

Review on outdoor furniture in time of pandemic COVID-19: *The Case of Ir. H. Juanda Road, Bandung*

D Morika¹ and A Ratum²

¹Subject Content Coordinator, Interior Design BINUS University, Bandung, Indonesia

²Subject Content Coordinator, Visual Communication Design BINUS University, Bandung, Indonesia

Email: doni.morika@binus.edu; arifpermana.ratum@binus.edu

Abstract. This paper is motivated by the Covid-19 Pandemic which changes social behavior for human being. The impact of this pandemic also affected the physical presence of many furniture in public areas specially in outdoor public space. These facilities were not functional and unused by its supposed users as pandemic spread out. The expected result is the finding of a trend toward suitable outdoor furniture design criteria so that it can meet the needs of pedestrians in times of pandemic. Ir.H. Juanda Road in Bandung is one of the Roads used by many pedestrians at the weekends. The contextual approach method is used as the basis for researching pedestrian activities in the pedestrian area along Ir.H. Juanda Road, Bandung, to find out design criteria for sitting facilities to adjust human behavior in times of Pandemic. The approach of this research stage by referring to the physical distancing rules, environmental dimension, and the personal dimension which results in the main table containing the design reference principles that depart from aspects of human and material behavior. The human and materials interaction will produce the design criteria to revitalize sitting facility to match pedestrian activities in times of pandemic.

1. Introduction

Each group of people, especially in the city of Bandung, will interact with each other and do activities. One of them is the activity as a pedestrian in the pedestrian area of Jalan Ir. H. Juanda, Bandung. Activities performed by the community of Bandung in the pedestrian street of the city of Jalan Ir. H. Juanda, as one of the places of liquid concentration of the mass of activity that occurs on Sunday morning "Car Free Day" is free car activity. Other daily activities in addition to community activities go to work and go to school, as well as tourist activities from outside the city that must always visit or on the road the Protocols Ir. H. Juanda, ranging from walking activities, shopping, culinary, waiting for public transportation, or just a stroll to enjoy the beautiful city of Bandung in Jalan Ir. H. Juanda. In doing so, there are times when the pedestrians feel exhausted and want to rest or just enjoy the atmosphere of the streets of the street, by sitting on the seating facilities are registered. The physical function of sitting in Pedestrian in the future after the pandemic will face many changes and adjustments with no exception to the context of its usefulness.

The World Health Organization's declaration that health is the "complete state of physical, mental and social wellbeing, and not merely the absence of disease or infirmity" [1] enabled the development of multi-layered approaches to, and interpretations and visions of, what comprise 'health and wellbeing'. The biomedical model of health that treats illness or disease in isolation from person and place is no longer accepted [2] indicating that models incorporating the social and environmental

context are increasingly relevant. Research suggests that outdoor activities enable people to engage physically, intellectually, emotionally, and spiritually with other people within outdoor environments [3].

In today's condition, where the Covid-19 pandemic is happening, everyone is asked to always stay at home and limit physical contact [4]. This limitation of physical contact applies in various parts of the world as part of preventing the spread of the Covid-19 virus [5]. Looking at it from the background, the physical function of the means of sitting in the pedestrian during this pandemic will have many adjustments both in terms of function and in the context of its use [6].

The discussion of the function and design of sitting facilities which are one of the elements in the public open space is the main thing that will be very interesting to discuss in this pandemic condition. Urban planning must reduce social vulnerability and environmental footprint to develop urban culture. Besides, an urban design must also improve social cohesion, such as contra segregation (social and spatial) and unequal distribution of wealth), and aim for a more equitable distribution of access to urban resources and more integration and connections among residents [7].

Nowadays urban culture has experienced a massive shift caused by a pandemic [8]. This shift is also related to the effort to revitalize sitting facility products in public areas that have more value through the contextual approach method during the Pandemic Covid-19 period.

2. Revitalization of functions of sitting facilities in a public are

The act of and effort in furthering the knowledge about the topic of the revitalization of urban public space theory is important because it can help governments, planners, developers, and public organizations to generate greater awareness and more strategies framework for urban public space. [9]. In times of Pandemic, the function of sitting facilities in the public area would be shifted. David Green, a principal at Perkins and Will a design firm that has worked on "health districts" said in [10] said that he is looking for redesigning public spaces that can work as logistics and treatment areas in cities in times of epidemics. The key analysis through revitalizing public areas is to search for the shift in urban culture and how would they respond to public areas.

2.1. Public Open Space

Public space is a place that is generally open and accessible to public (source). Roads (including the pavement), public squares, parks, and beaches are typically considered public space. To a limited extent, government buildings which are open to the public, such as public libraries are public spaces, although they tend to have restricted areas and greater limits upon use. Although not considered public space, privately owned buildings or property visible from sidewalks and public thoroughfares may affect the public visual landscape, for example, by outdoor advertising.

There have been declines in physical activity in many countries over the past few decades [11,12]. Given the limited success of individually based approaches to behavior change, public health researchers have increasingly used socio-ecological models to further understand the determinants of physical activity [13]. Such conceptual frameworks suggest that the built environment is one important level of influence, as it can facilitate or inhibit participation in physical activity [13,14].

Public open space can influence physical activity in at least three ways. First, public open space can be a setting in where people engage in physical activity. Second, public open space can be a destination to which people actively travel either to be active or simply to socialize. Finally, public open space can be used as part of a route to pass through to reach another destination (e.g., passing through a greenway to reach a shop) or as part of a recreational walk or running route [15].

The sense of public space (public Space) is a public place where the community conducts routine and functional activities that bind the community's breadth, both in the normal routine of daily life, as well as in periodic celebrations [16]. Along with the development of the Times, public spaces both in ancient times and now continue to function as a community to meet, gather and interact, both for religious, trade, and build government. Inland use or the utilization of space/region and the meaning of public spaces is open space (Open Space) that can be accessed or utilized by the citizens free of charge

as a form of a public body of the municipal government concerned for the continuity of some social activities of its residents.

It is still unknown 'how large' a public open space should be to increase public open space-related physical activity in times of pandemic. 'How many' amenities need to be provided to encourage public use open space in the post-pandemic scenario is another question to solve. Identifying thresholds across a wide range of public open space attributes in times of pandemic should be a priority for future research on furniture in public open space.

2.2. Public Furniture

The process of forming public areas can occur formally or naturally, without formal planning-such as using public space by users in certain ways repeatedly, or the concentration of users due to interest in something somewhere. Users can be passive, reactive, or creative users, depending on the environmental characteristics they are drawn to. Space and users are interconnected and can even define each other. Passive users are consistent, unpredictable users and able to transform space and meaning; Reactive users are able to change the physical characteristics of an environment; and creative users are able to provide new uses and meanings to the environment, through his actions which can be categorized in mental, carnal, physical, constructional or conceptual acts.

In completing public facilities, there are several general criteria or requirements that are the basis of consideration, among others according to the Urban Design Plan of San Francisco 1970 [17][18]there are ten principles, namely:

1. Comfort (amenity comfort).
2. Looks of interest (visual interest).
3. Activities (activity).
4. Clarity and pleasure (clarity and convenience).
5. Special characters (character distinctiveness).
6. Sharpness (definition).
7. Principles of regional views (the principle of views encompasses).
8. Variation / contrast (variety / contrast).
9. Harmony/compatibility (harmony compatibility).
10. Scale and shape integration (scale and pattern integrated).

Based on these criteria, it is clearly stated that the public space and its elements including the means of sitting must be able to meet the desires of the user, useful and appropriate in accordance with the culture and activities of the people around the public space. These conditions are important for realizing public spaces that are preferred and are always used by the community. Therefore, it is necessary to study the data to find out the type of public space, along with the elements in it, namely public furniture.

2.3. Human Behavior study on a seated facility

The science of human Behavior covers three main objects, human, environmental and time. Human psychological conditions have a reciprocal relationship with human behavior. Elizabeth D. Hutchison outlines human behavior in the American social worker environment in her book Aspect of Human Behavior, Personal, Environment, and Time.

In the personal dimension, human behavior is the interaction between biological conditions, psychological and social systems. Personal dimensions, environment, and time move dynamically and simultaneously. The three aspects: Personal, the environment and the time are discussed one by one in the book by Elizabeth D. Hutchison, but each of the aspects cannot stand alone without any other aspect. Elizabeth D. Hutchison initiated that the study of human behavior is a multidimensional science, which develops through various sources of consequences. However, he also argues that the study of each dimension can result in a statement on the changing attitudes and functions of a personal environment.

Christopher Alexander is an architect and researcher, currently a lecturer at the Institute for Environmental Structure at the University of California since 1963. His last book titled *Nature of Order* became the culmination of his research on humans and his relationship to nature. Clearly visible from the title of the book, that the content of the book discussion far exceeds the architecture itself. He discusses the unity of how people and the surrounding environment form a life. *Nature of Order* is about the concept of its research on the importance of interactions (relationships) between functional elements with human behavior aspects so that natural and non-natural factors can interact with balanced and flowing well. Christopher Alexander explains the importance of a designer's role to see the original culture of a place before he designed the environment. Because at first, the environment has been designed by the natives unselfconsciously. If the environment is designed by someone from outside the environment (self-conscious) and without seeing the characteristics of the human beings living in it, then it will not materialize the balance of objects in the environment with humans in it.

Research on how people use space is also done by Hall under title *The Hidden Dimension* and *The Silent Language*. It performs a very sensitive observation, which is how distance influences the communication each person receives. The observances are the long-distance measure between humans and other humans so that it can interpret the social connection that keeping the distance is "coldness", while the closer the distance then it means "friendliness". Furthermore, the observation led to the conclusion that culture also affects the definition of a distance between individuals.

2.4. Convenience (Amenity Comfort)

In research on behavior, there are several aspects that can be found in behavior when researchers have finished observing. These aspects can be found from a variety of data that many researchers have gathered. One aspect found, is the presence of behaviors arising from various stimulants around the environment.

If an area is found to have less or more stimulation, it will cause abnormal behavior, caused by abnormal stimulation. Deficiencies or excess stimulants can be caused due to the design or structuring of such places that are not appropriate. If the place is lacking in light, there is no refreshing air flow, then people will likely feel bored faster or even asleep. But if otherwise, the place is too bright or the noise level is very high, it will cause distraction and stress levels to the user.

The variables that define the convenience itself are:

1. The existence of facilities that support public space user activity.
2. Customized groups of users who utilize the most public space.
3. Support the psychological comfort of the environment, especially in the time of its use both against sunlight, wind and so on.
4. The design is balanced between the expression of visual art and functionally as a place for social interaction.

Supports physiological comfort seen from the suitability of scale integration and forms closely related to the human scale.

2.5. Spatial Role

Spatial Non-verbal Communication can be found at the position or seat of a person and describes the role of a (spatial) relationship between individuals. A variety of spatial roles to be found are confronting role, consorting role, conversational role and co-existing role. Confronting role is the attitude between two or more people who sit opposite and have two different opinions (arguments). Usually both see something from a different point of view. In that situation, people usually want to sit face to face, in order to see each other's faces and strive to dominate the conversation. The situation is also found when both people play chess each other (the game), the automatic they sit up against and it is impossible for them to sit alongside. Unlike confronting role, consorting role is the attitude between two or more people who set themselves up to be able to see an object of "perspective" or the same opinion. Typically, this kind of spatial role will form a side sitting pattern. If the seats are facing each other, they will find the position of the closest seat to each other. Another pattern that is not so

different to consorting role is conversational role. In this pattern, people want to communicate by talking and seeing each other's faces.

The conversational role describes both people who sit on the face but not in the argument of arguments but receive each other's inputs. Co-existing role is a sitting pattern that is usually formed by people who do not know each other in a space. For example, in a train that is not fully charged by the passenger of each line. Most people will look for a separate sitting position and there may be no eye contact with the other.

3. Contextual Method

Shirlee-ann Knight and Donna Cross said that the theory which underpins the Contextual Constructs Model (CCM) framework is described as “Contextual Constructs Theory” (CCT) and is offered as a novel approach to the overall conceptualization of a research project [19]. There are two concepts to CCT, that of (1) context; and (2) cognitively driven constructs.

A research context includes associated entities surrounding the research and researcher, such as:

- (1) the research project’s discipline [20];
- (2) the phenomenon (research object) being investigated [21];
- (3) previous theory related to the research object [22];
- (4) the researcher [23], – including their evolving “research lens” [20]; and
- (5) the conceptualizing of how the research object will be investigated, or research problems [24,25].

The second central concept of CCT is that research, as a mode of inquiry, is constructed. That is, the researcher must find ways to build abstracted constructs which are used to represent or describe the phenomena being investigated. Most often, these constructs are described in language, words that have come to represent phenomena which may have existed long before a scientist found a word to describe it. Apples have always fallen from trees, yet the scientific community came to know this phenomenon as “gravity” only since Newton coined a word to represent it. This is the constructed vocabulary of research, words and concepts that have come to represent meaning within specific scientific contexts. The research constructs are the constructions developed by a researcher to describe and investigate phenomena during the process of conceptualizing the research. Importantly, in describing the co-dependent nature of these two central CCT concepts, constructs never exist outside of a context, which in turn has an inherent influence on the development of the research constructs.

The contextual method emphasizes that a design must have a connection or continuity with the surrounding environment and is recognized by the surrounding community. The things to note from the method of contextual approach to the case are;

- Expose the area definition of Jalan Ir. H. Juanda to get the sense of the dominant object.
- Look for a precedent of Ir. H. Juanda Street to get an overview of activities and facilities
- Identifying pedestrian culture or area of movement and pedestrian activity
- Identifying activities and facilities based on the needs of a seating and cultural precedent in the postwar pandemic Covid-19.

4. Discussion and Conclusion

Human behavior in seated facilities after the covid-19 pandemic would be the deciding factor in designing public spaces. On the personal dimension, human behavior is the interaction between biological conditions, psychological and social system [26]. Personal, environmental and time dimensions move dynamically and together. Each of the aspects cannot stand alone without the other aspects. Hutchison initiated that the study of human behavior is a multidimensional science, which develops through various sources of effect. But he also believes that research on each dimension can produce statements about changes in attitudes and functions of the personal towards the environment.

The unity of how humans and their surroundings form a life [27]. Nature of Order contains the concept of his research on the importance of interactions (relationships) between functional elements with aspects of human behavior so that natural and non-natural factors can interact in a balanced and

flowing way. Alexander explained the importance of the role of a designer to see the original culture of a place before he designed the environment. Because at first, the environment has been designed by indigenous people unselfconsciously. If the environment is designed by someone from outside the environment (self-consciousness) and without seeing the characteristics of humans who live in it, then there will not be a balance of objects in the environment with humans in it.

In times of pandemic, going through post-pandemic conditions, humans needed to be adaptive. Able to adjust them-self to be safe and productive at the same time even though there are coronavirus breakouts. The need of open air physically and mentally for humans is clear. For the achievement of these objectives, humans need to provide special design to their public spaces. Furniture, as one of the elements in public space, has an important function in the form of non-verbal communication between humans. Furniture design with new criteria can be adapted to this post-pandemic condition to meet new human needs to stay healthy in times of coronavirus outbreaks.

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