

Transformation in the Spatial Concept of a Modern Residence Based on Cultural Traditions that are Anticipatory of the Coronavirus (Covid 19)

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Abstract. The world is currently faced with a change in the culture of life due to the COVID-19 pandemic. Architecturally, more attention is being paid to the spatial patterns of houses and yards to solve some of the problems inherent in dense urban housing, particularly in anticipation of this outbreak. The courtyard of the house occupied an important position in the history of architecture in the past, but for centuries architects neglected its use. This study discusses the spatial patterns of homes and outdoor spaces based on Indonesian and Chinese culture to be transformed into spatial patterns of modern life, especially dense settlements that are able to anticipate the spread of the Covid 19 outbreak. This study uses a descriptive research method with a qualitative approach. Collaboration of traditional conceptions in modern residential spatial planning will increasingly produce points that can be used as anticipatory residential elements for the Covid-19 outbreak.

Key words : transformation, special design, anticipatory covid 19. Indonesian and China, culture

1. Background

In general today in the world, the Corona virus or COVID19 has destroyed various aspects of life, not only in terms of health, economy and education. The term plague has changed almost all habits that exist and were formed in this millennial century. Prohibition of gathering, touching, keeping a distance, using masks and having to always wash hands after traveling, have become commonly seen in all locations, both at home, in the work environment and in public places, to prevent transmission.

Even placing a hand hygiene kit in front of the office door, in front of the house, at the entrance to the market and the entrance to the housing complex is a sight that is becoming increasingly popular these days. So that architecturally, this habit has an impact in changing the pattern of living activities. Other paragraphs are indented

As a city that quickly has to face the challenges of modernization and urbanization in the millennium era, houses are only built to fulfill the function aspects of the core needs for, shelter and rest, but they do not consider anticipatory aspects of disease outbreaks. In fact, since centuries ago, various cultures in the world, such as China and Indonesia, have implemented several outdoor spatial habits that anticipate outbreaks. The transitional space before entering the house, is created as a barrier

from the outside environment. For example, there are traditions in Indonesia and China, where the water is placed outside the house, which is to give the travelers a drink and wash their feet and hands before entering the house.

This tradition appears not without reason, in the world history of disease *thā'ūn* (طاعون) such as Corona has happened many times. This disease was endemic in the world, recorded in 1720, 1820, 1920, and now 2020 [1]. It is also noted that this disease claimed millions of victims. So that it can be understood when this local wisdom becomes a culture to anticipate outbreaks that have and will happen again.

Now with the covid 19 epidemic and the recommendation to clean yourself before entering the house, as well as independent isolation, to prevent transmission of the virus, the cultural heritage that has existed is expected to anticipate the phenomenon of the outbreak every 100 years.

For architects, it is a challenge to think about housing designs that are oriented towards occupant health, in this pandemic era, to anticipate a repeat of this outbreak in the future.

This study is to determine the local philosophy of wisdom on residential spatial planning that is responsive and anticipates disease outbreaks and their transformations in this millennium, especially in densely populated urban settlements.

1.1. Problems

- a. What about the concept of outdoor spatial planning that is oriented to culture and local wisdom traditions that are also health-minded, especially in anticipation of a recurrence of similar outbreaks in the future?
- b. How is the transformation of modern residential yard design today and in the future?

1.2. Research purposes

- a. To get a conception of local wisdom about living space in Indonesia and China which is anticipatory to disease outbreaks.
- b. To get a modern outdoor layout design concept that is anticipatory to the corona 19 virus, based on traditional culture.

2. Theoretical Review

2.1. Study of Traditional Residence (House and Yard) Conception

Based on the study of Javanese and Chinese culture in the tradition of living and outdoor (courtyard) layout, all do not only think about one aspect, namely humans, but there are 3 aspects that become the basic conception of design, namely: a. god, b. natural, c. human

These three aspects are united in one house complex. The size of the house only affects the area and the number of times of the building, but does not disappear from the existence of the yard [2]. This concept can be seen in the organization of traditional residential spaces for Chinese and Javanese culture. Spatial organization is a function of the form of social solidarity in humans as spaces and systems across space.

- a. Conception of Tiongkok (Chinese) traditional housing Lay out

The greatest characteristic of Chinese residential mode is that the courtyard becomes the center of the outer space and the residential buildings surround it, thus forming an inner and enclosed courtyard. The basic principle followed by garden architecture is, of artificial nature, which tries to combine with real natural beauty [3].

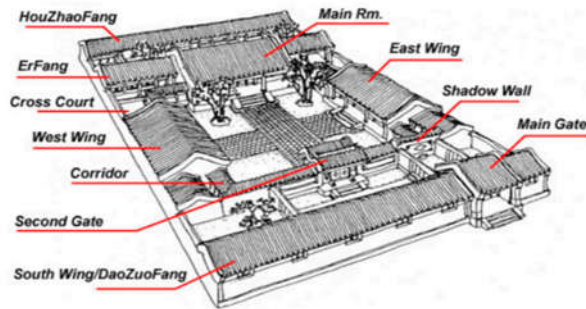


Fig 1. Image Perspective of Siheyuan (China) House

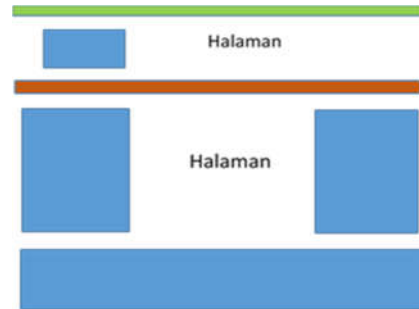


Fig 2. The Concept of Lay out China house

The organization of space is centered on occupancy the open courtyard surrounds the dwelling.

b. Conception of Javanese (Indonesian) traditional housing layout

The concept of space in a residence according to the Javanese architectural tradition, is in fact different from the concept of space according to the Western tradition. There is no synonym for the word space in Javanese, which is closer to Ngon, the verb becomes Manggon and Panggonan means place or place, so for the Javanese it is more accurate to mean place, than space [4].



Skema Kompleks Rumah Bentuk Joglo dan Bagian-bagiannya

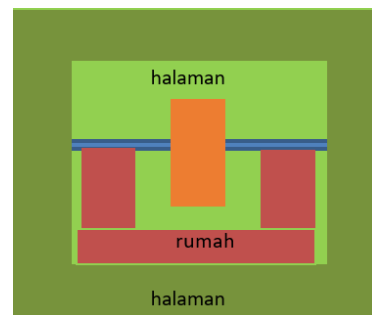


Fig 4. The Concept of Lay out Indonesian house

Fig 3. Image Perspective of Javanese (Indonesia) house

2.2. Study of Modern House Conception

The concept of modern housing refers to the efficiency, economical and minimalist factors. This is due to the lack of land and the need for a lot of urban housing.

In the modern layout house, a practical situation is found where the inner space is directly accessible without going through an intermediary space. However, the inner space is united in a more intimate and compact manner.



Fig 5. Image lay out of Modern house


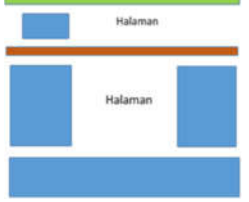


Fig 6. The Concept of Modern house

2.3. Study of anticipatory housing organizations for Covid based on traditional concepts

The conception of Indonesian traditional houses and traditional Chinese houses, especially Java and China, the layout of the living space is very much influenced by traditional cultural thoughts related to beliefs. When referring to the behavior patterns of living in traditional societies, the following patterns can be found:

Table 1. Map lay out indoor, outdoor and transition in traditional space

No	Space Organization	Conception	Map layout		
1	 <p>Javanese</p>	Space Organization focuses on residential dwellings surrounded by an open space courtyard	Assumption : <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>Transition space (V)</td> <td>Interior (I)</td> </tr> </table>	Transition space (V)	Interior (I)
Transition space (V)	Interior (I)				
2	 <p>Chinese</p>	Space organization is centered on the yard, while the residence is surrounded by open yards and hedges	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>Outdoor (O)</td> </tr> </table> V = transision I = Interior O = Outdoor	Outdoor (O)	
Outdoor (O)					

Transition space is widely used as a barrier for humans from the outside to the inner world. Its existence can be an antidote against all forms of interference from other than humans. The spirits and nuisance animals are blocked in the transitional space, or in other words, they can anticipate the transmission of disease outbreaks. However, the position of each room is the same so that outdoor space can be reached through indoor or transitional space.

2.4. Possible patterns of yard layout and shelter during a pandemic based on traditional conceptions

Based on the concept of traditional buildings, the existence of a transitional space is needed. However, urban living conditions do not have sufficient land for this concept. Below is the possible relationship between the urban residential layout concept based on traditional conceptions in the pandemic era.

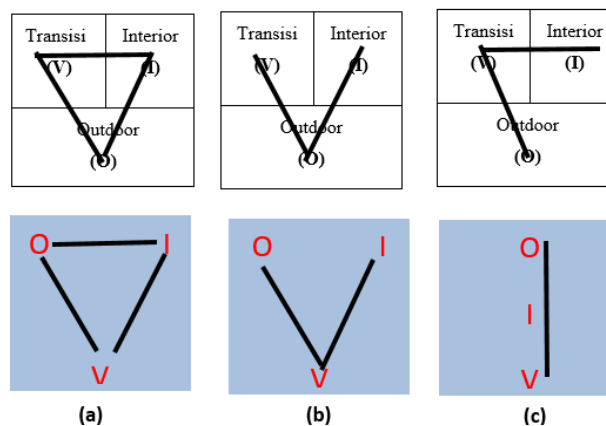


Fig.7 Lay Out Relation

- (a). Indoor (I) or outdoor (O) can be accessed through the "V" transitional space, while indoor and outdoor spaces are accessible to each other. The depths of the three chambers are the same.
- (b). In this case, both (I) inner space and outer space (O) can only be accessed through the living space (V).

This shows the importance of intermediate space; in other words, the privacy of indoor space and outdoor space is higher than (a). The depth of indoor and outdoor space is higher than the intermediate space.

- (c) The situation is more complicated; the indoor space must be accessed via intermediate space and outer space respectively. The outdoor space is more important, because each controls the indoor space and the intermediate space. Compared with outdoor and intermediate space, indoor space is cleaner, and quieter.

The density of buildings in a modern residence does not allow for large transitional spaces. The pattern of the building period tends to be tight.

3. Research Methods

Based on the current conditions, in the form of large-scale social restrictions in DKI and several regions in Indonesia, this research method cannot carry out an in-depth survey of the research location, so it uses descriptive research methods with a qualitative approach.

The research sites are located in 3 housing estates in Jakarta, 1. Gateway Apartment in Pesanggrahan, South Jakarta which is a multi-story residence, 2. densely populated settlements in the township of Tebet, South Jakarta, 3. Modern luxury residence in Pancoran DKI Jakarta.



Fig 8. Research Location Map

These locations were chosen because, it was recorded that the largest number of people became Covid 19 patients, both as People Under Monitoring (ODP), Patients Under Monitoring (PDP) and People Without Symptoms (OTG).

The analysis uses a comparative descriptive method, describing the factual conditions by presenting the facts in the field and comparing them between one condition and another.

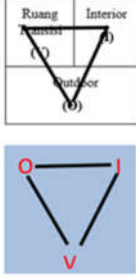
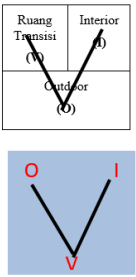
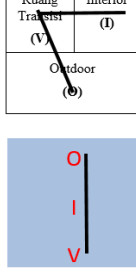
4. Discussion and Results

4.1. Analysis of the Anticipatory Lay Out Model of Disease

Based on the three spatial relation map models above, it can be analyzed the best spatial relation map in anticipating disease outbreaks. The variables used as a basis for consideration are:

- Spraying disinfectant
- Cleaning intensity
- Incoming sunlight
- Isolate the patient
- Circulation of health workers
- Social distance

Table 2. Analysis of the relationship between anticipatory occupancy layouts for disease

Relation Map	(a)	(b)	(c)	(d)	(e)	(f)
Type (a) 	It can be at 3 points, at I, O and V	Butuh effort lebih, karena harus memberikah V dan I	Cukup maksimal	Dapat di ruang buat di V yg terpisah dari I	Mudah dilakukan	Mudah dilakukan
Type (b) 	It can be at 2 points, at points O and V.	Butuh effort lebih, karena harus memberikah V dan I	Bisa maksimal	Dapat di ruang buat di V yg terpisah dari I	Mudah dilakukan	Mudah dilakukan
Type (c) 	Only 1 point, at point O	Mudah dilakukan	kurang maksimal	Kurang dapat terpisah,	Mudah dilakukan	Kurang maksimal

Type (a), is a transformation of the traditional layout map that is best applied to city dwellings that have a large outdoor courtyard.

Type (b), is good enough for urban residential types that have a narrow outer yard.
 Type (c), in general, can be used for all city dwellings, although it is less anticipatory for disease.

4.2. Result

In the research of Hamidreza Farshchi, Fariborz Sediqi Arfaei, Vahid Askari Kashan & Fatemeh Jamali, consideration of cultural elements including national values, norms and customs, myths and religious beliefs, spatial hierarchy, internal and external consistency, privacy, and communication type of planning, is very important as the main criterion. It can be concluded that in spite of all functional and regional limitations, architects paid adequate attention to the culture of the population and its impact on the innermost layers of their minds. Such criteria are essential to contemporary housing patterns in city law [5].

Urban communities who live in densely populated environments are very vulnerable to contracting and transmitting diseases, including COVID-19. In densely populated settlements it is difficult to carry out 3M's principles in preventing COVID-19, namely maintaining distance, washing hands, wearing masks. Yu Sing reiterated the importance of improving densely populated areas with residential designs that maximize land use.[6]

When viewed from the area of the unit, apartment housing has several shortcomings, especially in anticipating Covid 19, related to saving space use because the studio type is a residence that only has a sitting room to support various needs. a type of occupant activity that can also be turned into a space. bedroom, dining room, family room, living room and kitchen (other than bathroom).

In this study, the urban residential location was chosen in Jakarta, because the most Covid sufferers are in the DKI Jakarta area. The houses selected are apartments, urban village settlements and urban modern housing.


Based on the analysis and comparison with the conception of traditional housing, modern housing that is anticipatory to Covid 19 has several characteristics,

a. Modern residential apartments

In residential apartments, you can only use Type C

- Because the outdoor room is also located in the building, disinfectant spraying is carried out before entering the apartment building and in front of the entrance to the residential unit.
- transformation of the transitional space in the room, located after the entrance, this section needs to be given an additional humidifier, purifier or barrier in order to prevent the spread of the plague.
- Isolation room can be done in a room that gets the most sunlight.
- The possibility of cleaning the apartment occupancy is very large because of its small area

Table 3. Layout in apartment units that are anticipatory to Covid 19

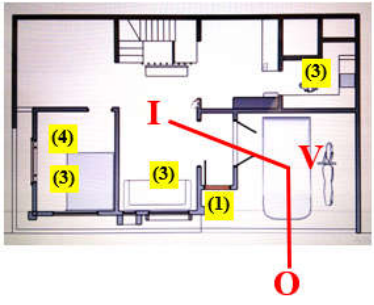
Unit Apartemen 2 bed room	Space Anticipatory Components
	<ul style="list-style-type: none"> (1) Disinfectant spraying point (2) Due to the small area maximum cleaning possibilities (3) The source of sunlight (4) Isolation room, the furthest distance from other rooms and closest to sunlight (5) Does not allow limitation of social distance

b. Urban Kampung Dwelling

You can use, Type (b) and type (c) as well,

- With moderate occupancy density, it still has transitional space, before heading for interior space.
- Transition chamber allows disinfectant spraying, by washing hands and feet with soapy water outdoors.
- transitional space, providing adequate lighting to the dwelling.
- if it has 2 floors, it still allows distance restrictions and independent isolation at home.
- The possibility of cleaning the dwelling regularly is very high, because of the small area.

Table 4. Layout in urban kampong dwelling that are anticipatory to Covid 19

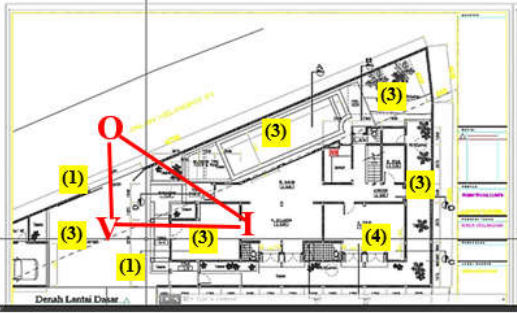
Village residential plans	Space Anticipatory Components
	<ul style="list-style-type: none"> (1). Disinfectant spray point (2). Due to the small extent possible the maximum cleaning routine is possible (3). Source of sunlight (4). Isolation room, the farthest distance from other rooms and closest to sunlight (5). Allows social distancing on the 2nd floor

c. Modern city dwelling

You can use, Type (a) and type (b) as well,

- The entrance has two stages, namely the gate and front door, so that disinfectant spraying can be carried out outside the gate and in the transition room before entering the house.
- Transition space that surrounds the interior space, can provide maximum sunlight at several points.
- Isolation room can be placed on the 1st floor which is far from other private rooms, but close to the entrance and gets maximum sunlight.
- The possibility of cleaning the dwelling requires a lot of effort and time, because of the large area.

Table 5. Layout in Modern City dwelling that are anticipatory to Covid 19

Lay Out Plan	Space Anticipatory Components
	<ul style="list-style-type: none"> (1). Disinfectant spray point (2). Due to the large area it takes effort for maximum cleaning (3). Source of sunlight (4). Isolation room, the farthest distance from other rooms, but near the exit and gets lots of sunlight (5). Allows social distancing on the 2nd floor

Overall, even though urban occupancy meets spatial efficiency, the unified layout of the interior space (I) creates a limitation of the distance of each room which allows antipativity against the epidemic to be created, unlike the traditional housing pattern.

It is necessary to carry out further tests on the position and shape of the opening with a simulation, namely the position below, middle or above; and transverse or longitudinal position [7].

The reduction of the yard as a transitional space, affects the reduced sunlight and ventilation which affects the health of the occupants [8].

5. Conclusion

The conception of traditional Indonesian and Chinese housing is influenced by factors of public belief regarding the balance of macrocosm and microcosm, as well as the values taught by the ancestors. Humans, nature and God, are important elements in the layout of the yard and shelter.

This conception is transformed into the pattern of placing the Interior Space (I), Transitional Space (V) and God's Outer Space (O) in a modern residence.

In modern housing, spatial patterns that are anticipatory to disease are found in the placement of transformed transitional spaces inside the building or outside the building in the form of a terrace.

Collaboration of traditional conceptions on modern residential layouts will increasingly produce points that can be used for residential elements that are anticipatory to the Covid-19 outbreak.

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