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# The Assessment of Soundscape as Intangible Heritage: Critical Approach in Understanding the Immaterial Qualities

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**Abstract.** Nowadays, the assessment of the cultural significance of cultural heritage has changed. The cultural heritage is not only seen as tangible heritage but also related to intangible heritage. This intangible heritage assessment requires a different assessment, which emphasises the value of the immaterial qualities in determining the authenticity of cultural heritage, especially in Asia. One of the immaterial qualities dimensions is related to sounds. The immaterial qualities of sound in cultural heritage can be studied through a soundscape approach that has developed rapidly in the last decade. Soundscape is an approach that examines human perceptions that are influenced by the acoustic environment in a context. Questions arise on the significance value of soundscape in preserving cultural heritage and how to formulate the methodology to assess those values? Those problems will be discussed through a systematic and comprehensive literature review. The result shows that the soundscape has important role to understand the immaterial qualities value of cultural heritage. Moreover, cultural heritage's value can be achieved through historical analysis, technical analysis, and social analysis. This is a new approach to understand the immaterial qualities through multisensory which has not been widely discussed in preservation of cultural heritage.

**Keywords**: *Cultural heritage; Cultural value; Intangible heritage; Immaterial qualities; Soundscape; Soundscape cultural value research methodology.*

## 1 Introduction

Discussions related to the preservation of cultural heritage was disparate, compared to the first initiation in 1931 through the Athens Charter. In the beginning, cultural heritage was understood to protect the monument from destruction. Nowadays, the shifting paradigm of preserving cultural heritage discourse can be seen in several aspects: (1) the objects of cultural heritage, (2)

the basis of the assessment of cultural heritage, (3) the value of cultural heritage, (4) the purpose for preserving the cultural heritage, and (5) the use of the senses in determining the value of cultural heritage.

The most significant contribution of this paradigm shift is the object of heritage from tangible to the recognition of intangible objects [1]. The preservation of the intangible cultural heritage cannot be equated with preserving the physical object of cultural heritage. Therefore, cultural heritage assessment is no longer based on preserving physical objects but on the values contained in them [2,3]. his value-based conservation continues to develop, where conservation in the European region emphasises historical, aesthetic, and technical values in the cultural heritage [4]. Whilst in the Asian region, the value of cultural heritage emphasizes the value of intangible qualities such as artistic expression, value, spirit, emotional impact, religious context, historical associations, sound, smell and taste, and the creative process [5]. These intangible qualities make conservation in the Asian region different from preserving cultural heritage in Europe.

However, not all of these immaterial qualities' values were explained on their significance to preserving cultural heritage, especially from a perception of sound. Therefore, this study uses a soundscape approach to explain the influence of sound in understanding the historic district. The soundscape approach studies human perception based on the perceived acoustic environment in a context [6]. The soundscape approach was originally an approach in the field of music and environmental acoustics but has rapidly expanded in the last decade to other fields: acoustics, architecture, environmental health, psychology, sociology, and urban science, requiring a holistic approach from all disciplines [7, 8, 9, 10]. Soundscape research in historic areas has not been widely developed, especially the research that examines the perception of the historic environment in the present and the past. This theoretical gap brings a great possibility to develop soundscape discourse related to the preservation of cultural heritage.

Based on the background described in the previous paragraph, this paper aims to discuss the importance of soundscape in preserving cultural heritage and methods that can be used to formulate the cultural value of soundscape in cultural heritage. This paper uses a systematic discussion of literature review. The structure of this paper is as follows: the next section will discuss the significance of soundscape on the preservation of cultural heritage, then followed by soundscape research methodology that can be done to obtain the cultural value of soundscape in cultural heritage and summarize with conclusions in the final sections.

## 2 The Significance of Soundscape on Preservation of Cultural Heritage

### 2.1 The Development of Heritage Discourse and Its Relation to Multisensory Perception

One aspect that is important in preserving cultural heritage discourse is related to the authenticity of the object. At the most basic level, 'authenticity' is an assessment of how authenticity reflects the society's values it represents [3, 11]. In the initial heritage discourse, the authenticity of cultural heritage objects was seen from the historical, aesthetic, and technical valuescontained in the physical objects. Therefore, the old paradigm of preserving cultural objects is often preserving, restoring, and reconstructing their original form.

The preservation of cultural heritage objects based on physical objects then changed massively after the convention in Nara. At this meeting, the experts agreed to broaden their views on the conservation practices from the existing preservation paradigm. Experts recognize the existence of cultural diversity that needs to be preserved to resist homogenization and globalization of the world. Diversity in cultures and heritage in our world, both tangible and intangible heritage objects, is an irreplaceable source of spiritual and intellectual richness for all humankind [12].

This meeting result has opened several new insights to enrich the preservation of cultural heritage. First, there is a diversity of cultural heritage objects representing the intellectual richness of humanity, and second, is the object of cultural heritage in the form of tangible and intangible objects, which also need to be preserved for the future. The world then recognises cultural diversity that needs to be respected at the 2001 convention [13]. Meanwhile, the recognition of intangible heritage as objects that need to be preserved was recognized by UNESCO in 2003. Objects in intangible heritage are traditions and oral expressions, including local languages, local performing arts, social practices, rituals and events, local knowledge and practices related to the environment, and traditional crafts [1].

In addition, the Nara Document on Authenticity brings changes to the conservation base. The practice of preserving cultural heritage has been carried out by concerning the preservation or restoration of the genuineness of physical objects, which has been emphasised since the preservation of cultural heritage discourse. However, with the recognition of intangible heritage objects, cultural preservation cannot solely emphasise the conservation of physical objects but needs to preserve the values coffined in the physical object. Currently, this paradigm is known as value-based conservation [2, 3, 14].

The physical objects of cultural heritage were initially valued as historical, technical, and aesthetic values of physical objects of cultural heritage. However, by recognizing the diversity of cultural heritage, it also indirectly acknowledges the diversity in the values contained in the cultural heritage. Mainly in the Asian region, where cultural heritage has a deeper meaning beyond its physical material object and becomes a part of everyday social life [15, 16, 17, 18].

Furthermore, the authenticity dimension for cultural heritage preservation in Asia has been listed in Hoi-An Protocols. According to the protocols, there are four dimensions of authenticity in Asia: location and settings, form, and design, use and functions, and immaterial qualities of cultural heritage [5]. From those dimensions, the immaterial qualities are the close dimensions to assess the intangible cultural heritage. Therefore, it has a significant role in assessing the authenticity of cultural heritage in Asia.

The immaterial qualities dimension of the authenticity of cultural heritage in Asia covered artistic expression, values, spirit, emotional impact, religious context, historical associations, sounds, smells, tastes, and creative process [5]. These immaterial qualities are something new, and not all of these aspects have been explained their significance on cultural heritage, especially related to multisensory: sound, smell, and tastes. The uses of multisensory are contradictory to the assessment of cultural heritage based on tangible objects that have been carried out, emphasising the visual aspect compared to other sensory aspects in determining the authenticity of cultural heritage [19].

Sensory changes in cultural heritage assessment are also supported by the thought of the beneficial preservation of cultural heritage. The focus of the preservation of cultural heritage that is carried out emphasises the preservation of the object, which provides the most significant benefit to the object per se but does not provide great benefits to humankind [20]. Therefore, the paradigm shift is that preservation no longer emphasises the preservation of cultural heritage objects but how the preservation conveys the good values of humankind in the past.

Understanding the value of information from the past towards humanity can be achieved by culminating people's experiences in the heritage area, called experienced-centred authenticity [20] or perceived authenticity [21, 22]. This perception or experience is based on the information obtained based on all the sensory in the human body [23, 24, 25]. Stimulus from each sensory will produce a meaningful perception that increases the understanding of cultural heritage authenticity [26, 27, 28, 29, 30, 31].

The perception of the place is developed on Merleau-Ponty's phenomenology of perception. Phenomenology of perception tries to put the essence of a thing or

object back into existence and understand humans and the world from reality. From a perception point of view, things or objects exist because of their relation to the surrounding environment. According to Merleau-Ponty, the sensation of the human body is experienced through the entire senses. He argues that a work of art, including conservation of historic district, is not a single thing but can change depending on the cognitive, physical, and social in a place and time [23, 25].

Based on the paradigm changes in the preservation of cultural heritage, the current cultural heritage discourse needs to consider the perceptions that arise from multisensory. Thus, the multisensory perception will lead to a better understanding of the authenticity of immaterial qualities that exist in the Asian region. This change will also place humans as the subject of the cultural heritage conservation process.

## 2.2 The Cultural Value of Soundscape of Cultural Heritage

The way to assess this multisensory perception is through a soundscape approach. The soundscape was initially defined as a sound identity in an area that needs to be considered to create the city more visible [32]. This understanding then changed, no longer emphasising the acoustic environment but more on the way the acoustic environment is accepted and understood by society [7]. Nowadays, the soundscape is understood as an acoustic environment that is accepted and understood by communities in a context [6].

Even though the soundscape initially discussed the field of music and the acoustic environment, but it rapidly emerged into other fields: acoustics, architecture, environmental health, psychology, sociology, and urban sciences, which needed holistic research from the field of science [7, 8, 9, 10]. The concept of soundscape differs from 'acoustic environment', whereas the acoustic environment is more related to a physical phenomenon, and the soundscape is more related to the perceptual construct of the sonic environment [6, 33, 34]. The acoustic environment is often measured by a sound pressure level that measures the level of loudness and is measured in units of decibels (dB), while the soundscape approach seeks the perceived human perceptual construct through the questionnaire and observation.

There are three major components in the soundscape that are interrelated: the context, the acoustic environment, and the perception of humans. The sound sources in the context will form an acoustic environment that differs from another context with different sound sources. This acoustic environment will stimuli human perception and provide a complete understanding of the environment.

Some monumental sites have unique soundscapes that deserve to be managed by their tourist and cultural value and enhance the visitors' overall impression. Perez-Martinez research found that there is a linear correlation of soundscape quality with the impression of the place. In his research, pleasant sounds are represented by natural sounds, which significantly improve the perceived quality of the environment, while the negative sounds come from humans [35]. Contrary to this, research in Istanbul finds that the soundscape of the place represents the local indigenous. The daily-life activity of the community in Istanbul with its remarkable sound becomes the soundmark of the place, which is its identity. Once the sound disappears, then the connectivity between the people and the context will fade away. Therefore, its urge to preserve the soundmark of the place to enhance the image of the place [36].

Another research confirms that the daily experience of the place is from a visual and multisensory aspect. Those multiple senses can enhance the feeling of authenticity of the place. There is a strong correlation between the soundscape quality and the perception of the place. Positive perception will increase the attachment of society to the place. The soundscape should represent the historical-cultural of the place, even though it can be differed along with time [37, 38, 39].

From the research above, the soundscape is more than just sound type and sound pressure level; it also has a deeper meaning within society. Often the same sound sources have different meanings in different places. The different meaning shows that there is an influence related to the prevailing culture in that place. Therefore, the sound is part of the existing culture, which needs to be preserved.

## 3 The Soundscape Research Methodology to Define the Cultural Value of Soundscape of Cultural Heritage

There are several research methodologies in soundscape research, depending on its acoustic environment. Soundscape research can be conducted in an in-situ environment, laboratory environment or recalled in memory related to the soundscape of the past. The in-situ environment can be assessed by soundwalk and behavioural observation. Laboratory acoustic environment conducted through reproduction, simulation, and composition. While the recalled in memory acoustic environment can be defined through an in-depth interview with the expert [9, 40]. The complete soundscape research method can be seen in figure 1.

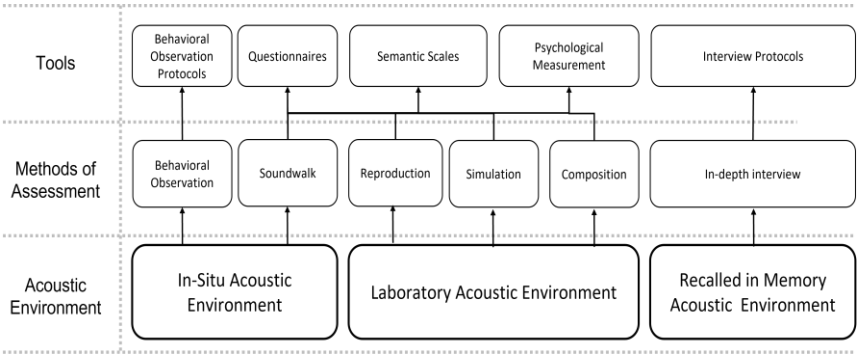


**Figure 1** Soundscape Research Methods.

Adopted and modified from Aletta et al. (2016) and Sudarsono et al. (2018)

To assess the cultural value of the soundscape of cultural heritage, Maffei (2016) developed a triangulation method of analysis, historical, physical, and social, known as PHS triangulation methods (cf. figure 2) [41]. This triangulation analysis is interrelated and needs to be done to answer the cultural values of the soundscape. The PHS method can recognise the cultural value of the soundscape in the historic district, although this method still requires more in-depth operational guidelines.

Maffei's PHS triangulation method has significant similarity with the soundscape research method previously developed by Aletta. Therefore, Aletta's research methods of soundscape can be adapted and modified to find the cultural value of the soundscape of cultural heritage developed by Maffei. Further sub-section will explain more detail on operational methods of PHS triangulation.

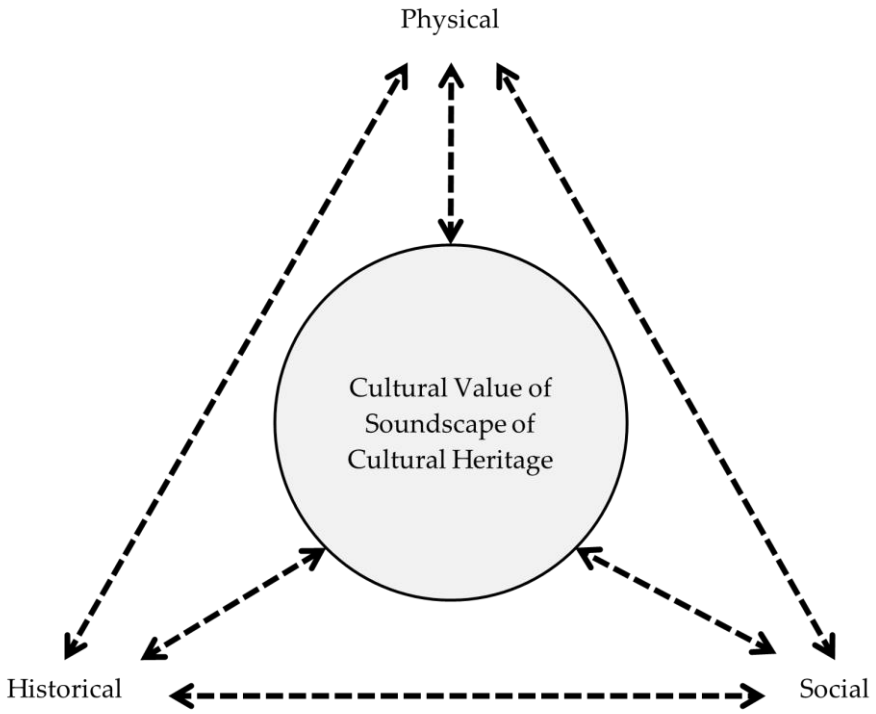


**Figure 2** PHS triangulation methods.

Adopted from Maffei (2016)

## 3.1 Historical Analysis

The historical analysis aims to investigate the evolution across the time of elements representing potential sound sources that could directly or indirectly influence the soundscape of the place. These methods are similar to those recalled in memory in Aletta's soundscape research models. The data of potential sound sources can be done through in-depth interviews with experts, although this method encountered problems for the long-forgotten acoustic environment beyond the lifespan of humans.

Experts who serve as sources for interviews need to be ensured that they are intimately acquainted with the history of the historic district and selected carefully. People who are active as conservationists of historical areas, government organizations that manage historical areas, and people who have lived and worked in these historical areas can be selected as resource persons from this in-depth interview.

It would be better if interview data were combined with data on potential sound sources through other sources, such as studying the written historical records and looking for visual recordings of the past, either in the form of photographs or existing video recordings. Audial recordings are usually rare, as the realization that audial are part of history has also emerged recently. This secondary data method can also be used to identify the acoustic environment at a much older period.

Sometimes the secondary data is not fully available, especially if the history of a place is not well documented. The availability of historical photos or video documents needs to be diligently sought because they are often in the personal archives of families or belonging to government agencies. The use of internet searches is beneficial to find data from these other sources.

As part of historical research, it is essential to pay attention to the district's history's synchronic and diachronic developments. The selected period is the period where a significant change in sound sources. Based on the research conducted, the dominant factors that influence the change in the sound source are changes in the function of the historic area and changes in transportation technology. Therefore, it is necessary to pay attention to the function's changes of the building of the historic area and the development of transportation technology in the area and its surroundings.

## 3.2 Physical Analysis

The physical analysis tries to measure the acoustic environment. This analysis can be done through direct in-situ measurement of sound pressure level. The acoustic environment's physical sound pressure level measurement can also be conducted by in-situ recording followed by laboratory reproduction and analysis.

However, this physical analysis was quite difficult to do for the acoustic environment in the past. One of which can be done was to reconstruct or compose the acoustic environment. To reconstruct this acoustic environment, it is necessary to find sound samples based on potential sound sources that have been identified in the historical analysis. A complete library of sound samples will help with this process, although they will need to be verified and agreed with the experts.

Then, the sound samples are put into the mixer, either digitally or manually, for the reconstruction or composition process. This reconstruction or composition of the acoustic environment can be done by the researcher, expert, or respondent. In this reconstruction process, respondents were visually stimulated by displaying historical records, photos, and videos which previously collected. Ideally, this

reconstruction process should be carried out in an anechoic chamber to achieve the high results sound composition that will match with the visual stimulus.

Based on the composition of this acoustic environment, it can be analysed which sound sources are the most identified sound sources by the respondents. Followed by analysing the sound pressure level of each sound source, which will determine whether the sound is a dominant sound or background sound from the historic areas. In addition, respondents can also determine the position of the sound sources.

## 3.3 Social Analysis

The main aim of the social analysis is to verify the role of the soundscape in the global perception of the place or event by local and not local communities. This study resembles a soundwalk study, except that the acoustic environment assessed is not an in-situ acoustic environment, but an acoustic environment produced through laboratory composition. This social analysis can be investigated through questionnaires and semantic scales, directly or online, to determine the perception of the historic district.

The result of the acoustic environment of the past, which has been generated from the reconstruction or composition process in the laboratory, can be used as a modality for investigating the perception of acoustic environment. It would be beneficial to be given several compositions because the compositions of the acoustic environment used are also the result of the respondent's visual perception of the past. Providing several acoustic compositions is important because different sound sources and sound pressure levels in the acoustic environment might lead to different perceptions. Conformity to visual stimuli also becomes essential.

The questionnaire to assess the perception of the historic acoustic environment is divided into open questions and semantic scales. Open questions can be used to explore identifiable and prominent voice sources in the past. These sound sources may be soundmark in the area, which needs to be represented to increase understanding of historical areas.

Semantic scales are used to get the respondents' perceptions widely on the composition of the acoustic environment in the past. This perception is determined through previously defined perceptual dimensions: eventful – uneventful, vibrant – monotonous, pleasant – annoying, calm – chaotic, appropriate – inappropriate [9, 42]. In addition, the acoustic environment also needs to assess whether the acoustic environment represents a historical or new acoustic environment.

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