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STUDY OF THE UNIQUENESS OF FARMER'S JOGLO HOUSES: THE ROLE OF CULTURE IN DETERMINING HOUSE ORIENTATION

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Abstract
This article aims to explore the uniqueness of traditional housing in terms of its culture. Specifically, this paper examines how local culture influences house orientation. In architecture, orientation is emphasized by context, such as the roads, sun paths, views, and wind. However, it has been suggested that culture may be an important determinant of building orientation. Understanding how a culture influences the orientation of a building can enrich discussions about residential architecture, that focus on local culture. This study was conducted using a descriptive qualitative methodology. A case study was conducted on the Joglo House in the Pondokrejo Village. The Joglo houses are unique in that they use culture as a basis for determining their orientation. Direct observation and interviews were used for data collection. The analysis is conducted by identifying the themes that emerged from the case study and then constructing them into a conclusion. As a result, it was determined that a culture-based orientation was based on birth date. The orientation is determined by Javanese calendar calculations, occupants, and the degree of the owner. The findings can contribute to enhancing the culturally based traditional architectural residential approach, especially when it comes to determining the orientation of a house.

Keywords: Orientation, Locality, Farmer's Joglo, Contexts, Culture

INTRODUCTION

This article aims to explore various unique traditional cultures as an element in determining architectural aspects, specifically building orientation. The concept of context reading has been used by various designers as part of the process of developing their design (Lee, 2012; White, 1983). In Indonesia, there are diverse and distinct cultural elements in each region, which is why some local architectural works in certain areas emphasize the role of culture in determining the architectural design of their buildings (Harani, Riskiyanto, Harsritanto, & I. Hasan, 2023; M. I Hasan, A. M. R, & H. B. M, 2022; Yatmo & Atmodiwirjo, 2013). There is potential for further exploration of this local treasure to enrich architectural discourse, especially in this paper that addresses building orientation.

An architectural design cannot be separated from reading the environmental context, which includes climate, local conditions, existing conditions, and geography (Moneo, 2015; White, 1983). In reading a context, the presence of cultural elements is one of the aspects to be considered due to the differences in culture between locations (Fraser, 2005). An enrichment of architectural design that takes into account the culture and locality of the region. There is a unique aspect to each region that can only be understood through in-depth reading (de Certeau, Rendall, & Certeau, 1984; Harani, Atmodiwirjo, & Yatmo, 2023; Highmore, 2002), and that can lead to architectural knowledge that prioritizes locality and culture.

In Indonesia, one study discusses locality largely in terms of residential homes that are designed to prioritize users (Muhammad Ismail Hasan, Ressang Aminuddin, Bava Mohidin, & Sarkum, 2023; Sari, Sudirman, & Chiou, 2024). Furthermore, the orientation of traditional houses in Indonesia is an important aspect to explore further in relation to climate, culture, and religion (M. I Hasan et al., 2022). A building's orientation is currently considered merely a form of opening that contributes to energy efficiency (Khaleel, Ahmed, Dakkama, & Al-Shohani, 2023), and the building's position is influenced by views and boundaries (Cetin, 2017; Wagenfeld, 2011), as well as being widely discussed in relation to net zero energy (Feridonzadeh & Cyrus Sabri, 2014; Franco, Miserocchi, & Testi, 2023; O' Donovan & O'

Sullivan, 2023). The orientation of buildings based on local culture has not been widely recognized.

By exploring the determination of house orientation based on local culture, this article explores the various unique characteristics of traditional housing. Through a qualitative approach, this study employs a case study as its research method. A case study of an urban area with a strong cultural heritage has been selected. This selection provides an opportunity to explore a variety of cultural aspects related to determining the orientation of buildings, especially residential ones. Kampung Joglo was selected as the location in Pondokrejo Rembang. There is a unique structure on this site in the form of a joglo building owned by a local farmer. Through this approach, various cultural aspects, including locality-based orientations, can be revealed in the design of architectural structures.

Many discussions have taken place about joglos as traditional Indonesian buildings, but there has been little discussion of farmers' joglos. An article such as this one does not discuss in detail joglo buildings, but rather focuses on the arrangement of residential houses and one of them is a farmer's joglo adapted to local customs. This can certainly enhance our understanding of Indonesian localities beyond their physical appearance. The purpose of this article will be to discuss three main topics, namely, cultural concepts related to "weton" calculations; building layout strategies; and social aspects related to residents.

METHOD

The approach used in this article is qualitative, in which the study context is described based on what is observed in the field. This method is used because it is capable of showing how a community that is culturally and socially diverse uses its space and how it lives its daily life daily (Creswell, 2009). It is possible to trace architectural interpretation through architectural drawings, which are used to describe the spatiality of the spaces. In architectural research, drawings are required to demonstrate spatial spatiality and spatial interpretation (Creswell, 2009).

The focus of this article is on a single case study, which is a farmer's area in Rembang, Central Java, which has unique traditional joglo buildings. It was determined that this case study would be conducted as a result of an interest in social and cultural issues as well as traditional houses that are still in use today. The location chosen for this research is therefore considered to be suitable for the objectives of the study.

The data was collected through direct observation, interviews, and the distribution of open-ended questionnaires. The data obtained was then categorized and then analyzed in more detail. The analysis is carried out by drawing and analyzing the data, in particular by describing every aspect of the relationship between the data obtained based on categories. This analysis can indicate spatial readings such as direction and strategy, while analytics are conducted to determine findings based on existing theories.

RESULT AND DISCUSSION

There is a Javanese astrology system known as Javanese Weton, which relates a person's birth date to natural elements to reveal his or her characteristics, fate, and luck in life. "Weton" derives from the Javanese term "Wewetonan", which means "relating to". Javanese weton has the following elements:

1. Days (Dina): There are seven days in one week, namely Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday. Every day has its own characteristics and neptu (value). For example, Monday is associated with wisdom and having neptu.

2. Pasaran (Market day): There are five markets in one week, namely Legi, Pahing, Pon, Wage, and Kliwon. Each market also has special meaning and neptu. For example, Legi means clean and has neptu.
3. Javanese Zodiac Signs (Wuku): There are 30 Javanese zodiac signs in a cycle that repeats every month. Each wuku relates to a plant, animal, or other natural elements that contribute to a person's personality. For example, wuku Sinta is related to roses and symbolizes beauty and affection.

Each weton has its influence in determining character based on neptu (the sum of the day and market numbers), hastawara (guardian god), sadwara (guardian star), sangawara (guardian animal), saptawara (guardian source), rakam (guardian animal), and paarasan (guardian plant). Additionally, weton is also used to determine a good date for important events such as weddings, housewarmings, etc. As it relates to joglo houses in Pondokrejo Village, weton is used for determining the orientation of the building's facing direction and good days for building and moving.

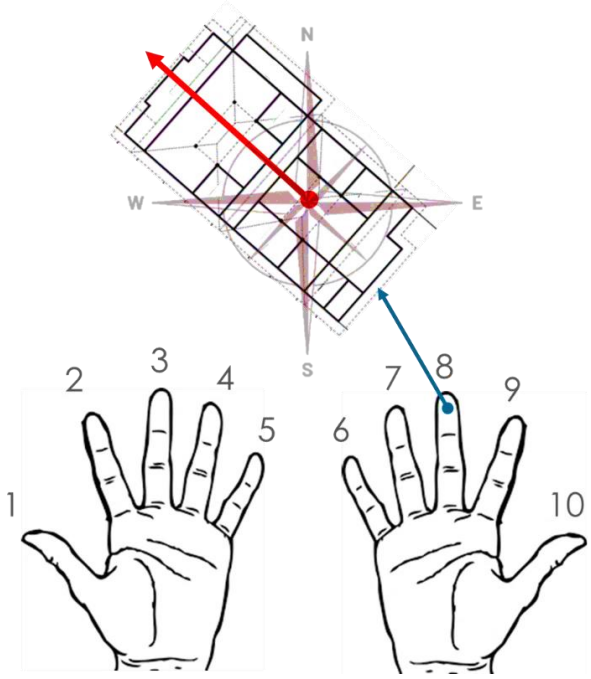

Figure 1. Methods for determining the orientation of buildings

Table 1. How to calculate the direction of building orientation

Day/Weton	Pon (7)	Wage (4)	Kliwon (8)	Legi (9)	Pahing (9)
Monday (4)	11	8	12	9	13
Tuesday (3)	10	7	11	8	12
Wednesday (7)	14	11	15	12	16
Thursday (8)	15	12	16	13	17
Friday (6)	13	10	11	11	15
Saturday (9)	16	13	17	14	18
Minggu (5)	12	9	13	10	14

A house's orientation should be determined by its "pasaran" or "jangkepan" of "weton" (birthday) of the most powerful family member. When residents wish to construct a house, they usually consult with the village elders to determine the best direction in which the building

should be built. It is usually taken care of by village elders or poets who are believed to be capable of making accurate and accurate calculations regarding auspicious days and the direction that the building should face. It is necessary for residents who wish to build a house to go to this elder/poet to receive instructions regarding the direction in which to face and to determine the most appropriate day for building the home.

Based on the Javanese "primbon" from Mataram Palace, this calculation has been made. In order to determine the direction the building faces, the following calculation procedure must be followed:

1. To determine the direction the house faces, the owner will meet a "pujangga" (poet) or "sesepuh" (elder)
2. Ask for input regarding the "best" and most "rejoicing" direction of the house.
3. Calculation of the best "wethon" from existing family members
4. Calculation guidelines consist of:
    - 1=Cucuk (mouth), 2=Wadhuk (stomach), 3=Bokong (butt)
    - Guru-Ratu-Ronggoh-Sempoyong
    - Earth-Sky-Heaven-Hell
5. Not allowed on unlucky days
6. The direction facing is based on "primbon" (horoscope)

In the process of determining the direction of the house's orientation, if the shape of the "kampong" or house plot to be constructed does not allow it to fit the "weton" according to the "poet's" directions, then a "buthulan" or door opening should be constructed in the same direction so that the "bala" is rejected. According to the "poet", the "buthulan" door is placed on the side of the house that should face the street.

A. Resident Background

In Kampung Joglo Pondokrejo, the residential environment is located in an inland area, in the middle of a rice field. A majority of the population (84.3%) is employed as farmers. 422 families are residing in 422 residences, 199 of whom have joglo-shaped houses. While joglos are decreasing in other places, the number of joglos in this village continues to increase. As a result of this condition, there exists a unique anomaly related to the existence and preservation of joglo houses that are still functionally original, owned by the indigenous people of the area, and still in their original setting.

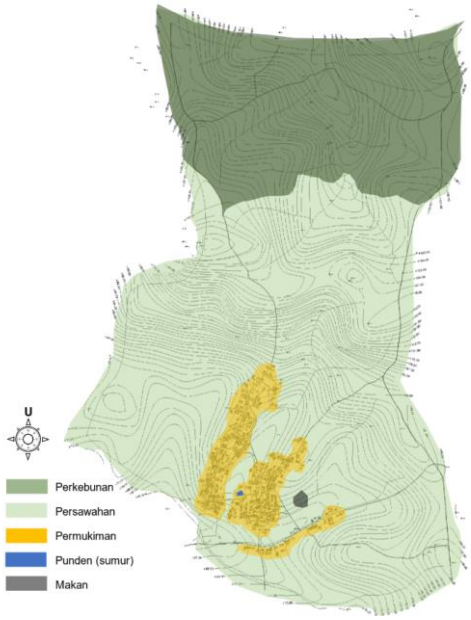

Figure 2. Location of Joglo village in the middle of an agricultural area

Figure 3. The existence of joglo houses in natural settings
Source: Wibawa (2020, 2025)

A.1. Joglo Cultural Background

In light of the anomaly above, there is a cultural background and tradition that remains strong and continues to this day, so that this Joglo village can remain sustainable in its original culture and environment. Regarding joglo houses, there is a tradition in this village that almost all parents will build joglo houses for their daughters. A joglo house will be built for your daughters when they get married if you have one, two, or more daughters. It is not uncommon for parents to prepare a joglo house for their children as early as possible, even if they are unable to afford it. The culture of building joglos is not applicable to boys, but for very well-off families, joglo-shaped houses may also be built for their sons. Generally, joglos are constructed in the yard of the parents' house, but if this is not possible, they may be constructed elsewhere, as long as it is located within Pondokrejo Village.

Table 2. Several types of roof shapes in Pondokrejo

Roof Form	Fuction
 **JOGLO**	The joglo building form is often found for the main building in most residential houses. This building always has a “soko guru”. Usually it is owned by people who can afford it or have enough funds to build it because it requires a lot of teak wood material.

Roof Form	Fuction
 **WEDHOK**	This shape is a development of the village shape which always has air openings on the long sides. The name is often called the “omah wedhok” because it is usually used for housewives' daily activities such as cooking, sleeping, etc.
 **SINOM**	This form of sinom is always found in front of the joglo house. The roof is pyramid-shaped but the height is between a joglo and a pyramid. This form has a pillar, but the central roof has not been raised, and the roof around it has not been built.
 **PARIS**	This Parisian form is a Limasan house form that is widely used by the middle class if they are not yet able to make a joglo. Its function can be the main house, or the second house after having a joglo.
 **RONGPYAK**	The shape of Rongpyak is a simple village shape. This form of house is usually the main house for residents who cannot afford to build another type of house or is usually used as a house for service functions (kitchen or warehouse) at the back.
 **PANGGANG-PE**	This type of house is not found as a stand-alone house, but is often just an additional roof attached to the main house. Its function can be for cages, bathrooms, etc.
 **TAJUG**	This type of tajug shape is only found in the function of worship buildings for muholas or mosques. This form is not used for residential purposes.

Source: Wibawa (2019)

The process of building a joglo for girls is quite straightforward for those families who are able to afford it, but it will be conducted in stages for those who are unable to afford it. When a daughter is born to a less well-off family, the parents begin planting teak seedlings in their paddy field or yard so that when the daughter becomes an adult, the teak trees planted will also be common enough for her to use. As a material for joglo houses. It is also common for parents to pay in installments and store the teak wood material in their house in stages, so that when their daughter is about to get married, the teak wood material will be available.

There is also a tradition in this village of bequeathing the parents' house to the youngest daughter (ragil). As a rule, the youngest daughter will always reside in her parents' home, even after she marries. In order to care for and look after her parents, this child will bring her husband to stay at her parents' home. Upon the death of both of her parents, this "ragil" daughter will inherit the house.

B. Building Form

In this village, there are eight types of roof shapes, but only five types of house shapes, namely Joglo, Paris, Bekuk Lulang or Wedhok and Rongpyak. A tajug roof can only be found in worship buildings, while a grilled pe roof is only used in warehouses, stalls, or other simple structures.

B.1. Building Layout

Pondokrejo Village houses are built with a building mass of 1 to 3 and arranged "lengthwise" from front to back. There are only a few modern houses in this village with four

or more stories and this is not the original layout for these buildings. The rearward extending layout configuration is applicable to all existing houses.

Based on observations and interviews with informants, it was determined that each building has a different set of provisions and rules, which are as follows:

1. Generally, the main building or main house is the first house built for a family. In the case of new families or people who are less fortunate, they will make one building the main (core) house. This location will be placed at the front if it is a joglo shape, but if it is not, they will build it at the back so that if they are able to build it one day, it will be in front. All functions and activities will be conducted in this single house, which will serve as the family's main residence.
2. A second building where the second construction stage is usually a second house with an addition in front or behind the first house. In this house, the function of the building for service functions has begun to be separated.
3. Construction of a service building where the functions of the main house, the second house, and the services are separated.

Conceptually, the existing building configuration in this village can be described as follows:

Figure 4. Building layout configuration

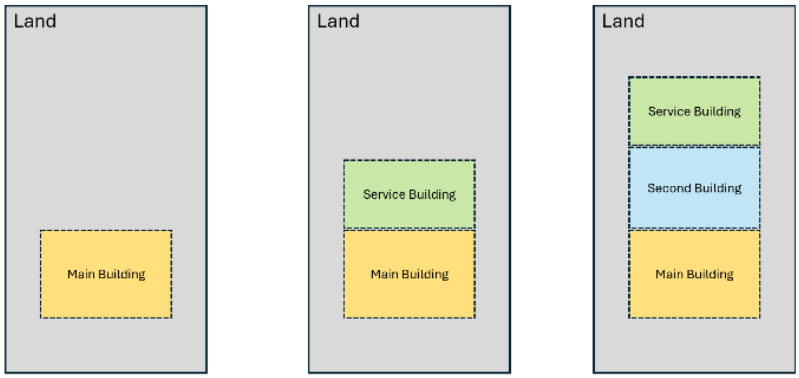

Figure 5. Front-to-back building layout concept
Source: Wibawa (2025)

Building a joglo house to this day is still carried out in cooperation, indeed the tradition of moving an old house to a new location is usually carried out together without dismantling the construction of the house (only the roof tiles are removed) is still in existence and sustainable to this day. The following considerations are often taken into account when moving or shifting a house:

1. The best and largest joglos are always located at the front
2. In a limited-land area, if there's no joglo, the "wedhok" or "Paris" house must be moved to the back
3. If you build a bigger joglo again, the old joglo will also be moved or moved back
4. "Boyongan" is done by lowering roof tiles, tying the soko-soko with bamboo, and lifting and moving them simultaneously through cooperation.
5. Building moves and shifts are always carried out in compliance with the rules of building planning, which is always linear and continuous from front to back.
6. Depending on its new position, the function of a house can change.

Buildings are often shifted and relocated for the benefit of the community depending on the capabilities and conditions of the owner. Therefore, the houses in this village are houses that can grow and develop according to the abilities of their owners. As a family becomes more capable and establishes their economic condition, they will build a larger and better joglo house at the front of the structure. In the event that the location of the land in front cannot be maintained, the existing building will have to be relocated to the rear.

Figure 6. Building a building in accordance with "gotong-royong"

B.2. Building Orientation

The layout and design of houses have clear rules and configurations, but the orientation of the building's facing direction appears very random and does not adhere to any rules. Based on aerial photo observations and field checks in several residential blocks, the following conclusions can be drawn:

Figure 7. Building orientation that appears random at a glance

Regarding the spatial pattern and orientation of the houses in this village, there are several findings as follows:

1. The direction the building faces is very diverse and random.
2. There is no similarity in the direction the building faces towards the ritual spaces (pinden) and tombs.

3. The orientation of the building does not depend on the position of the main road, a neighborhood path will be created between the existing houses.
4. Facing orientation is not influenced by climate (path of the sun and wind) or water channels/bodies.
5. The orientation of the house facing each family is determined based on the calculation of "weton" or the birth day of the family member who has the highest value based on the Javanese calendar and "primbon" calculations.

C. Residents' Social Status

The shape of joglo houses in this village has become a "klangenan" or dream that all its residents desire to achieve. The joglo is a building model that requires large quantities of expensive teak wood, yet it does not seem to hinder the wishes of its residents, regardless of their income level.

In the case of residents who are able to afford it, a joglo will certainly be constructed in their homes, but if they are truly able to afford it, they will construct two joglos. People who cannot afford the joglo will first build another type of house, then when they are able to afford it, they will build it in front of it (if the land permits) or they will move the original house to the back and build the joglo there. The practice of carrying items to move or to move houses has become a local culture that is carried out in a cooperative manner. Buildings are typically moved by removing only their tiles and walls, then tying them between columns and lifting them with the help of many people.

This village's joglo building is culturally recognized as a symbol of social status. Generally, the more joglos one has, the larger the size of the house, the higher the jogol roof (based on the number of tiles), the larger the size of the "soko guru", the greater the number of "tumpangsasi", the higher the social strata and degree of the owner.

A joglo is a form of accommodation that is always present in the home of every resident or family in this village. Having a joglo has become a desire for all residents, regardless of their financial situation. People who are able to afford it can purchase the best and largest wood according to their ability from outside the village (Perhutani), whereas those who are unable to afford it will purchase the wood in installments and store it in stages within their homes. From generation to generation, there has been a tradition passed down that people build a joglo house by "paying off" its materials in one piece so that gradually the desired joglo can be built. The following are some of the stages:

1. Underprivileged residents are able to own a joglo by paying small bills. When they have grandchildren, they want to be able to give the wood to them, so it is often found that the wood has been left behind by their grandmother.
2. Those who are better off tend to buy and collect finished wood gradually and store it at home. As a general rule, this "installation" is carried out in stages, beginning with soko, followed by medhangan, followed by gebyok, and so on.
3. When the amount of wood is sufficient, the house will be built in stages. The first step is usually the construction of the "ragangan" or main structure and roof. It is usually possible to buy a house with a structure and roof (without "gebyok" or walls with doors and windows) if you cannot afford it.
4. In preparation for the construction of the kebyok keling with doors and windows, the group will collect more teak wood as soon as the funds have been refunded. The gebryok will be installed as soon as sufficient wood is available for the construction of the joglo building.

It is possible to use materials from outside the village in the construction of a joglo for families who are able to afford it, with better and larger dimensions and a higher quality of

wood. However, for some families, preparations must be made earlier in order to fulfill their desire to build a joglo. Newlywed couples plant teak trees in their rice fields after they have married.

Most people who cannot afford to build a joglo build a pacekan joglo, which is a type of house that already has a soko guru, so that one day if additional costs arise, the building can be upgraded to a joglo. Among the types of buildings that already have a "soko guru" are the "sinom" and "wedhok" types.

Figure 8. Joglo 'pacekan' house in a 'Sinom' house with soko guru

Discussion

Based on the discussion above, it can be observed that there are several factors that determine the shape and orientation of the traditional joglo farmer's house in Rembang, namely cultural, social, and time-based factors. An orientation is determined by a weton calculation, which is a time calculation. Time is based on the Javanese calendar, which is regarded as valuable. In contrast to current architectural discussions, the orientation of this project is devoted to mornings, afternoons, evenings, and nights. This broadens the understanding of orientation in traditional architecture. This study expands the understanding of architectural orientation, which has been extensively discussed in determining time-based efficiency (Ahmed, Suwaed, Shakir, & Ghareeb, 2023; Khaleel et al., 2023).

A variety of architectural approaches of a social and cultural nature contribute to the unique physical form of residential houses, particularly Joglo-style farmer houses. This indicates that the people in this location possess cultural values that are capable of producing architectural forms independent of contextual factors. Whereas in other areas there is a context reading system related to topography, view, sun orientation, and noise (White, 1983), in this area it prioritizes user welfare, descent, and also environmental protection. The findings of this study demonstrate that social and cultural factors are among the contextual factors, which in this case are oriented from the users to the outside, namely the house's physical features. As a result, context analysis can be performed by reading from the inside out. This is in addition to the statements made by White (White, 1983).

The status of house occupants which has so far been seen as related to social rank and the shape or size of the house, can be shown to be a development strategy by the existence of a disassembly system, material arrangement, and construction phasing system. There is no significant impact of social status on aesthetics and area, but rather on the direction in which development stages are oriented. Accordingly, site management systems are determined by

social status. Moreover, the findings of this study also demonstrate that natural resources are optimized based on social status, with wood material coming from local sources being prioritized. As a result, this supports sustainable architecture, which prioritizes resource utilization in the environment (Suryantini, Paramita, & Yatmo, 2019).

This article shows that there are rules in determining various elements of a residence. These rules are local and trusted in certain communities. This diversity of rules certainly enriches architectural knowledge, especially those that prioritize locality. The main aspect of this paper is the determination of orientation. Orientation is not only concerned with the direction of the house but also with the placement of the rooms inside, as well as with the development of the construction and subsequent stages of the building.

CONCLUSION

This article shows that there is a context-based reading from within the user of the residence which influences the external form and external environment. The findings in this paper are that there are aspects that determine the shape and orientation of traditional joglo farmer houses in Rembang, namely time, culture and social based. Time is related to the residents' calculated beliefs, culture is related to negotiations with nature and social is related to development strategies based on the social status of the residents. The social and cultural-based local rules show that there is a reading of the context that does not only focus on reading the environment as stated by White (White, 1983) but seeing beliefs as local culture can produce architecture that is also contextual. This adds to what Hasan et al. (M. I Hasan et al., 2022) stated that cultural diversity creates strict rules in housing design and influences several elements, including orientation. This article adds that orientation is not only related to the position of the building but also the stages of development.

The findings in this article show the potential for determining the orientation of a residence based on local culture to provide enrichment in architectural form. Especially in homes with social and cultural aspects that are strong in their locality, this supports the construction of homes that apply culture and can be a practice of maintaining customs and culture. Traditional residential houses can be used more optimally based on their construction strategy, this can of course demonstrate maintaining the cultural traditionalism of a community. Traditional houses can follow user developments without abandoning their traditions. This strategy shows the existence of local regulations that support the sustainable architectural process. This research has the potential to be carried out in other cultural contexts, of course opening up opportunities to look at various local sustainable strategies.

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