



# Cultural Soundscape Evaluation on Re-Functionalized Historical Sites with Adaptive Reuse Approach: Ankara Citadel Case

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## Abstract

Cultural soundscaping is a research field that aims preservation and evaluation of the cultural heritage sites' sound environments, as they are the intangible values that act as a crucial part of the place identity. Different aspects of sounds' interaction with humans and places have provided that value of soundscape has become significant in heritage sites. The semantic values hidden in the intricate content of soundscapes within an urban context and their cultural values are in the scope of this study. In this sense, a methodological framework is introduced that is merged from the studies on cultural soundscape that are present in the literature. Accordingly, a pilot study was conducted as a case study based on the presented framework. The old city centre of Ankara, where new functions have been assigned with restoration projects in an adaptive reuse approach, and its heritage value from the perspective of its lost and changed soundscape, especially during and after the restoration were considered. Soundwalks and listening points on the pre-identified routes and semantic sound analysis were conducted as a pilot study in order to evaluate the restoration process during construction and after construction period of the sound environment at Ankara Citadel region. The importance of observing, surveying, managing, and preserving the historic sound environment of such historic heritage sites and its importance for the urban habitual life and society are discussed.

**Keywords:** cultural soundscapes, heritage sound preservation, adaptive reuse.

## 1 Introduction

Soundscape research field has aimed to enhance acoustic environments and user comfort through the evaluation and considering the user perception and preference. Yet, cultural soundscape is a relatively new topic that aims conservation and evaluation of the cultural heritage sites' sound environments, which is believed that sounds are the part of a place identity. Different aspects of sounds' interaction on human and places have provided that value of soundscape has become significant in heritage sites. These interactions include "creating a sense of place, providing cultural and historical heritage values, interacting with landscape perceptions, and connecting humans to the nature" [1]. Creating sense of place, through the auditory experiences with the evoked memories [2], also promotes attachment to a place and interpretation of a place identity.

This study aims to investigate the cultural heritage sites' identification and to develop a preliminary methodological framework for evaluation of cultural soundscapes, through the adoption and combination of the methodological approaches in the literature, and assessment of the framework with a pilot study at Ankara Citadel.

## 2 Cultural Soundscapes

### 2.1 Soundscape as an Intangible Cultural Heritage

Several studies in literature [1-4] address the evaluation of acoustic environments in heritage sites as “cultural soundscapes” within the concept of intangible cultural heritage. Cultural soundscapes are dominated by the natural or human generated sound sources which have “cultural, historical and spiritual” values, and usually the bond between people and cultural soundscapes are built with specific soundmarks [1, 3]. Thereby, identification of the soundmarks of a place is an effective way to preserve the cultural soundscape as a heritage [1, 5]. Regarding that, Dumyahn and Pijanowski (2011) propose the principles of the soundscape conservation as “set goals, identify targets, assess condition, identify, and manage threats, and conduct monitoring of the soundscape”.

Gathering and classifying sound sources and types has an importance for soundscape conservation and it is needed to be clarified more in detail. Schafer’s (1994) approach to sound types, categorizes sound sources as keynote sounds, signals and soundmarks as features of soundscape. Keynote sounds are the sounds that are not listened consciously and are deemed as background sounds. However, they have an importance since keynote sounds give information about the character of a place. On the contrary, signals are identified as foreground and dominant sounds which are listened consciously by people. Lastly, soundmarks are the sounds, which are unique for a space and needed to be protected [5]. Correspondingly, soundmarks are interpreted as they are the specific sounds that people expect to hear from a place. Yelmi’s study (2016), which is adopted the cultural soundscape as an intangible cultural heritage, states that the sounds have a great importance on people’s culture and the identity of a place or a city as an aural symbol. In one study, related with the soundscape of İstanbul, keynote sounds were exemplified as traffic noise and seagulls which can be heard anytime and anywhere. Signals were stated as ambulance sirens, the call to prayer and church bells, and finally keynote sounds are exemplified for İstanbul as nostalgic tramway’s bells at Taksim and the creaking of the horse-drawn carriages at Büyükdada. Accordingly, it is remarked that soundmarks are the aural indicators of the cultural identity of a place [2].

Besides the literature on soundscape heritage, descriptions of UNESCO and articles of ICOMOS charters or doctrinal texts can be used as an evidence to support the expression of cultural soundscape as an intangible cultural heritage. Convention for the Safeguarding of the Intangible Cultural Heritage of UNESCO [6] reports identifies the “intangible cultural heritage” as “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage”. Moreover, intangible cultural heritage was presented as five domains, which are;

- (a) oral traditions and expressions, including language as a vehicle of the intangible cultural heritage,
- (b) performing arts,
- (c) social practices, rituals and festive events,
- (d) knowledge and practices concerning nature and the universe,
- (e) traditional craftsmanship. [6]

Québec Declaration on the Preservation of The Spirit of Place [7] states that the spirit of a place is consist of tangible and intangible elements and describes intangible elements as; memories, narratives, written documents, festivals, commemorations, rituals, traditional knowledge, values, textures, colours, odours, etc. Additionally, Québec Declaration expresses that these intangible elements contribute to form a place and give it a spirit [7]. Sounds of a place are not indicated in the definition of intangible elements yet sounds can be assumed as an intangible cultural heritage, just as the odours.

Burra Charter [8] is the first declaration, which refers to sounds as an element that should be preserved within a setting of a place. In the definition section of the declaration, “setting” (Article 1.12) is defined as; “the immediate and extended environment of a place that is part of or contributes to its cultural significance and distinctive character. Setting may include: structures, spaces, land, water and sky; the visual setting including views to and from the place, and along a cultural route; and other sensory aspects of the setting such as smells and sounds” [8]. Besides, in Article 8, it is stated that setting conservation “includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place” [8]. Thereby, it can be interpreted as the sensory settings also include auditory sense, and soundscape is a part of a cultural unity of a setting that should be protected as a heritage.

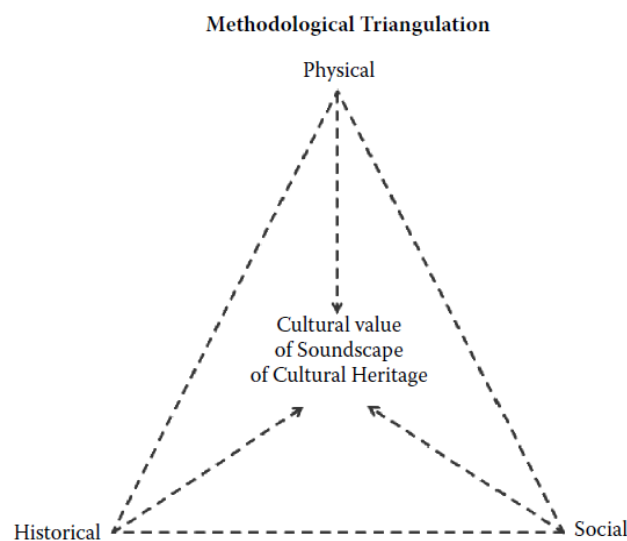


Figure 1 – “A scheme of the methodological triangulation” [4]

Maffei et.al. proposed a methodological triangulation (Figure 1) in order to understand the cultural value of soundscape of a place with the three components as physical, historical and social information [4]. This methodological triangulation is an approach that expresses how to consider soundscape as a cultural heritage. However, data collection and evaluation methods should be determined as well in order to evaluate cultural soundscapes in a holistic approach.

## 2.2 Data Gathering and Evaluation Methods for Cultural Soundscapes

After the theoretical framework (physical, historical and social background/information) of a cultural soundscape is studied, methods should be determined in order to collect data from the site/case to be evaluated. ISO standard [9] on soundscape data collection methods propose a protocol including soundwalk with filling standardized questionnaires/scales. Soundwalk is a method that is conducted through the predefined soundwalk area and listening points, and at each point participants are expected to listen the sound environment during a defined period (e.g., 3 min) and then to fill the questionnaires. Questionnaire including sound source identification, perceived affective quality, assessment of surrounding sound environment including appropriateness of sound environment with the surrounding [9]. Data gathering and evaluation can be conducted in two ways as in-situ with soundwalk with the participants and in laboratory by making participants to listen the recordings that were recorded on the site [10, 11]. For the previous sound sources of a previous function or use of a site, past recordings from archives (from governmental records, documentaries, previous studies etc.) might be reached to evaluate a site in a comparative attitude [12]. Additionally, since narrative interviews have been described as the method for gathering extensive information about the site or soundscape in case that the researcher has limited knowledge on case/site [11], narrative interviews are another data gathering method that would be useful for cultural soundscapes.

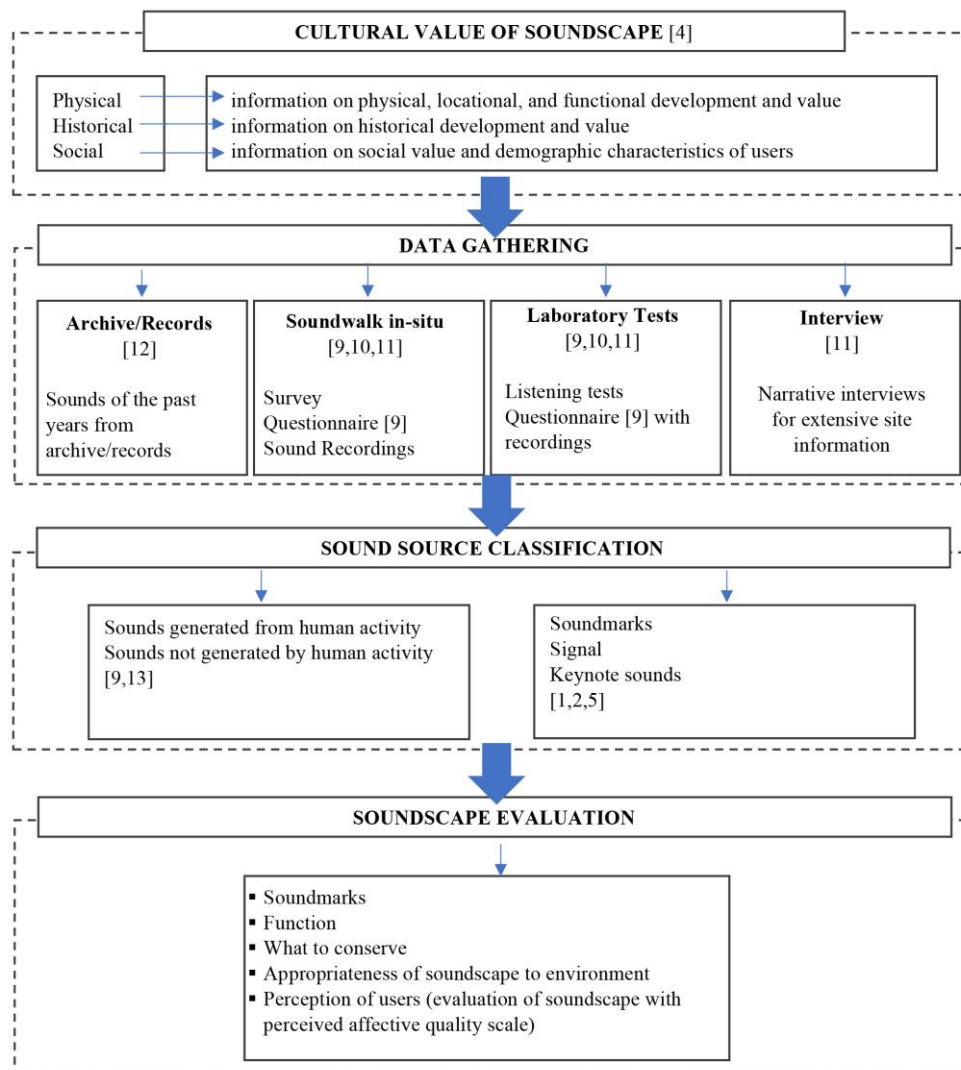


Figure 2 – Methodological framework for cultural soundscape evaluation.

As for the evaluation of the sound sources, two approaches can be adopted; Brown’s model [9, 13] to classify among natural and human generated sounds, and Schafer’s approach [5] to assign soundmarks that are important for a cultural soundscape identity. At the end of the data collection process, it was predicted that the obtained information and data could be evaluated with a holistic approach (see Figure 2), by considering the sound marks, the function and value of the site, determination of what should be protected, soundscape appropriateness to environment, and the perception of the users. As a preliminary study, a pilot study was conducted on a site that has a historical and cultural value as a cultural heritage. Outer citadel area of Ankara citadel was selected as a case, where the most of the historical buildings that had been used to use as residential purposes were adapted reuse.

### 3 Ankara Citadel and Its History

Ankara city is in the middle of the Anatolian peninsula, which has an important position that provides transportation by sea and land between the east-west and north-south states, and its position suitable for defence in the centre and on trade routes, has undertaken important military, commercial and agricultural functions throughout its history [14].

Ankara Citadel had been hosted many civilizations as Eastern Roman, Byzantine, Seljuks, Ottoman Empires, and finally Republic of Turkey. According to the excavations, the first findings addressed the Hittite era (4000-1200 B.C.) for Ankara Citadel existence and settlement. In second and third century, citadel walls had been reconstructed or repaired during the Roman dominance. Although there is no exact information, it is thought that the existing Ankara Citadel was a result of the 7th century Byzantine military attitude, and reconstructed or repaired between 334 B.C. and seventh century under the Byzantine rule [15].

The most important factor affecting the spatial structure of Ankara and the economy of the city in the Middle Ages is that the city had existed as a 'border city' for about a thousand year, first for the Eastern Roman Empire and then during the Seljuks period. During this period, the main function of the city at the regional perspective was trade. The first functional differentiation affecting the spatial structure of the city in the historical change is that the basic function of the city has ceased to be an easily defended and important military point, and has become a 'commercial city' located on one of the main trade routes [16]. Ankara Citadel has two parts as inner and outer citadel that can be seen in Figure 4.

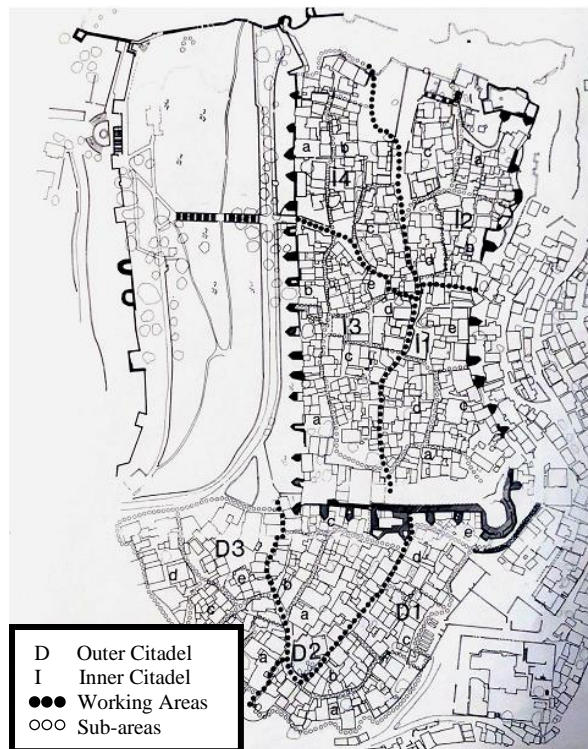


Figure 3 – Parts of the Ankara Citadel [15].

In sixteenth, seventeenth and eighteenth century, city had become centre of trade with forty-three trade branches, and in nineteenth century trade branches increased to seventy-two. As a result with the improving population citadel has become a residential area instead of defence centre [16]. In Figure 5, which demonstrates the residential pattern of inner citadel in late nineteenth century, it is seen that almost all buildings had been used as residential purpose.

The intense structuring of Ankara over time after becoming the capital city of the Republic of Turkey in the beginning of the twentieth century; inner citadel and its surroundings have become a traditional but poor part of general structure of the city. Since the Jansen plan, which was approved in 1932, it has only been the subject of prohibitive conservation orders under the name of "Protocol Area". With this decision, the proposal "Not to Intervene the Old City" was implemented in the form of "Not even Intervene the Old City



for the Purposes of Restoring and Preserving" [15]. With the decision of the "Protocol Area", Ankara Castle has undergone fundamental physical degradation, with its symbolic and cultural importance, being topographically disconnected from the centre and remaining outside the main road network. However, the population of inner citadel increased as its proximity to the centre created demand in the area; It is degraded and degenerated due to uncontrolled usage transformations, illegal construction in gardens, widespread neglect. It also faced problems such as homeowners leaving their homes, division of buildings, increased tenancy rates and insufficient infrastructure [14]. Thereby, the residential function of the buildings in citadel did not change until the end of the twentieth century (Figure 6).

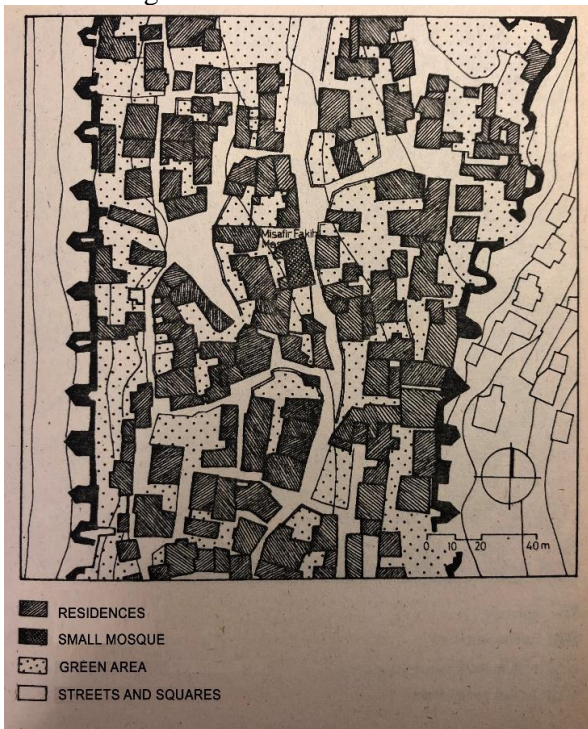


Figure 4 – Residential pattern of inner citadel in the late 19th century [16].

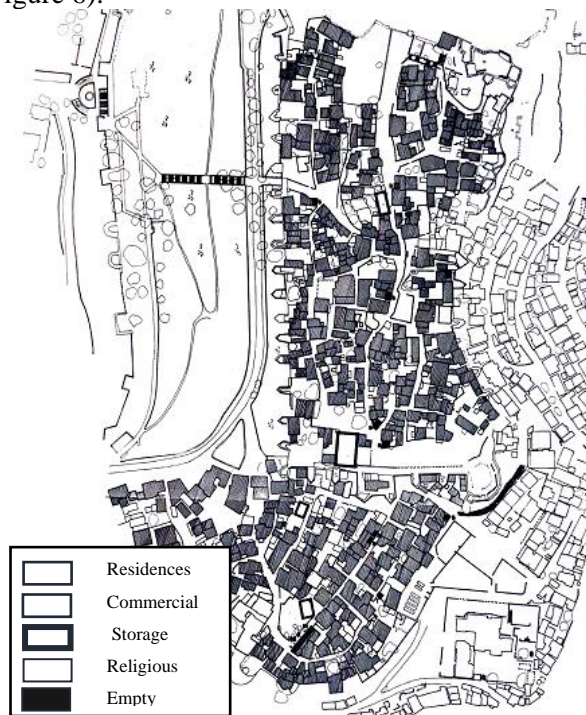


Figure 5 – Building functions in Inner and Outer Citadel in the late 20th century [15].

After 1972, it was discussed that a conservation planning and restoration works should be started. Restorations were completed in 1992, and the buildings planned to be organized as restaurant, patisserie, souvenir shop functioned as restaurant, bar, antique furniture shops. During the late restoration process in 2000s, a large part of the outer citadel was adapted to re-use, transformed into cafes, restaurants, and shops, but the housing function majorly has continued in the inner citadel with the old residents. As for the current use of the outer castle continues for touristic purposes. Therefore, outer citadel zone was selected a case for this study since the majority of the buildings' main functions had been changed.

## 4 Soundscape Analysis in Ankara Citadel

### 4.1 Method of the Study

In this study, as a pilot examination, Ankara Citadel was visited in 2020 for preliminary assessment and sound recordings to compare and evaluate with the previous data that was gathered during the restoration in 2015. Soundwalk method was conducted with a focus group that consists of four people, who are studying on soundscape. Six listening points were determined on the area of outer citadel, which begins from the citadel gate and ends at the bastion (Figure 7).





Figure 6 – Soundwalk path and listening/recording points (satellite image was taken from google maps).

At each point, participants stopped and listened to the environment approximately 3 minutes by looking at the same direction, and they were asked to fill-in the questionnaire at each point, which was published in ISO/TS 12913-2:2018 [9]. Simultaneously, sound environment was recorded with Zoom H6 Handy Recorder at each point on the soundwalk path during the 3 minutes for future listening tests. Photographs at each listening point were also taken (Figure 8-13), and coded as P1 for listening point 1, P2 for listening point 2.



Figure 7 – P1, Citadel Gate



Figure 8 – P2, First Square



Figure 9 – P3, Passageway



Figure 10 – P4, Second Square



Figure 11 – P5, Archway

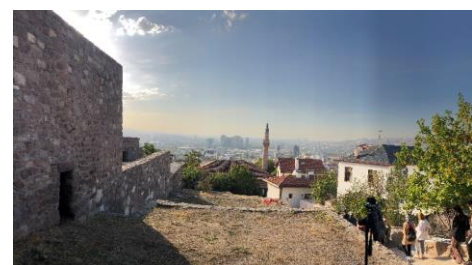


Figure 12 – P6, End of Bastion

In this study, only in-situ soundwalk has been used. In the future studies, other data gathering methods are planned to be used, which are collecting data from archives/records, interviews with local experts, laboratory experiments (Figure 2). The gathered data from the soundwalks have been analysed for sound source classification in accordance with the classification models that were presented in the literature. Furthermore, as proposed in the model, the case for this pilot study has been discussed under five aspects as, (1) soundmark, (2) function, (3) what to conserve, (4) appropriateness of soundscape to environment, (5) perception of users (according to perceived affective quality scale).

## 4.2 Results and Discussion

As a result of this pilot study, during and after restoration sound sources were identified by the focus group with the ‘sound source recognition’ and ‘sound source dominance’ scales of the questionnaire published in ISO 12912-2. Other scales of the questionnaire, which are ‘perceived affective quality’ and ‘appropriateness’ were not evaluated, since this study was a pilot study with limited number of participants. Analysis of sound sources were assessed into two stages. As the first stage, sound sources collected from six listening points in 2015 and 2020 with ‘sound source recognition’ scale of ISO 12913-2 questionnaire and categorized based on the Brown et. al.’s model [13], as highlighted in ISO 12913-2 [9]. Categorized sound sources collected in 2015 are presented in Table 1, and in Table 2 sounds are presented that were collected in 2020.

Table 1 – Sound sources during restoration in 2015.

<b>Sounds not generated by human activity</b>	<b>Sounds generated by human activity/facility</b>		
<b>Natural Sounds</b>	<b>Mechanical sounds</b>	<b>Human sounds (Voice)</b>	<b>Sounds from Domestic life</b>
<ul style="list-style-type: none"> <li>▪ Wind on the leaves/structures/buildings</li> <li>▪ Birds singing</li> <li>▪ Street dogs and cats</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction sound coming from on-site restoration work</li> <li>▪ HVAC systems on the restored buildings</li> <li>▪ Distant traffic (ambulance, horns)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Talking</li> <li>▪ Laughter</li> <li>▪ Walking (on unpaved and gravel road)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Baby’s cry</li> <li>▪ Hoover</li> <li>▪ Cutlery</li> </ul>

Table 2 – Sound sources after restoration in 2020.

<b>Sounds not generated by human activity</b>	<b>Sounds generated by human activity/facility</b>		
<b>Natural Sounds</b>	<b>Mechanical sounds</b>	<b>Human sounds (Voice and Instrument)</b>	<b>Sounds from Recreational activities</b>
<ul style="list-style-type: none"> <li>▪ Water feature</li> <li>▪ Birds singing</li> <li>▪ Flap of birds</li> <li>▪ Dog</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Siren</li> <li>▪ Car sound</li> <li>▪ Horn</li> <li>▪ Announcement</li> <li>▪ Siren</li> <li>▪ Car engine</li> <li>▪ Cell phone</li> <li>▪ Distant traffic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Goblet drum (Darbuka)</li> <li>▪ Singing children</li> <li>▪ Sounds of children</li> <li>▪ Whistle</li> <li>▪ Footstep</li> <li>▪ Talking</li> <li>▪ Stroller</li> <li>▪ Sounds of prayer calls</li> <li>▪ Child/baby crying</li> <li>▪ Peddler/Hawker shout</li> <li>▪ Clapping</li> </ul>	<ul style="list-style-type: none"> <li>▪ Music from stores</li> <li>▪ Pulling furniture</li> <li>▪ Cutlery</li> <li>▪ Load of goods</li> <li>▪ Shopping bag</li> <li>▪ Hand cart</li> </ul>

The categorization of the sound sources has an importance on soundscape evaluation for the second stage of this study, which is the ‘sound source dominance’ assessment, since the dominance scale published in ISO 12913-2 is rated based on the categories; traffic noise, other noise (construction, sirens, industry, loading goods), sounds from human beings, and natural sounds. In Table 3, sound sources are listed by sorting descending dominance level in six listening points. Since the buildings in outer citadel has been restored and gained a new function, the area lost its original function, where it had been used as a residential area for hundreds of years. Therefore, the original soundscape has been changed as well. The contradiction revealed for the sites, where have been restored, is to decide what to be conserved, or what sources are worth to



protect regarding cultural soundscapes, since it is not much possible to conserve original soundscape of outer citadel. It can be interpreted that with a new function of the outer citadel, the area is used more for touristic purposes, so the current sound sources are more appropriate to this adapted function but not incompatible with the historical environment. Therefore, re-functionalized historical sites with adaptive reuse approach arise new discussion points on cultural soundscape preservation and what sound sources to restore.

Table 3 – Sound source dominance at listening points.

Listening Points	P1: Citadel Gate	P2: First Square	P3: Passageway	P4: Second Square	P5: Archway	P6: End of Bastion
<b>Sound Sources in 2015 (during restoration)</b>	1. Construction sound coming from on-site restoration work 2. <i>Cars passing by</i>	1. Construction sound coming from on-site restoration work	1. <i>Distant construction sound</i> 2. <i>Baby's cry</i> 3. Hoover 4. Cutlery	1. Construction sound coming from on-site restoration work 2. Birds singing	1. Distant construction sound 2. Walking (on unpaved and gravel road)	1. Wind on the leaves/structures/buildings 2. Birds singing 3. <i>Distant traffic</i>
<b>Sound Sources in 2020 (after restoration)</b>	1. Goblet drum (Darbuka) 2. Singing children 3. Sounds of children 4. Whistle 5. <i>Cars passing by</i> 6. Footstep 7. Horn 8. Shopping bag 9. Talking 10. Announcement	1. Water feature 2. Talking 3. Music from stores 4. Sounds of children 5. Stroller 6. Pulling furniture 7. Cutlery	1. Talking 2. Stroller 3. Music from stores 4. Sounds of prayer calls 5. Birds singing 6. <i>Construction sound</i> 7. Load of goods 8. <i>Child/baby cry</i> 9. Flap of birds 10. Siren	1. Goblet drum (Darbuka) 2. Singing children 3. Music from stores 4. Talking 5. Footsteps 6. Peddler / Hawker shout 7. Flap of birds 8. Car engine 9. Load of goods 10. Hand cart 11. Shopping bag	1. Goblet drum (Darbuka) 2. Singing children 3. Talking 4. Distant traffic 5. Horn 6. Walking (on unpaved and gravel road) 7. Children/baby cry 8. Stroller 9. Construction sound 10. Cell phone ringing	1. Goblet drum (Darbuka) 2. Singing 3. Peddler / Hawker shout 4. Talking 5. Laughing 6. Children 7. Clapping 8. Cutlery 9. Footsteps 10. Dogs barking 11. <i>Distant traffic</i>

When the sound sources of 2020 are compared with the data gathered during the restoration, it is seen that the human and domestic sounds have increased after the restoration was finalised, while construction and mechanical sounds decreased. The identified similar sounds are shown in italic in Table 3. In 2015, during restorations, construction sound coming from on-site restoration work dominated P1-P5 that are located in the outer citadel area. Human sounds did not dominate the soundscape, because the site was not fully used by visitors or tourists due to ongoing restoration work. P6, which acts as a border between inner and outer citadel is dominated with wind on the leaves/structures/buildings, birds singing and distant traffic.

After restoration, soundwalk results have shown that, at all listening points, goblet drum and singing sounds were rather dominant, but this finding does not lead to the conclusion of determining the goblet drum sound as a heritage soundmark for this historical area. This dominant goblet drum sound is not a preserved or heritage sound but rather appears as an attraction to appeal tourists to the site and is a relatively new sound for this environment. Therefore, it can be argued that the goblet drum sound does not fully match with the function and the historical context of the environment, yet it is not an unpleasant or unwanted sound either. This can be seen as a good example for the change in the soundscape context for the re-functionalized historical sites with adaptive reuse approach. Furthermore, the human sounds which are talking, footsteps, child/baby shout or cry, peddler/hawker shout, which might be interpreted as the sounds of the new function of the outer citadel. However, for more reliable results, future studies are planned with larger sample sizes with the evaluation of perceptual evaluations of the users on site.

## 5 Conclusions

In this study, a methodological framework on data collection methods for the evaluation of cultural soundscapes has been proposed and a preliminary pilot study in Ankara Citadel case was conducted for the future studies to test the proposed methodological framework focusing on data gathering. As for the pilot

study, sound sources were identified, and dominance levels are assessed through conducting a soundwalk at the pre-identified listening points by using the scales published in ISO/TS 12913-2:2018. In this first phase of the study, sound sources are identified and listed according to their dominance in two different times, at 2015, during restoration and at 2020, after restoration. It was found that during restoration, the most dominant sound had been construction sound in all the listening points that had potentially affected the inhabitants and visitors in a negative way, as the construction sound due to restoration is not a part of that environment. The sound source identification and dominance scales are related to each other and needed to be evaluated as a whole, but they focus on different aspects. Therefore, the identified sound sources were categorized based on the dominance scale in order to evaluate the dominance ratings of the sound sources. Dominance levels of the sound sources are significant as they are important for determination of the soundmarks. However, identifying soundmarks of the case still needs further studies and comprehensive surveys and assessments as presented in the proposed model. For cultural soundscapes it is even more complicated because many of the re-functionalized historical sites with adaptive reuse have altered sound environments. Therefore, as future studies of this initial pilot study, other data gathering methods are planned to be used and listening tests that were recorded during the pilot study will be conducted with larger samples.

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