

Article

The Historical Soundscape Analysis of Fatahillah Square, Jakarta

Michael Isnaeni Djimantoro ^{1,2}, Widjaja Martokusumo ^{1,*} , Heru W. Poerbo ¹ and R. Joko Sarwono ³

¹ Architectural Design Research Group, School of Architecture, Planning and Policy Development, Institut Teknologi Bandung, Bandung 40132, Indonesia; michaeldjim@gmail.com (M.I.D.); heru@ar.itb.ac.id (H.W.P.)

² Architecture Department, Faculty of Engineering, Bina Nusantara University, Jakarta 11480, Indonesia

³ Building Physics Research Group, Faculty of Industrial Technology, Institut Teknologi Bandung, Bandung 40132, Indonesia; jsarwono@tf.itb.ac.id

* Correspondence: wmart@ar.itb.ac.id; Tel.: +62-22-2504625

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Abstract: Understanding conceptions of the protection of cultural heritage continues to develop until now. Presently, urban historic places are not only comprehended as tangible but also include intangible dimensions. However, the conservation of cultural heritage dominantly still emphasises the visual sense more than any other senses. Thus, this paper addressed several questions on the role of human senses, the historic sonic environments, and the soundmarks of the past in examining a historical area. This paper aims to reveal the relation between sound sources and its predicted sonic environment in historic places over the time. The case study was Fatahillah Square, Jakarta, which has been documented from the 19th century until now. Some methods were carried out such as soundwalk, recalled in memory, and visual analysis. The results show that comprehensive study of multisensorial stimulus can increase a holistic understanding of historic places. Therefore, the protection of historic sites cannot only focus on the object per se, but also it must be considered to be a holistic entity. This research highlights new perspectives in analysing historical areas using combination of pictorial sources and sonic information.

Keywords: conservation; historic district; historic soundscape; Fatahillah Square; Jakarta

1. Introduction

Presently, the understanding of heritage has shifted compared to the time when the initial idea of conservation of cultural heritage was sparked through the 1931 Athens charter. The shift of understanding can be observed from the purpose and approach of conservation, the values contained therein, objects included in the heritage category, ways to do it, and the implementation process of conservation [1–3]. These changes may have eventually impacted on how to manage and use the cultural heritage of today and future's practical conditions.

Early development of conservation theory and practice was dominated by Western perspectives, where the protection of cultural heritage was focused on its physical fabrics and by an emphasis on visual senses. Therefore, the authenticity of cultural heritage has a strong relationship with the originality of the physical condition, and the conservation practice relates on how to preserve, maintain, and restore—sometimes rebuild—those objects. This earlier understanding and practice of conservation saved the cultural heritage *per se* but lacked in appreciation and attachment with surrounding environment and communities. Thus, the current discourse of conservation of cultural heritage tries to bring more benefits for humanity [3,4]. The authenticity is no longer based on the

physical value of the heritage fabric only but it involves human experiences especially when interacts with cultural heritage objects which is called perceived authenticity [5,6]. This experience of humans in urban areas—including historic places—can be assessed from all of the senses which generate the perception of the urban space [7,8].

According to Maffei, the cultural value of soundscape of cultural heritage can be assessed with Methodological Triangulation, namely physical analysis, historical analysis and social analysis [9]. This article highlights the historical analysis aiming to investigate the sound sources that could bring a direct or indirect influence on the soundscape of the past using in-depth interview with experts, soundwalk, and multimedia sources (e.g., pictorial sources). Based on this method, several questions then can be raised. To what extent does the role of other senses besides the visual sense play in increasing the appreciation of historic places? What was the sonic environment of the historic area like in the past? What kind of soundmarks, distinctive sounds or sounds that are closely related to the historical development of the area need to be preserved or reproduced in order to increase the appreciation of the historic area? This article aims to examine the sound sources over the period to predicted sonic environment in enriching the appreciation of the historic district.

2. Theoretical Discourse

Currently, discourse of heritage is not confined to a mere tangible object, but also the intangible dimensions of cultural heritage. Despite the static physical form, the background of this circumstances is determined through various forms of culture, such as dynamics of daily life. In relation to that, UNESCO recognises the diversity of cultural heritage which should be preserved for the future to come [10,11]. According to the UNESCO Convention for the Safeguarding of Intangible Cultural Heritage, the “intangible cultural heritage”, is manifested inter alia in the following domains: (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 [12].

In Eastern society, culture is valued beyond material realities [13,14]. Especially in Asia where the cultural values emphasise organic relationships, spiritual values, and meanings embedded in objects of cultural heritage that differentiate them with common conservation practices. In the term of assessment, the Asian Region considers immaterial qualities such as values, impressions, emotional impact, religious context, multisensorial, and creative process [15]. Whereas the assessment in the historic places involves multisensorial assessment such as the sound, smell, and taste.

In the general sense, human perception is formed through perceived multisensory qualities [7]. Previous research on soundscapes in historic urban places discovered that the engagement of heritage sites has always been dominantly based on the visual sense and it has less consideration of the sonic environment [16,17]. This situation leads to a problem, which is a lack of public understanding of historical values contained and attributed in the area in which the sonic element is closely related to human existence and community [18,19]. This also becomes an important concern, especially in historic places that built their environment for cultural heritage, since the sonic element cannot be solely described and appreciated using mono-sensory which exclusively based on visuals. Such an approach now becomes a common alternative to better and comprehensively understand specific urban areas [20]. Thus, it is quintessentially critical to examine the nexus between visual character and the sonic environment to understand historic places [21] and this can be done by using soundscape.

Soundscaping is a study that looks for a relationship between sound perception and the context of the surrounding environment [22,23]. Considered to be a new approach in understanding the formation of an urban area, the concept of ‘soundscape’ is now widely used in disciplines outside its original acoustic-based roots -such as architecture, environmental health, sociology, and urban studies. All of these disciplines have one thing in common, i.e., they deal with how humans experience and attempt to establish relationships between the physical environment and the human responding to it [18,24,25].

Soundscape research can be carried out at three acoustic environments, namely in situ at locations, by laboratory simulations, and recalled in memory—especially for digging up memories of the past. Each acoustic environment has its research protocol. The in-situ acoustic environment can be assessed by soundwalk and technical recording, the laboratory acoustic environment can use recording, simulation or reproduction technique, while the recalled in memory uses in-depth interviews with the experts [26].

Regarding the soundscape of cultural heritage, Maffei introduces the triangulation methodology to assess the cultural value of soundscape of cultural heritage (cf. Figure 1). There are three dimensions that need to be analysed. Those are the physical analysis, the historical analysis, and the social analysis. The physical analysis is required to measure on-site acoustic or to reconstruct virtually acoustic. The acoustic measurements are performed using several techniques such as soundwalks, sound recordings, and other technical methods. The virtual acoustic reconstruction technique can be used to auralise sounds of the past. Meanwhile, the historical analysis can be assessed through in-depth interviews with experts and various multimedia sources (e.g., pictorial sources). Furthermore, the historical analysis aims to identify the elements representing the potential sound sources that could have a direct or indirect influence on the sonic environment of the past. The social analysis is used to verify the role of the soundscape in human perception [9]. The sound source is then classified by the standardisation of sound source in urban environment [27–29]

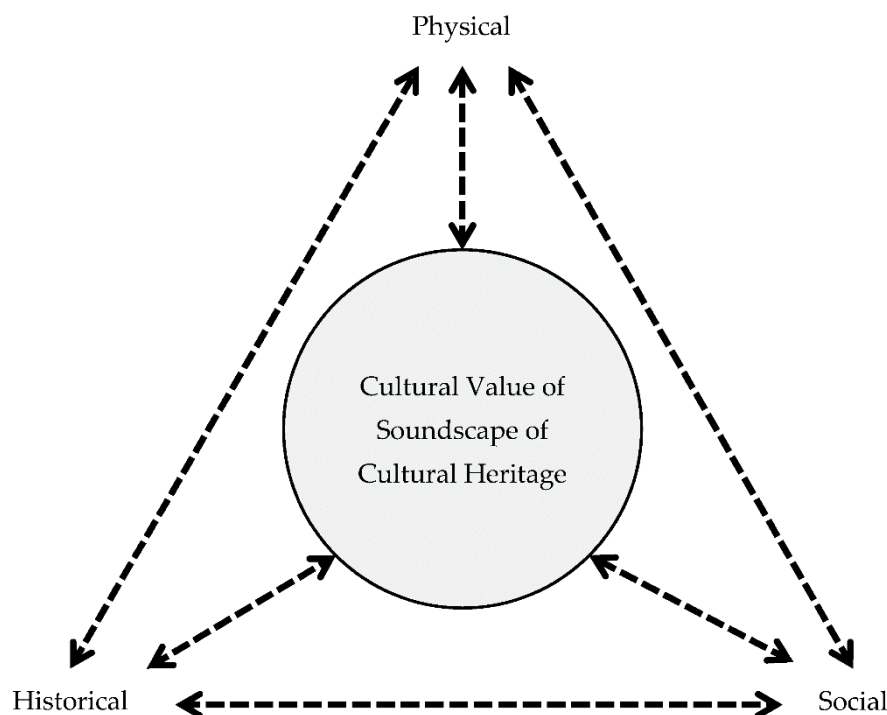


Figure 1. The Methodological Triangulation. Source: Redrawn after Maffei (2016).

3. Methods

The methods in this research were modified from Maffei's Triangulation Methodology. (cf. Figure 1). Since the observation timeline in this research has a wide range of periods, several methods for collecting data were carried out. The current condition is assessed by soundwalk. The sonic environment in 1970s was explored by interviews with experts and visual analysis of pictorial sources. In addition, the sonic environment in the 1880s and 1920s was visually analysed. Figure 2 summarises the research periods and the conducted research methods.

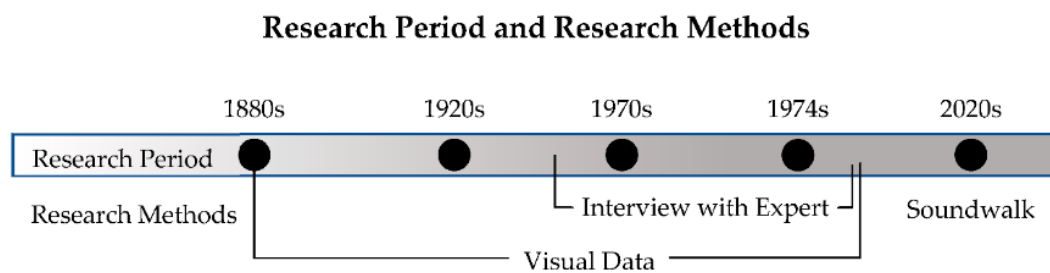


Figure 2. Research Period and Research Methods.

The in situ soundwalk method for identifying the acoustic environment and its component is the most frequent methods applied to collect data. Soundwalk is carried out by implementing a protocol that has been widely discussed. Participants walked in silent along the route to evaluate the perceptual of visual, the perceived sound, and other conditions of the environment with their own viewpoints [23,29–31].

The in situ soundwalk research was conducted during weekdays and weekends in order to get a complete picture of the condition in the historic district. The weather condition due the soundwalks was sunny. The walks adopted and expanded the online questionnaire with general questions, open questions, and semantic differential scales [32,33]. General questions asked about participant background: gender, age, and education. The open questions tried to identify visual elements and audial elements from the respondent. The seven points semantic differential scales assessed the perceived affective with scale one to seven which explored the respondent perception related to the general descriptors, visual descriptors, audial descriptors and thermoception descriptors. Forty-three respondents (60% male and 40% female) from the architectural students (ages 17 to 21) participated in the soundwalk. The soundwalk was organised in three areas of Old Town of Jakarta as shown in Figure 3. However, in this paper, merely discuss the Fatahillah Square soundwalk result.

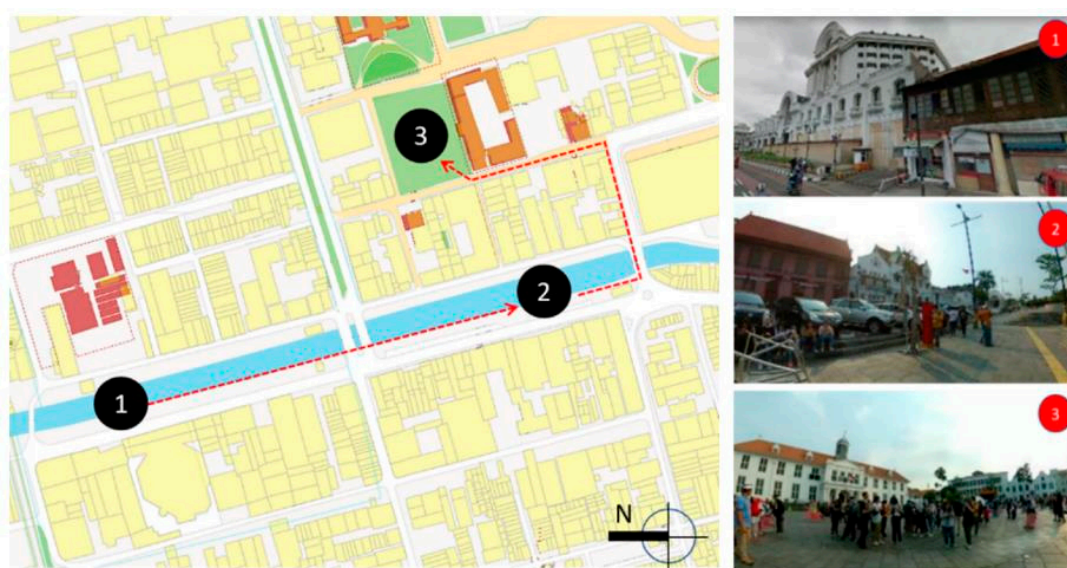


Figure 3. The route of soundwalk in Old Town of Jakarta. The location of Soundwalk assessment: (1) North Kali Besar (2) South Kali Besar (3) Fatahillah Square.

Semi-structured interviews with the experts were conducted with several questions to explore the conditions and historical realities occurred in that era. The experts were selected carefully according to their professional backgrounds. Since Fatahillah Square is not a residential district, the protocol of the interview [29] must be modified. The chosen expert represents the archaeologist, an architect and people who had direct experiences in the area. These experts were people who know deeply,

have direct experiences, and pay attention to the conditions of the research location at that time. The interview addressed the expert's professional background, the sonic environment, the identified sound source, the character of the sound and their feeling.

For periods of 1880s and 1920s, visual analysis of representative pictures of certain areas purposively be implemented in order to bring more insights on what the case looked like. Observation of the place through pictorial sources identified the sound source elements of the past. This pictorial investigation identified the classification of sound sources of urban areas [27–29]. The analysis also highlighted the change of urban morphology, and the various possible activities of the area. The pictorials analysis was complemented with historical records from many sources to predict the sonic environment of the past. Visual data was collected from several sources such as “Digital Collection Leiden University” [34], Merrillees’ Greetings from Jakarta: Postcards of a Capital 1900–1950 [35], Heuken’s Historical Sites of Jakarta [36], and private collections of the experts.

4. The Development Period of Fatahillah Square

Jakarta—the capital city of Indonesia—has a long history. According to Heuken, its history can be traced back to the 14th century when this area was called Sunda Kalapa—a trading port under the Pajajaran kingdom [35,36]. This area began to be occupied by the Dutch East India Company in 1619, by establishing a trading office in the Dutch India, which later became the fortress of Batavia. Because of environmental degradation, the walled city of Batavia then was demolished, and the city developed linearly to the south to become the new centre of the Dutch colonial government in Dutch East India until 1942. The name Batavia was later changed to Jakarta during the Japanese occupation and remains to this day.

Morphologically, Old Town Jakarta was influenced by the structure of typical Dutch canal city and has had a character of grid town. The grid structure was shaped by the canals and their promenades, and Fatahillah square (stadhuisplein) was one of the main open spaces (cf. Figure 4). Even after the canals had been transformed into streets in the beginning of 19th century, these distinctive urban elements and the whole grid-structure of the area can still be recognised today [2] as represented in Figure 5.

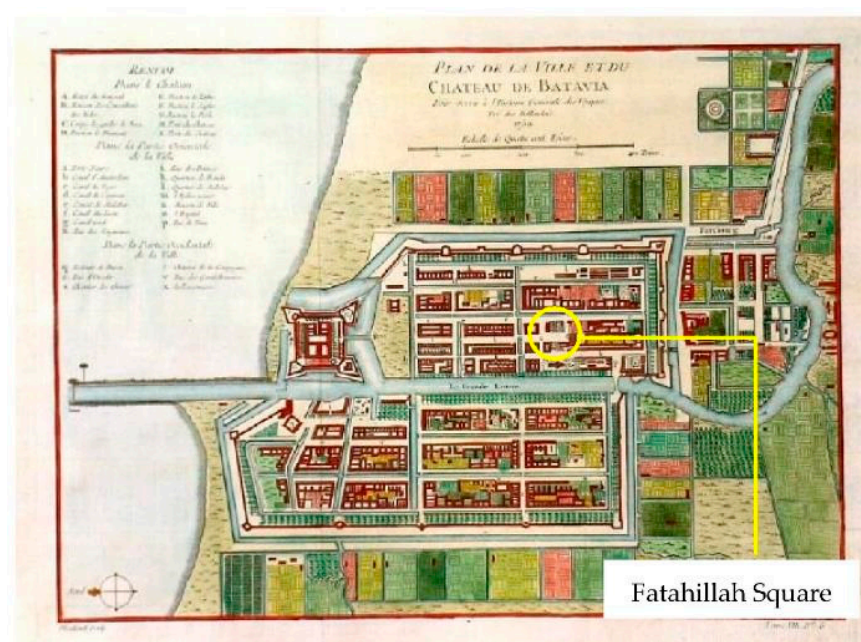


Figure 4. Map of Batavia in 1744. The city of Batavia shaped in grid urban morphology with canals as transportation mode and thick wall on outer boundary. Source: Collection of National Library of Indonesia.

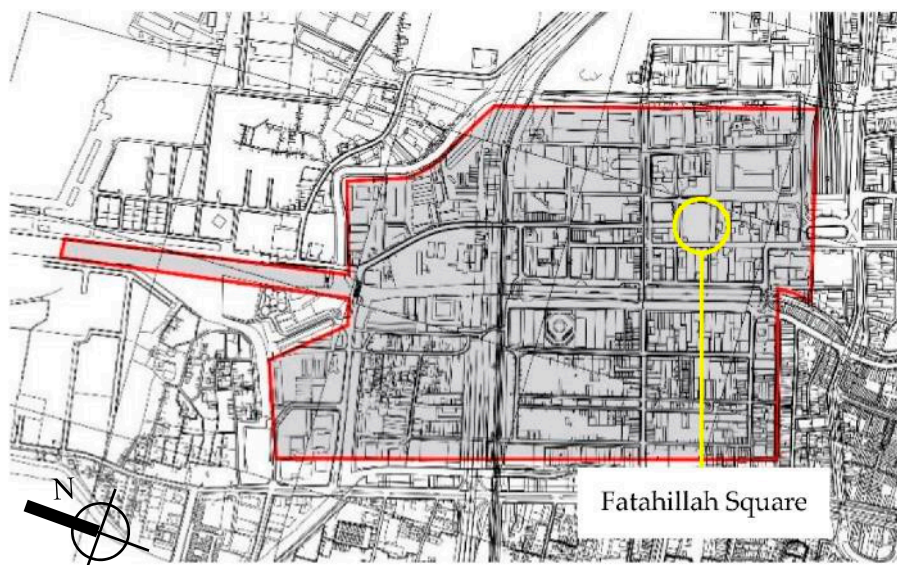


Figure 5. The map of Old Town of Jakarta in 2020. The red line is the wall of the city in the past.

The Fatahillah Square is an important area in the core area of the Old Town Jakarta. As part of the main building at the square, the former Stadhuis de Batavia had been revitalised in the beginning of 1970s, and it has served as Jakarta History Museum since 1974. For decades, the Fatahillah Square has become a popular area for the people of Jakarta as a place to gather and socialise. Some of important landmark buildings at its surrounding have also been revitalised and adaptive reused to museums, café, and restaurants (cf. Figure 6). Since the 2000s, efforts on conservation have mainly been focused on the public space, so that the importance of the cultural heritage can eventually be appreciated. As such the awareness toward protection the cultural patrimony can be enhanced and supported.

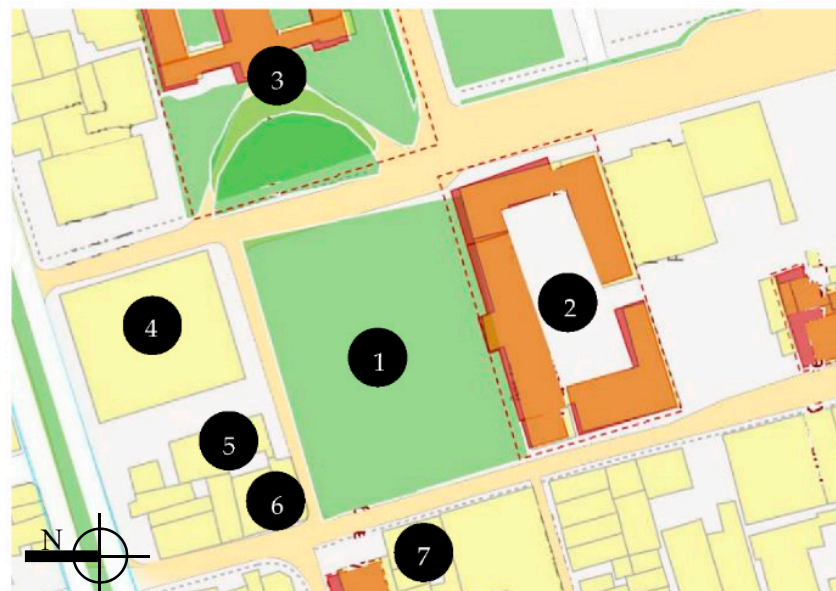


Figure 6. The area of Fatahillah Square with the surrounding heritage building. (1) The Fatahillah Square. (2) Jakarta History Museum. (3) Museum of Fine Arts and Ceramics. (4) Post Office. (5) Jasindo Building. (6) Café Batavia. (7) Wayang Museum. Source: Collection of Jakarta Satu, 2020.

Figure 7 shows the historical development timeline of Jakarta, and marks important interventions and historic events or experiences in the Old Town of Jakarta. Based on the historical timeline, this research on the sonic environment of the past is limited to some periods. The stages are divided

as follows: the first was the period of the 1880s, shortly before the steam engine tram was operated in 1883. Second, the period of 1920s, when the area became the business centre. The third period to be observed was the 1970s, when the Fatahillah Square was misused as a bus terminal. The fourth was post-revitalisation period in 1974, and the last period is the current condition. These periods are chosen in order to observe and determine the sonic environment occurred at Fatahillah Square.

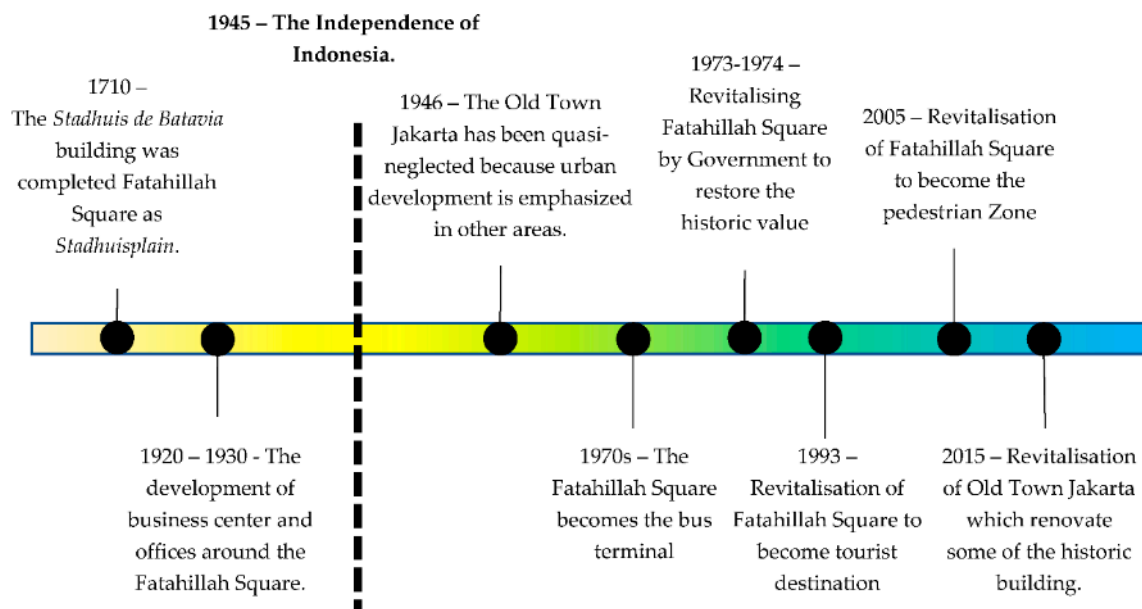


Figure 7. Historical Development Timeline of Fatahillah Square.

5. Results

5.1. Fatahillah Square in Early 1880s

The first period to be looked at in depth is the period of early 1880s, because the steam tram engine began to operate in 1883, which provided a different sonic environment [35,37]. In this early period, the neighbourhood around the *Stadhuis de Batavia* was still characterised with a low-rise building. The former *Stadhuis de Batavia* building, which remains to this day the Museum Fatahillah, was the third city hall building as a placement of the previous ones. This building was inaugurated in 1710 and was used as a government and court building in Batavia [36].

Figures 8 and 9 portray the Fatahillah Square in the 1880s period. The surrounding area of the *Stadhuis de Batavia* was still an open space. Thus, it was predicted that many natural sounds would be heard. The most widely used mode of transportation was the horse-drawn carriage which had an impact on the sonic environment of the area. Based on the historical records, the memorable soundmark was the sound of the bell at the top of the *Stadhuis de Batavia* building—similar to a church-bell sound. This bell was used to call the residents to watch the executions of the death penalty for those who violated the regulations in Batavia [36].

There are several categories of sound that were expected to be heard on that period. First, the sound of nature—e.g., the rustling of leaves in the wind and birds. Second, the sound of transportations which originated from horse-drawn carriages, both from the sound of horseshoes and the wooden wheels rolling on the ground. Another sound classification was the human voice—people chatting in the government offices and knocking of wood when the trial took places. It was also predicted that occasional groaning sounds would also be heard, because this building also served as a prison equipped with torture chambers for extracting confession from the defendants. Given the surrounding circumstances, the sonic environment in Fatahillah Square was considered very quiet and scary at that time.



Figure 8. Stadhuis de Batavia from the North in 1880. Identified sound source: (a) trees as a source of natural sounds. (b) Horse-drawn carriage. Source: Leiden University Digital Collections.



Figure 9. Stadhuis de Batavia and its Stadhuisplein in 1880. Identified sound source: (a) the government officers. Source: Greetings from Jakarta: Postcards of a Capital 1900–1950.

5.2. Fatahillah Square in 1920s

This 1920s period was an important period of Dutch colonial rule in Dutch India (the former of Indonesia). At that time, Batavia was already known as one of the political and economic centres in Southeast Asia. As previously mentioned, the city of Batavia was expanded towards the South, after the demolition of the fortification wall, due to an environmental decline. Following this, government centre in Dutch India was moved to *Weltevreden* (now: Lapangan Banteng) and the *Stadhuis de Batavia* building was used as a provincial office for West Java Province [36]. Thus, the Old Town of Jakarta was then dominated with business activities.

Figure 10 is taken from the *Stadhuis de Batavia* building heading to the North in around 1930s [35]. A picture shows the tram crossing Fatahillah Square (cf. Figures 10 and 11). At this period, there were five tram lines in Batavia, but only two tram lines crossed the Fatahillah Square, with approximately had 10 min interval [37]. There were several buildings that were built around the Fatahillah Square area to form the urban square. The three-storey building that was completed in 1920 was used as the office building for Netherlands Lloyd Insurance. The building on the right corner is the Central Post Office which was completed in 1928 [35]. The construction of these offices had triggered the emergence of human voice from office activities. Additionally, the construction of these mid-rise buildings had changed the sonic environment because the produced sound reflection was different from the previous period when the surrounding area was still characterised by one-storey buildings.

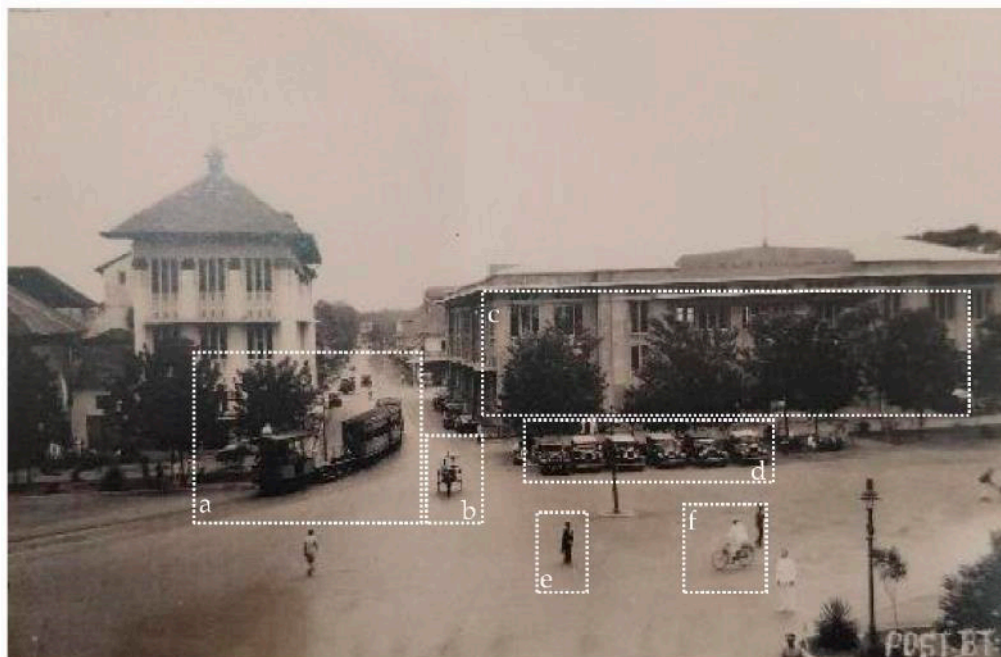


Figure 10. Fatahillah Square heading to North in 1930. Identified sound sources: (a) tram. (b) Horse-drawn carriage. (c) trees as natural sound. (d). vehicles. (e). Human voice. (f) a bicycle. Source: Greetings from Jakarta: Postcards of a Capital 1900–1950.

Figure 11 shows the activities of the people passing by in uniform due to the business district that had been built in the surrounding area. There were also several cars parked under shady trees, which may be owned by government officials or surrounding offices.

There were several classifications of the sound sources that made up the sonic environment of the area. There were the sounds of nature i.e., the sound of wind on the leaves and it was predicted that there were also bird sounds in the trees. The transportation sound came from the tram i.e., the engine and the bell, which was similar to a cow-bell sound, the vehicles—the mufflers and the horns, the horse-drawn carriages—from the sound of horseshoes and the wheels on the ground,

and the bicycles—the sound of the wheels spinning on the ground, the gears, and the bicycle bells. Based on interviews with people who had direct experiences of the last operation of the trams in 1960s, the sounds that came from the tram were the sound of the tram engine and also tram bell—similar to the sound of a cow-bell—to signals the rickshaws (locally: *becak*), pedestrians, and other vehicles to stop and give way to the tram. Because the tram line was still mixed with other circulation lines, signals were necessary to avoid accidents. The human sound came from the people talking and the sound of office activities.



Figure 11. The situation of Stadhuis de Batavia in 1936. Identified sound sources: (a) vehicles (b) humans (c) tram. Source: Leiden University Digital Collections.

To conclude, the atmosphere in this period was estimated to be quite busy and active, like a typical urbanised area, due to offices and business area around the area.

5.3. Fatahillah Square in 1970s

Along with the independence of Indonesia in 1945, the new government tried to show the superiority as a newly independent country by building several superstructure developments. Most of those buildings were erected in the centre of the new expanded area of the city, causing the historic district to be quasi-neglected. At the same time, the usage of trams that were connecting Batavia with new development in the South had also been replaced by buses and minibuses in 1964 due to political reason. This led to the misused of the Fatahillah Square as a bus terminal in the North of Jakarta.

As seen in Figure 12, the ground surface of the Fatahillah Square area was covered with hardened soil. In the middle of the square was an area for microbus transportation, and the Northern side of the square was used for the larger bus stop. While large buses were used for long distances, the minibuses *oplet* were used for short-medium trips. The terminology *oplet* was named after the brand Opel, which was colloquially adapted to the local dialect.



Figure 12. The situation of Fatahillah Square as the bus terminal in 1971. Identified sound sources: (a) Microbuses (b) Buses (c) human. Source: Collection of Tropenmuseum.

Figure 13 shows the activities supported around the terminal. There was a pool of rickshaws which served as short-distance transportation means, and street hawkers with their carts of food and drinks. Several buildings at the square, such as the Jasindo—an insurance company—building and the post office building are still used until now. Meanwhile, Figure 14 shows the buildings around Fatahillah Square that were used as commercial buildings and museums.

The area of Old Town Jakarta was already a hub of commercial and business district in the early of 1970s. With the population of ca. 4.5 million people, Jakarta was considered to be a city with high urbanisation rate [38]. Based on in-depth interviews with an archeologist and an architect, Fatahillah Square was already very busy during that period. The identified sound sources came from buses and microbuses—especially the very distinctive trumpet sound from microbuses. In addition, the sound of vehicles also came from private vehicles and goods transportation, considering that there were offices and warehouses around the area. From the sound classification of the human voice, the sound source came from the men shouting off the designations of the bus routes, activities from street hawkers, and workers' sound from the offices around Fatahillah Square. All these voices then overlapped with an amplified sound of the Malay Orchestra performed by the locals. Therefore, it can be concluded that in this period, the sound environment was already very busy, frenetic, and to a greater extent was considered lively. With these conditions—the usage of Fatahillah Square as a bus terminal and the noisy environment—caused the character of the area to be similar to an ordinary bus terminal

in several other urban areas, which did not appreciate the important historical values contained in this area.



Figure 13. The street hawkers, food stalls and rickshaws at the Fatahillah Square. Identified sound sources: (a) rickshaws (b) street hawkers. Source: Eugene Cosserat-Flickr.



Figure 14. Daily activities at the surrounding of Jakarta History Museum in 1971. Identified sound sources: (a) a bus (b) vehicles (c) rickshaws (d) loading-unloading materials. Source: Collection of Tropenmuseum.

5.4. Fatahillah Square–Post-Revitalisation of 1974

In the beginning of 1973, the first conservation programme had been started and initiated by the municipality. Martokusumo eloquently explained that the heritage management adopted the western-based concept of preservation district [39,40]. The term preservation itself dealt with all efforts of maintaining all important old buildings in their existing state [41].

Due to the decline of activities around the Fatahillah Square after independence, and became the terminal in previous period, revitalisation was carried out in the period of 1973–1974 by the Governor of Jakarta Ali Sadikin to restore the image of the historic district in particular [2]. He made major renovations in this area. The surface of Fatahillah Square was replaced by natural stone pavement and its perimeter was surrounded by chain fences, preventing vehicles from entering the area (cf. Figure 15). Meanwhile at that time vehicles were still allowed to go around the Fatahillah Square. The visible building was the Central Post Office building, with several vehicles parked in front of the building.



Figure 15. The situation of Central Post Office buildings at Fatahillah Square in 1980s. Identified sound sources: (a) humans (b) vehicles (c) road line with bricks (d) the square with natural stone. Source: Private Collection of Attahiyyat.

The revitalisation project in this period also reconstructed the water fountain in the middle of the square, which was the source of water for the residents in the past [36]. Additionally, during this period, the *Stadhuis de Batavia* building began to be revitalised and used as the Jakarta History Museum. The atmosphere in this area was calmer compared to the previous period even though the office building and the Central Post Office were still operating. As shown in Figure 16, there were many newly planted trees. Compared to the quiet conditions in previous period, it was predicted that in this area there were many sounds of rustling leaves blown by the wind and the sound of birds. The condition of the area was also open, where motorised vehicles could still pass in the area, therefore, it was expected that noise arose from motorised vehicles, although it had a low intensity.

This condition brought new hope for a better appreciation of the historic district, even though the revitalisation was implemented in form of beautification of the area and the buildings. With the existence of Fatahillah Square, which was off limit to vehicles and a calmer atmosphere, it allowed the public to enjoy the *Stadhuis de Batavia* and other cultural heritage buildings visually.

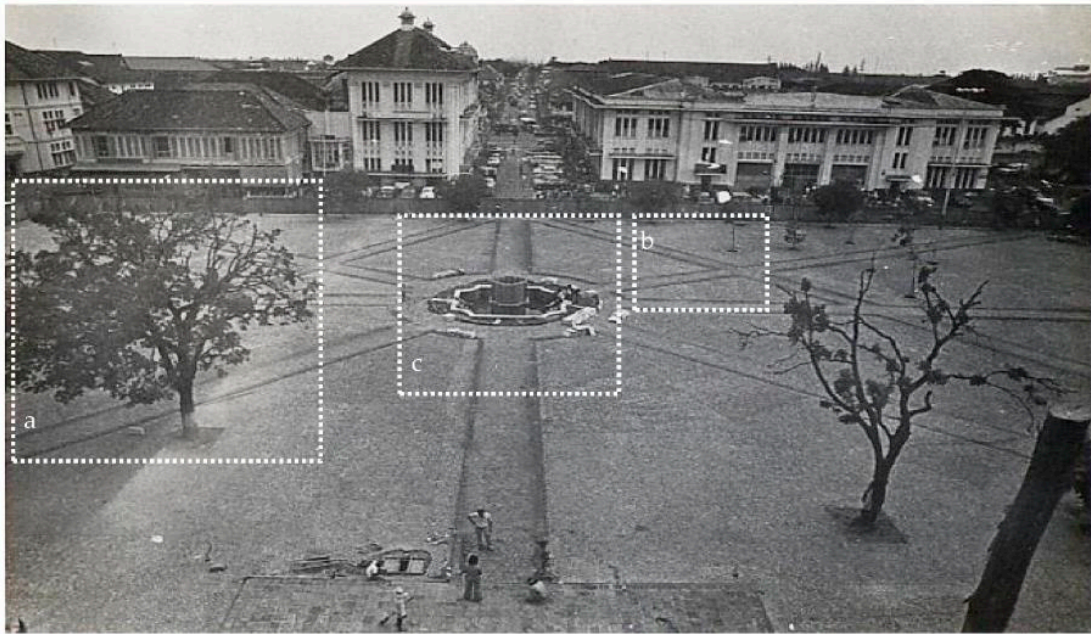


Figure 16. The reconstruction of Water Fountain in the centre of Fatahillah Square. Identified sound sources: (a) the tree (b) natural stone pavement (c) water fountain. Source: Private Collection of Attahiyyat.

5.5. Fatahillah Square in the Current Condition

The current condition is the result of the several revitalisation programme in Old Town of Jakarta, which had been carried out in stages from the period of 1990s until 2010. In 2006 the revitalisation programme of Jakarta waterfront areas was heralded as one of the priorities for the urban (heritage) development schemes in Jakarta. Following this, in the core area of Old Town Jakarta, the Town Planning Office of Jakarta prepared a pedestrianisation programme for Fatahillah Square that was implemented in the period of 2006–2008. The pedestrian walkways were part of Jakarta’s Macro Transportation Plan and the Spatial Plan of Jakarta in 2010 [2]. It was argued that pedestrianisation of the area is an important key in supporting the economic and cultural activities proposed (revitalisation efforts). Through such activities, new dimensions of appreciation towards the heritage sites and conservation practices was also established. Since then, this area has been designated specifically for the pedestrian zone, therefore private vehicles are not allowed to enter this area as shown in Figure 17.



Figure 17. Jakarta History Museum and Fatahillah Square in 2017.

Presently, the conditions of Fatahillah Square are significantly different on weekdays and weekends. On weekdays, this area tends to be empty from visitors, especially when the temperature is very hot. There have been a significant changes in Fatahillah Square, whereby the existing trees were cut down in early of 2017 (cf. Figure 18). Meanwhile, at the weekend evenings, this area becomes very crowded, where many local communities, street hawkers and street artists gathers there. In addition, supported by the private sector, the management unit of Old Town Jakarta initiates musical performances to attract visitors and to promote the historic district. Despite of the crowds at the weekends, such events has resulted in the coming of many street hawkers and street arts which also enliven the situation in the Fatahillah Square.



Figure 18. Trees in Fatahillah Square in 2016. Source: Private Collections of Attahiyyat.

Figure 19 shows the condition of Fatahillah Square on a weekend afternoon, where a lot of people gathered with their groups. In the distance, there were tents that were used as stage for music performance. The sound source that can be identified by the respondents were human voices and activities (talking, laughing, screaming, etc.), non-motorized transport (bicycle and its bell), and amplified music with a loud volume (cf. Figure 20). Based on data collected by semantic differential scales, the average comfort level of respondents in the Fatahillah Square area at the weekends was 4.61 on a scale of 7. The level of crowd at weekends also did not increase the perceived value of being a historical district either, with an average rating of 5.07 out of a maximum scale of 7.

Figure 21 illustrate the condition of Fatahillah Square at noon on a weekday. Based on the conducted soundwalk, the respondents felt a higher level of comfort with an average of 5.67 on a scale of 7. This quieter situation supports the level of appreciation of respondents to the historical aspect in the area by an average of 5.80 out of 7 scales. The majority of respondents' complaints were more related to the area's high temperature. Most of the respondents identify the sounds come from human voices and activities such as talking, laughing, screaming, etc., and the sound of bells from *ontel* bicycles. There was some background music. This quieter condition supports the respondents to listen to sounds more closely, such as the flapping of bird wings and also when the wind blows through the leaves, which could not be heard when the atmosphere was crowded (cf. Figure 22).



Figure 19. The condition of Fatahillah Square on weekends. Identified sound source in the picture: (a) human voice (b) a bicycle (c) a music stage.

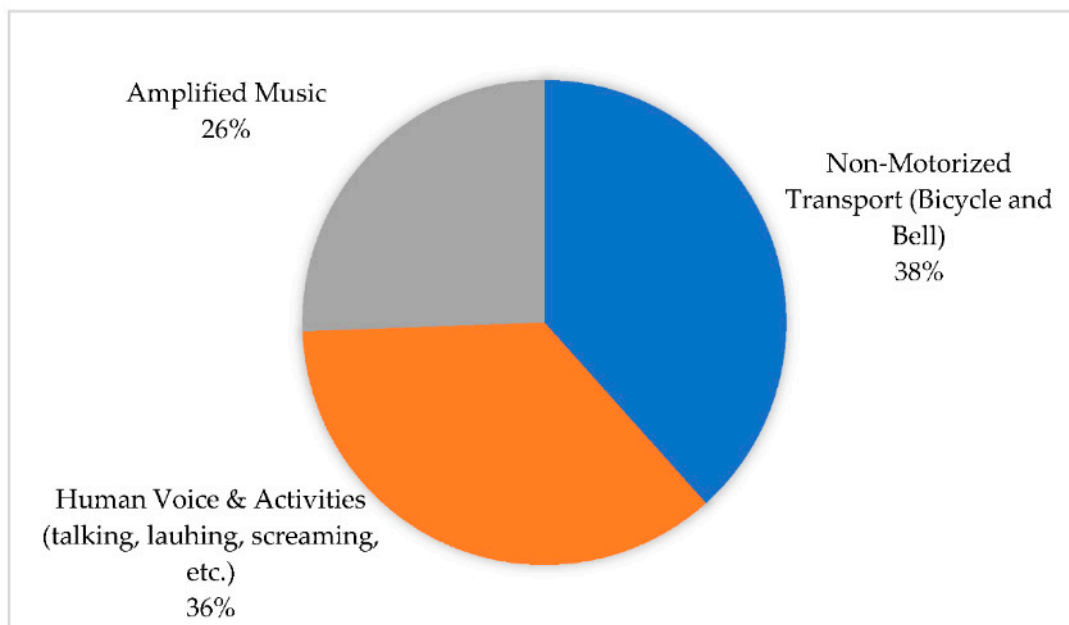


Figure 20. The classification of identified sound sources on the weekends.



Figure 21. Portraits the condition of Fatahillah Square on weekday. Identified sound sources in the picture: (a) human voice (b) bicycle.

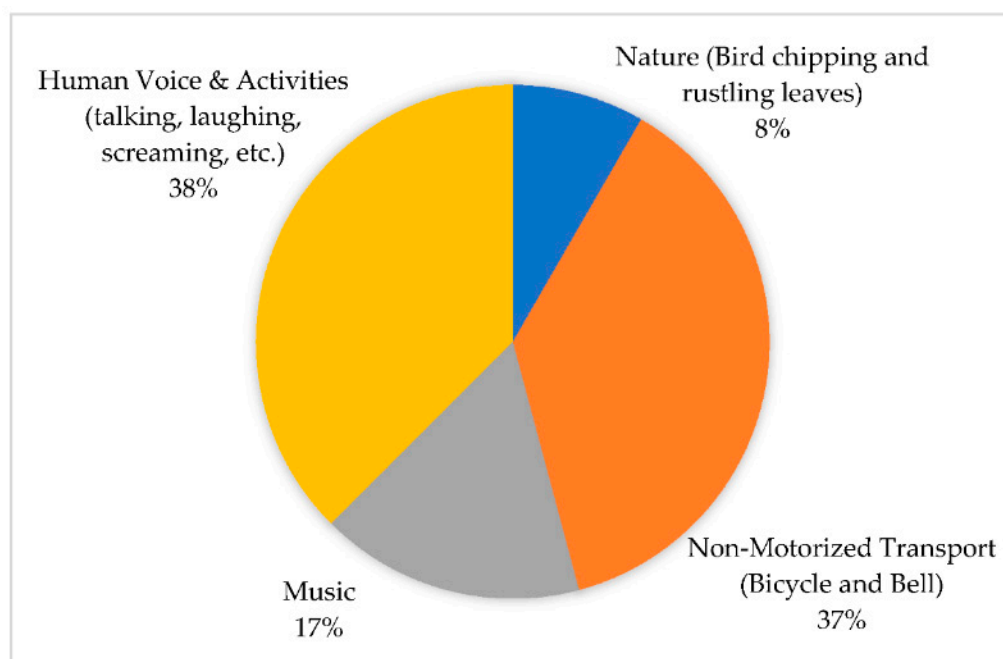


Figure 22. The classification of identified sound sources on Weekdays.

6. Discussion

Based on the results of the research and to conclude, sound sources and their predicted sonic environment in each period are described in Table 1. The influence of sonic environment on historic districts are the morphological setting changes of the area, the urban land-use of the area, and urban dynamics, especially from transportation mode changes. These morphological development and physical changes of surface material of the Fatahillah Square and construction of new buildings around the area have significant influences and impacts to the sonic environment in historic areas. The urban land-use of the area in accommodating certain activities will generate various kinds of human sounds. In addition, the continuous development of transportation in the area—starting from horse-drawn carriages to developing trams, private vehicles, *oplets*, and buses—will change the sonic environment

significantly. Therefore, the management of historic places needs to consider the noise disturbance caused by the vehicles, which similar to the research result proposed by Montazerolhodjah et al. [16].

Table 1. The classification of sound sources in Fatahillah Square over the periods.

Sound Source Categories	1880s	1920s	1970s	1974s	2020s	
					Weekdays	Weekends
Transportation	Horse-drawn carriage.	Tram, Horse-drawn carriage, bicycle, vehicles.	Buses, Microbuses, Vehicles, Rickshaws.	Vehicles.	Bicycles.	Bicycles.
Human	Court Activity, Government Activity, Human Voice, Groaning sound.	Human voice, Office activities.	Human Voices, Human Singing, Office activities Street Hawkers.	Human Voices, Human activities, footsteps.	Music, Human voices.	Amplified Music, Human Voices.
Electromagnetic Social Communal	Church bell.	Constructions.			Bells.	Bells.
Nature	Rustling leaves, wind, birds.	Rustling leaves, wind, birds.		Rustling leaves, wind, birds.	Chipping birds, rustling leaves, wind.	
Predicted Sonic Environment	Quiet	Quite busy and Active	Crowded	Calm	Calm/Quite	Crowded

There are several identified soundmarks in Fatahillah Square in the past. The first was the church-bell sound from the period of 1880s, this sound created the negative perception of the places. The second was from the tram bells—like a cow-bell sound—from the period of the 1920s. The third was the microbuses trumpet from the period of 1970s. However, to decide which soundmark has the greatest influence on perceptions in the Fatahillah Square historic district requires further research.

The challenge to determine the cultural values of soundscape of cultural heritage was searching the available data, especially for long-forgotten environment. In the case of the Fatahillah Square study, which experienced colonial rules and independence periods, many pictorial sources were obtained from the digital collection of Leiden University, which collected a lot of photographs in the past. The period with a small amount of data was the early period of Indonesian independence. This happened due to the government's focus on other problems. Another possible means was to source photographs from private collections.

As mentioned by Basturk et al., the soundscape is not just a matter in regard to the noise in city space, but it relates on how the soundscape will increase the understanding of the quality of urban environment, including historic places [42]. The Maffei's Methodological Triangulation can help to determine the cultural value of soundscape of cultural heritage [9]. The results of this study indicate that understanding of the sonic environment provides a more complete appreciation of the context of the historic place in particular time periods.

Therefore, this article argues that the assessment of significance of historic district cannot be implemented without a proper consideration of both tangible and intangible dimensions of the fabrics. The research clearly shows that even some landmark buildings such as Central Post Office, Jasindo, and Jakarta History Museum relatively remains unchanged over the time, unsurprisingly the urban dynamic setting might affect the appreciation of historic values of the places. As such, it is to confirm that historical context of heritage sites cannot be assumed to be a passive condition, but rather it may change time after time. The implementation of pedestrian area in the core area of Old Town Jakarta has affected the surrounding environment—including the sonic environment. Unfortunately that pedestrian designated area may not lead to the expected overarching understanding of the place. A holistic understanding of the district can only be achieved through a well-comprehensive multisensorial stimulus.

7. Concluding Remarks

Soundwalks, recalled in memory, historical records and pictorial analysis methods can be used to determine the sonic environment over a long period of time. Observation and interpreting visual and audio-visual data are to some extent problematic, especially if the conditions in the past were not well documented. The more pictorial and audio-visual recording available, the more accurate the prediction of sonic environment will be. As recommended, the sound source plays an important role in soundscape study, therefore, the sound source needs to be well managed in order to create the acoustic environment that can enhance the historic values of the district.

The appreciation of historic district can be enhanced with the complete understanding through multisensorial stimulus. Based upon Maffei's triangulation methodology, a further study can be directed to reconstruct the acoustic environment through laboratory experiments and assess the human perceptions about acoustic environment. This simulation will provide an influential sonic environment in the historic district which needs to be maintained, preserved, or restored.

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