The Soundscape Experience at Pulo Kenanga and Lorong Taman Sari, Yogyakarta City

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ABSTRACT:*This study investigates about, however sound element having a huge role to define an experience in each spaces. People tend to use the visual element to define a space. The sound might built with different element. It's depend on the physical environment and building architectural which might be natural or artificial. The data were collected by field observation with experimental interview. Analyzed with sound context classification of acoustics, psychoacoustics, semantics, and aesthetic to translate the soundscape experience. Pulo Kenanga and Lorong Taman Sari having strong differences in building ground level, building physic, physical environment, it's become the parameter of sound experience resulted. The similarity between two space is sound element source.*

Keywords: *Soundscape; Experience; Pulo Kenanga; Lorong ; Taman Sari; Yogyakarta city ; Place making*

INTRODUCTION

The space making often assessed through visual element. Things that human often to neglect is the sound or noise from space which is make the space into a place to living. A sound created by an element surroundings or the physical environment, it can be natural or artificial which will makes human feeling living in it. So, that phenomena called as a soundscape.

Soundscape in each different places will resulting a different experience for human even it's in a similar area. It is depend on how the physical environment creating the soundscape itself. The typology of places such as a modern, historical, or an old building,etc. will affecting the soundscape experience to the human either.

Taman Sari area is 10 hectares which originally consist of 57 building. However, after several earthquake there are now only 22 buildings left. Taman Sari has various buildings with different ambience and experiences. Taman Sari famous with the aesthetic architectural construction java-portuguise character.

Pulo Kenanga is located in the Taman Sari complex. In the past, Pulo Kenanga was located in the middle of an artificial lake, which is now turned into a houses of villagers. Formerly, this artificial lake was used as a boat playground by royal relatives (1765-1812). Now the location of artificial lake has become ngasem market and villagers house.

In the past, in Pulo Kenanga also built a tall two story building surrounded by a *Kenanga* flowers. Because of it's high location, this building can make people see the Yogyakarta city area. This building is visible from a distance because of it's height and as if it a floats on water. Then, called as Water Castle is appear.

In the southern part of Pulo Kenanga, there are appear a small building called *Tajug.* This small building is an air vent for underwater tunnels/passages, namely the entrance to Pulo Kenanga without using a boat. So, the tunnel is underground and the *Tajug* is at the ground as an air supply.

Literature Review

Sound sources can be obtained from anywhere depending what element it is. The element or objects of sound which creating a soundscape must be defined. "next to consider a framework which will allow us to study the functions and meanings of sounds. Most sounds of the environment are produced by known objects and one of the most useful ways of cataloguing them is according to their referential aspects. The only way we have of gathering information about the soundscapes of the past is through earwitness accounts by those who were there." Schafer, R. (1977). Every human having different kind of earwitness perception. Human condition, the condition of place might influencing the quality of sound element that produced.

"Soundscape research is highly subjective as listening to sound sources is an activity that is arranged and comprehended by the human mind. Therefore, sounds interact and intervene in the connections of listeners and context; yet sounds are also influenced by physical, environmental and social elements". Truax,B (1996). It is confirmed that human sense triggering mind and how human interact with environment creating a soundscape it self. The physical environment and social element play a huge role to be a sources of the sound elements.

The physical environment and social element is having relationship in creating a experience and meaning in some language. "Sounds may be classified based on sound context: according to their physical characteristics (acoustics) or the way in which they are perceived (psychoacoustics); according to their function and meaning (semiotics and semantics); or according to their emotional or affective qualities (aesthetics)." Schafer, R. (1977). It is depend on what kind of sound element in the spaces because every sound element will translated to certain meaning. Depend on the sources, the sound strength, etc.

Table 1. Sound context classification according Schafer,R. (1996:161)

Sample sound	Acousti cs	Pyscho acoustics	Semantics	Aesthetics
Kettle boiling	Colored noise arrow band (8000 hz) steady-state; 60 db	Hissing sound	Teaison	Pleasing

From table 1 showing that sound element have meaning in each category and resulting a certain experience to the people.

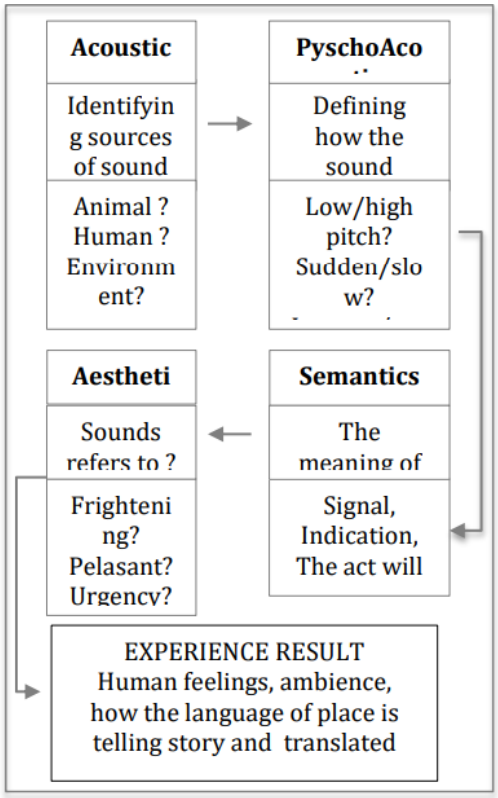

Figure 1. Mind mapping sound context classification to translate the sound experience according to Schafer,R (1977)
Source: Author

Mind mapping formulation shows how the steps of sound analysis will be conducted from the raw sound element identification to defining the sound perceived, then the meaning of sound to the refers of sound. Thus, resulting the experience of space.

According to Schafer, R. (1977) "Here two sounds with similar, but not identical, physical characteristics appear to be identical in perception, but nevertheless cause no confusion in meaning and accordingly have different aesthetic effects. Their contexts keep them clear. But when they are removed from their contexts in tape recordings, they may quickly lose their identities. Nor is the ear acute enough to be able to distinguish whatever differences may exist in their physical structure."

Table 2. identical sound according Schafer,R.(1996:163)

Sample sound	**Acoustics**	**Pyscho acoustics**	**Semantics**	**Aesthetics**
	What sounds are	**How they are perceived**	**What they mean**	**If they appeal**
Alarm bell	Sharp attack, frequency 6,000 Hz	Sudden arousal, high pitch, loud, decreasing interest	Alarm signal	Frightening, upleasant, ugly
Snake hissing	Colored noise; narrow band (7500 hz) steady- state (occasionally intermittennt) 55 db	High pitchend hissing sound	Snake preparing to attack	Frigthening

There is a high probability if the sound element might change the meaning since the physical structure might be change in every time and every second.

Problem formulation

What is the differences and similarities of soundscape experience between Pulo Kenanga and Lorong Taman Sari building?

METHODOLOGY

Field observation by experimental interview method

Field observation to the location of study case and interviewing the visitors. It's important to have an experimental observation. To know what kind of factor and element build the case. Observing the element of surroundings that build the soundscape and behavior or act of visitors.

Due to Covid-19 pandemic, Taman Sari implementing the regulation of Covid-19 prevention health protocol. With this condition, this research is limited in several condition such as limitation on doing interaction between others, exploring the space, and time visit. The regulation demanding visitors to grouping by 10-14 people. Every group will have a tour guide which lead the people to a certain access and circulation to diminish the possibility of crowd happening. Tour guide either limiting the time visit for each building.

Table 3. Research matrix

Research purpose	Analysis unit	Parameter	Data collection method	Data compilation	Analysis method	Result
Finding the differences and similarities soundscape experience that resulted from Pulo Kenanga and Lorong Taman Sari	The respond from group act towards the space	Sound element, and visitors opinion	Observation with experimental interview	sound element opinion by experimental interview with table	identifying acoustics, psycoacoustics ,semantics,aesthetics of every sound and conclusion of opinion each place	The table comparison of experience soundscape and opinion at Pulo Kenanga and Lorong Taman Sari

Source: Authors

This field observation conducted in two days in different week at 13.00 – 15.00 WIB.

The observation will be conducted by doing experiment which involving the visitors hearing by a group of people which need to ear witnessing the space of Lorong Taman Sari and Pulo Kenanga. The way they ear witness the space by close their eyes and only using their hearing to sense and feel experience in the space. The need of eyes closed in order to focusing in hearing senses. The sight sense having a strong influence in giving opinion and argument towards the feeling that people experienced. With closing their eyes, the hearing will be focused and the brain will gives the information of what the ear hear. They will asked a few question which will influencing and triggering their sense of hearing such as what sound element that they hear in the space and what did they feel in the space.

Data analysis method

First step, mapping the site surrounding and then specified to Pulo Kenanga and Lorong Taman Sari with boundaries for data gathering. Next, classify the sound element source and categorizing by implementing the theory of R.Schafer ear witness, also social environment which influencing the sound element by B.Truax. From here, it can be seen the people behavior respond towards the place.

After gathering the data, next is analyzing the data with theory of classify sound in acoustics, psychoacoustic, semiotics and aesthetic by R.Schafer. Thus, it will be found the language of sound which resulting soundscape experience for the differences and similarities at Pulo Kenanga and Lorong Taman Sari.

DATA AND ANALYSIS

Parameter

1. Boundaries on collecting data

Figure 2. Mapping Pulo Kenanga and Lorong Taman sari Analysis Boundaries
Source:https://www.openstreetmap.org/ query?lat=-7.80963&lon=110.35993#map=18/-7.80949/110.35992&layers=C edited by author

Taman Sari complex is surrounded by a urban villagers community. They mingle with Taman Sari and now become a part of Taman Sari life. Taman Sari become the support for their daily income since the place is tourism area.

The community dwelling mingle with Taman Sari and live side by side fig.2. The alley and pedestrian to the Taman Sari also as an alley for villagers. There is no exact boundaries between Taman Sari and villagers dwelling. The data gathering will be taken from the building of Pulo Kenanga and Lorong Taman Sari itself. So, the boundaries is the building itself. The surrounding will be parameter which might influencing the sound element source into the building.

2. Sound element source

The source of sounds element is depend on the surrounding area boundaries of Pulo Kenanga and Lorong Taman Sari. Either, the differences of ground level is influencing

the sound sources. Pulo Kenanga ground level is about 6 meter high from villagers house ground and 82 meter from main street.

Figure 3. Interior Pulo Kenanga east wing
Source : Author

The possibility of sound source will be from the villagers, street and nature. Pulo Kenanga building longitudinal fromwest to the east with an open roof at west and east wing. The center part is entrance with roof. Every wings having a wide opening.

Figure 4. Interior Lorong Taman Sari building *Tajug*
Source : Author

Lorong Taman Sari ground level is 3 meter from villagers house ground level. All surrounded by villagers houses and local shop/store.

3. Visitors opinion and argument

The visitors interviewed with a few question. Their answer will referring to the feeling of experience in the space. Every individual in the group might having differences or similarity in giving opinion. The assessment will be taken from the opinion and argument of what is sound element and what did they feel in the space.

Data Collection

1. Field observation by experimental interview at Pulo Kenanga

Figure 5. (a) Interview experimental with closed eyes visitor at outside Pulo Kenanga building. (b) Interview experimental with closed eyes visitor at inside Pulo Kenanga building Source : Author

Visitors close their eyes about 1-5 minutes while focusing their hearing to the sounds surrounding Pulo Kenanga building. All the sound element heard by visitors from Pulo Kenanga creating an experience. The experiment conducted inside and outside building to comparing the sound element between two area. The result based on visitor opinion having similarities in some opinion.

Table 4. Sound element source from visitors opinion at Pulo Kenanga

Space	Sounds source	Sound element	Sense
Pulo Kenanga	Jalan Taman Jalan Polowijan Jalan Kadipaten Kidul	Motorcycle muffler	-Alive -Free -Spacious -Peaceful
	Nature	Birds chirp and wind blown trees	
	People (visitor)	Visitor steps and murmuring	

Source : Author

The opinion from visitor is sound element come from the street which reach Pulo Kenanga building since this building location is in an open air and higher level. The motorcycle muffler sound is clear heard, it's have a high possibility to transmit to the open air space. Building surrounded by trees which windblown leaves accompanied with birds chirping in the sky. It is showing that the building ground is higher than others and feels narrow to the sky. The sound from human at Pulo Kenanga is the apparent murmuring and steps sound. The open space makes the sound diffused and echoing to all direction of space. The differences is the step sound inside the building is clear and at outside is apparent. The space is feels spacious and free from crowd. It is building a feeling of awareness to environment either.

2. Field observation by experimental interview at Lorong Taman Sari

Picture 4. Visitor respond towards Lorong Taman Sari
Source : Author

This building is longitudinal from North to the South. The sound sources from Lorong Taman Sari mostly come from the upper part of it's building which is *Tajug.* It is place where the wind and sun light penetrate to the Lorong Taman Sari.

The experimental interview with visitor closing their eyes inside space resulting visitor opinion which sound element source is from the visitors itself.

Table 5. Sound element source from visitors opinion at Lorong Taman Sari

Space	Sound source	Sound element	Sense
Lorong Taman Sari	People (visitor)	Murmuring, echoing steps	- trapped - pressure - narrow - crowded - noisy

Source : Author

The sound from surrounding is not transferred to Lorong Taman Sari. Although the top of space there is *Tajug* which has an opening, it's still not transferring the sound from outside.

The sound heard by visitors only people murmuring and the steps echoing loudly. It's feel like people is whispering surround them and very crowded also noisy. Meanwhile, the truth there is distance between visitors. The shape of Lorong Taman Sari is supporting the echo of sound distributed evenly delivered to all the visitors. They tend to feel trapped inside. The narrow ceiling and path width makes them feel pressured in the space. The visitors confirm that Lorong Taman Sari isolate the sound from outside to inside and vice versa.

Data Analysis

1. Identifying sound element by sound context classification at Pulo Kenanga

From data sound element at Pulo Kenanga building. It's identified the sound element by sound context classification.

Table 6. Identifying sound context classification according R.Schafer at Pulo Kenanga building

Sound	**Acoustics**	**Pyscho acoustics**	**Semantics**	**Aesthetics**
Lorong Taman Sari	**What sounds are**	**How they are perceived**	**What they mean**	**If they appeal**
People Murmuring and steps sound	Sharp, slow coincided sound	high pitch, loud echo, high frequency	Speaking and walking	unpleasant, crowded, pressured, noisy

Source : Author

The sound context classification shows that motorcycle muffler is sharp with high pitch and sudden. So, it attacking the visitors hearing. It's annoying and tense but, since the sound is far from visitors point it's sounds fading gradually. It's showing atmosphere life of Yogyakarta city with the communities surrounding. The feel of annoying is ignored. Then, they feeling how human and nature is interact each other. The sound of birds chirping and wind blown the tree is slowly yet melodious referring to peaceful. The high pitch of bird with harmony shows the freedom and spacious nature accompanied with leaves sound. It's a harmony of life in nature.

The sound of visitors murmuring and steps echoing slowly yet coincided apparent with low frequency. The sound meaning is visitors speaking and walking while relaxing enjoy Pulo Kenanga atmosphere. With human presence and creating sound in space, it's make a building alive. No pressure and no feeling of frightened. Only freedom and enjoying the space.

2. Identifying sound element by sound context classification at Lorong Taman Sari

Table 7. Identifying sound context classification according R.Schafer at Lorong Taman Sari building

Sound	**Acoustics**	**Pyscho acoustics**	**Semantics**	**Aesthetics**
Pulo Kenanga	**What sounds are**	**How they are perceived**	**What they mean**	**If they appeal**
Motorcycle muffler	Sharp and piercing	Sudden arousal, high pitch, loud	In hurry to destination	Tense and annoying
Birds chirping and wind blown trees	Slowly and melodious	High pitch, slow, pure	Free in the air	Free, nature, happiness
Murmuring and steps	Slowly, coincided sound	Apparent, low frequency, fading	Speaking and walking slow	Relax enjoying space

Source : Author

From data sound element at Lorong Taman Sari building. It's identified the sound element by sound context classification.

The sound context classification shows that the sound at Lorong Taman Sari is only visitors sound such as murmuring and steps sound. The sound is sharp to heard and slowly coincided. It's come in one time together and echoing which causing coincided sound. The narrow space make the sound is echoing faster it's make the sound so loud. As the result, the sound have a high frequency.

The coincided sound is very clear heard at Lorong Taman Sari. The way people speaking also echoing. It's delivered to the other people directly. They feel someone talking near them and it's make them make a more distance. They feel it is crowded situation and unpleasant because of the steps of people is too much heard and coincided. They think people surrounding are in hurry. In fact, it is not. Only the coincided echoing sound of steps and murmuring stimulating their brain to think that people are in hurry. It is creating an experience of pressured and crowded situation.

RESULT

The sound context classification at Pulo Kenanga and Lorong Taman Sari showing the differences and similarities in aspect of sound element and soundscape experience.

1. **Soundscape experience differences between Pulo Kenanga and Lorong Taman Sari**

Table 8. differences comparison soundscape experience table between Pulo Kenanga and Lorong Taman Sari building

Building	Sound element	Experience result
Pulo Kenanga	Motorcycle muffler	Tense and annoying
	Birds chirping and windblown trees	Free, nature, happiness
	People Murmuring and steps sound	Relax enjoying space
Lorong Taman Sari	People Murmuring and steps sound	unpleasant, crowded, pressured, noisy

Source : Author

Sound element at Pulo Kenanga is vary since the location at an open air space and having higher ground level. So, the physical environment is influencing the sound element in the building and the sound easily transferred to the building even it's a low frequency sound. From the sound context data analysis, the soundscape experience referring to a freedom, nature, happiness and relaxing space. While, Lorong Taman Sari is a closed space and at underground. It is blocking the sound from the surrounding physical environment.

The sound only from visitors murmuring and steps sound. But, the differences with Pulo Kenanga is at Lorong Taman Sari the sound echoing loudly and fast. The soundscape experience resulted is a crowded and pressured space. It's tend to noisy and unpleasant feeling.

2. Sound element similarities between Pulo Kenanga and Lorong Taman Sari

Table 9. similarities comparison sound element table between Pulo Kenanga and Lorong Taman Sari building

Building	Sound experience	
	Sound context classification	**Visitor opinion**
Pulo Kenanga	Freedom, happiness, relaxation	Alive, free, spacious, peaceful,
Lorong Taman Sari	Unpleasant, crowded, pressured, noisy	Trapped, pressure, narrow, crowded, noisy

Source : Author

The similarities sound element between Pulo Kenanga and Lorong Taman Sari building is sound of people murmuring and steps sound. It's the main parameter in creating soundscape. Since Lorong Taman Sari space is underground and closed, the source of sound only from visitors itself.

3. Comparison soundscape experience between sound context classification and visitors opinion towards space

Comparing the soundscape experience, it is showing a similarities. Pulo Kenanga having a soundscape experience of freedom, happiness, spacious area, relaxing and peaceful. Lorong Taman Sari is feeling of crowded, noisy, and pressured inside.

CONCLUSION

In despite of Taman Sari complex is in the same area, every building will resulting differences and similarities of soundscape experience in building. Pulo Kenanga and Lorong Taman Sari having strong differences in building ground level, building physic and physical environment surrounding.

The theory from B.Truax is proven correct. The physical environment is influencing the soundscape experience. Pulo Kenanga has a soundscape experience of nature such as birds chirping, windblown trees, people murmuring and steps, also community activities.

The theory from Scafer.R about sound context classification translating the sound element into soundscape experience is correct. The comparison between the theories and visitors opinion in sensing the space is not a huge differences. It's tend to have similarities. The Pulo Kenanga refers to a freedom, happiness, and relaxation. Showing the life of Yogyakarta city. While, Lorong Taman Sari refer to a a crowded and pressured space. The sound from surrounding physical environment is not transmitted to the space.

The building architectural also playing a big role in this making the soundscape experience in the space. The open space building will receiving the sound from outside the most and influencing the sound experience making. While, the closed space building will only receiving sound from anything inside the building. So, the sound from outside is blocked.

Even though, there is a similarities in sound element, identical sound will having different meaning. The sound people murmuring and steps at Pulo Kenanga and Lorong Taman Sari is different meaning. At Pulo Kenanga it's refers to something alive, relaxing and enjoyment. While, at Lorong Taman Sari it's refers to something that pursue or chasing the people. The qualities of sound is different. But, it is the similar sound source.

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