The Bule Mosque)[32].



Figure 29. The Shore of The Bosphorus Strait Soundscape Scene[32]

4. Results

Studying Istanbul's soundscape provides valuable insights into how different sounds contribute to a city's identity. The city's unique sounds, such as those of the Bosphorus Strait and the bustling urban areas surrounding historic sites, play a crucial role in shaping its identity. Global cities like Hong Kong and Paris reveal that each city has distinct sounds influenced by geography, culture, and development. For example, the sounds of dense urban activity in Hong Kong and Paris contrast with Istanbul's mix of waterborne and terrestrial noises, highlighting the interplay between natural and urban elements.

5. Conclusion

The urban soundscape is a symphony of diverse and intricate auditory experiences that fill its streets and open spaces. It encompasses the energetic hum of automobiles weaving through the city streets, the lively chatter of people mingling in bustling markets, and the rhythmic melodies of street musicians. Each sound interweaves to create a rich tapestry that mirrors the pulse of human activity, the whispers of nature's presence, and the myriad expressions of cultural vibrancy.

Recognizing and understanding the profound impact of soundscapes on urban experiences underscores the necessity of weaving thoughtful sound management strategies into the fabric of city planning and development. By doing so, cities can cultivate acoustically harmonious environments, ensuring that the soundscape enriches the daily lives of residents and visitors alike. This approach enhances the well-being of urban dwellers and safeguards the distinctive auditory identity that sets each city apart.

Conflict of Interest

The authors declare no conflict of interest.

6. References

- [1] Rehan RM. The phonic identity of the city urban soundscape for sustainable spaces. *HBRC J* 2016;12:337–49. <https://doi.org/10.1016/j.hbrcj.2014.12.005>.
- [2] Gilmurray J. “Ecoacoustics” - composed documentary for Critical Waves Radio (2015). 2017.
- [3] Jiang L, L. Bristow A, Kang J, Aletta F. Figure 2. Soundscape of a lively urban square. Reproduced based on... ResearchGate 2022. https://www.researchgate.net/figure/Soundscape-of-a-lively-urban-square-Reproduced-based-on-image-from-Leeds-City-Council_fig2_360868556 (accessed July 23, 2024).
- [4] Axelsson S. The ISO 12913 series on soundscape: An update, May 2012. *J Acoust Soc Am* 2012;131:3381. <https://doi.org/10.1121/1.4708750>.
- [5] Truax B. *Soundscape studies: An introduction to the World Soundscape Project*. Numus West 1974.
- [6] Raimbault M, Dubois D. Urban soundscapes: Experiences and knowledge. *Cities* 2005;22:339–50. <https://doi.org/10.1016/j.cities.2005.05.003>.
- [7] Gleeson S. *The Sonic Identity Model: one interdisciplinary approach for qualitative urban soundscape analysis, management and design*, 2022.
- [8] VELUX Group. *Noise or sound – Daylight, Energy and Indoor Climate Book* n.d. <https://www.velux.com/what-we-do/research-and-knowledge/deic-basic-book/acoustics/noise-or-sound> (accessed August 5, 2024).
- [9] Li H, Xie H, Woodward G. Soundscape components, perceptions, and EEG reactions in typical mountainous urban parks. *Urban For Urban Green* 2021;64:127269. <https://doi.org/10.1016/j.ufug.2021.127269>.
- [10] Brown L, Gjestland T, Dubois D. Acoustic Environments and Soundscapes. *Soundscape Built Environ.*, 2015, p. 1–16. <https://doi.org/10.1201/b19145-2>.
- [11] Brown L, Gjestland T, Dubois D. Acoustic Environments and Soundscapes. *Soundscape Built Environ.*, 2015, p. 1–16. <https://doi.org/10.1201/b19145-2>.
- [12] Paiva D, Brito-Henriques E. *Sounding the unheard city: an approach to the soundscapes of urban vacant lands in Lisbon*, 2017.
- [13] Krause B. *Voices of the Wild: Animal Songs, Human Din, and the Call to Save Natural Soundscapes*. Yale University Press; 2015.
- [14] Pijanowski B, Farina A, Gage S, Dumyahn S, Krause B. What is soundscape ecology? An introduction and overview of an emerging new science. *Landsc Ecol* 2011;26:1213–32. <https://doi.org/10.1007/s10980-011-9600-8>.
- [15] Pijanowski BC, Villanueva-Rivera LJ, Dumyahn SL, Farina A, Krause BL, Napoletano BM, et al. Soundscape Ecology: The Science of Sound in the Landscape. *BioScience* 2011;61:203–16. <https://doi.org/10.1525/bio.2011.61.3.6>.
- [16] Zorzanello S. (2) Identity and sound identity: what are their relations within the landscape | stefano zorzanello - Academia.edu 2017. https://www.academia.edu/35199309/Identity_and_sound_identity_what_are_their_relations_within_the_landscape (accessed June 6, 2024).

- [17] Zhu X, Oberman T, Aletta F. Defining acoustical heritage: A qualitative approach based on expert interviews. *Appl Acoust* 2024;216:109754. <https://doi.org/10.1016/j.apacoust.2023.109754>.
- [18] Yang L, Liu J, Albert C, Guo X. Exploring the effects of soundscape perception on place attachment: A comparative study of residents and tourists. *Appl Acoust* 2024;222:110048. <https://doi.org/10.1016/j.apacoust.2024.110048>.
- [19] Crain K. Rio Carnival 2024: What makes it a must-see event? 2024. <https://www.theblueground.com/blog/rio-de-janeiro/carnival-rio/> (accessed August 5, 2024).
- [20] Trehaan A. New Orleans is where jazz blends with history. *NewsBytes* 2024. <https://www.newsbytesapp.com/news/lifestyle/new-orleans-jazz-and-history-blend/story> (accessed August 5, 2024).
- [21] Wilson S, Milne E-J. Visual, Audial and Artistic Methods in Social Research: The Young People Creating Belonging Project. *J Sociol Bull Yerevan Univ* 2022;13:39–54. <https://doi.org/10.46991/BYSU:F/2022.13.1.039>.
- [22] The chimes of Big Ben n.d. <https://g1b2i3.wordpress.com/tag/the-chimes-of-big-ben/> (accessed August 7, 2024).
- [23] De-mist-ifying the Fog: Five Fun Facts. *Gold Gate Natl Parks Conserv* 2016. <https://www.parksconservancy.org/park-e-ventures-article/de-mist-ifying-fog-five-fun-facts> (accessed August 7, 2024).
- [24] Williams R, Maus G, Styles S. Sound Evoked Visual Memory in Narrative Film. 2023. <https://doi.org/10.31234/osf.io/mhvf5>.
- [25] Botor C. Best Places To Eat, Play And Stay In Lisbon - International Traveller. *Int Travel Mag* 2022. <https://www.internationaltraveller.com/europe/portugal/guide-to-visiting-lisbon/> (accessed August 7, 2024).
- [26] Lisa. Venice private gondola ride experience. *You Know Boat Sorrento* 2019. <https://www.youknowboat.com/en/venice-gondola-ride-experience/> (accessed August 7, 2024).
- [27] Orio N, De Carolis B, Liotard F. Locate your soundscape: interacting with the acoustic environment | *Multimedia Tools and Applications* 2021. <https://link.springer.com/article/10.1007/s11042-021-10683-9> (accessed August 5, 2024).
- [28] Yvan. Exploring Marrakech: Uncovering the Best Local Markets. *Ilove Marrakech Blog* 2024. <https://www.ilove-marrakech.com/blog/where-can-you-find-the-best-local-markets-in-marrakech/> (accessed August 7, 2024).
- [29] UMETravel. Tokyo Cherry Blossom Season 2025: Where to Enjoy Sakura in Tokyo? 2024. <https://www.umetravel.com/japan-cherry-blossoms/tokyo-cherry-blossom-season.html> (accessed August 7, 2024).
- [30] August Strindberg's the Red Room (first modern Swedish novel). 2021.
- [31] Erell E, Pearlmutter D, Williamson T. *Urban Microclimate* 2012.
- [32] Alaa El-Din Mohamed S. Guidelines For Analyzing Soundscape Patterns In Urban Public Spaces. Thesis , Master Of Science in Urban Development and Design Communities. Architecture Department, Faculty Of Engineering, Cairo University., 2024.
- [33] Radicchi A, Cevikayak Yelmi P, Chung A, Jordan P, Stewart S, Tsaligopoulos A, et al. Sound and the healthy city. *Cities Health* 2021;5:1–13. <https://doi.org/10.1080/23748834.2020.1821980>.

- [34] Sami M, Sara K. Acoustic Urbanism: A Holistic Approach to Shaping Vibrant Cityscapes. *Int J Adv Nat Sci Eng Res IJANSER* 2023;7:156–67. <https://doi.org/10.59287/as-ijanser.579>.
- [35] Dubey P. BTS National Transportation Noise Map 2017. <https://informedinfrastructure.com/30272/bts-releases-national-transportation-noise-map/> (accessed August 5, 2024).
- [36] Haag L. 07.05.1 Strategic Noise Map LDEN (noise index day-evening-night) Road Traffic 2023. <https://www.berlin.de/umweltatlas/en/traffic-noise/noise-pollution/2017/maps/artikel.983556.en.php> (accessed August 5, 2024).
- [37] Rehan RM. The phonic identity of the city urban soundscape for sustainable spaces. *HBRC J* 2016;12:337–49. <https://doi.org/10.1016/j.hbrcj.2014.12.005>.
- [38] Lavia L, Xiao J, Kang J. Towards an agile participatory urban soundscape planning framework. *J Environ Plan Manag* 2018;61. <https://doi.org/10.1080/09640568.2017.1331843>.
- [39] Blume. Sound Art in Public Spaces. *Sounds Now* 2021. <https://www.sounds-now.eu/activities/sound-art-in-public-spaces/> (accessed August 5, 2024).
- [40] Rehan R. The phonic identity of the city urban soundscape for sustainable spaces. *HBRC J* 2015;5. <https://doi.org/10.1016/j.hbrcj.2014.12.005>.
- [41] Gawad I, Omira R. Urban Soundscape Ecology: Considering Users Perception 2020.
- [42] The sound of Hong Kong. 2017.
- [43] THALYS - Sounds of the City. 2015.
- [44] City Sounds in Istanbul. 2022.
- [45] Yelmi P. The Soundscape of Istanbul: Exploring the Public Awareness of Urban Sounds. *Int J Soc Sci Humanity* 2017;7.
- [46] Morgenroth P, Morgenroth M, Graffam M, Berwick J, Cameron L. Istanbul an acoustic journey between Hagia Sophia and Beyoğlu ; audioguide. Berlin: Geophon; 2010.
- [47] Maffei L, Brambilla G, Gabriele M. Soundscape as Part of the Cultural Heritage. *Soundscape Built Environ.*, 2015, p. 215–42. <https://doi.org/10.1201/b19145-10>.
- [48] Yelmi P, Kuşcu H, Yantac E. Towards a Sustainable Crowdsourced Sound Heritage Archive by Public Participation: The Soundsslike Project, 2016, p. 1–9. <https://doi.org/10.1145/2971485.2971492>.
- [49] The Soundsslike Project. Soundsslike Proj n.d. <http://www.soundsslike.com/> (accessed August 26, 2024).
- [50] Historical Tour of Istanbul With Bosphorus Cruise, All in One Day Istanbul Combo Tour n.d. <https://www.bosphorustour.com/Historical-Tour-of-Istanbul-with-Bosphorus-Cruise.html> (accessed August 28, 2024).
- [51] Istanbul's plan to save its cultural soul n.d. <https://www.bbc.com/travel/article/20240701-istanbuls-plan-to-save-its-cultural-soul> (accessed August 28, 2024).
- [52] Travel-Influencer. Istanbul Sets New Tourism Record in 2024. *Tour Turk Top Travel Spots Tour Attract* 2024. <https://visitturkey.in/istanbul-sets-new-tourism-record-in-2024/> (accessed August 26, 2024).
- [53] Istanbul Soundscape Scene (Sultan Ahmed Square, next to Hagia Sophia Mosque). 2023.
- [54] Istanbul Soundscape Scene from The Shore Of The Bosphorus Strait. 2023.