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Conceptions of the Vernacular Settlement Architecture Orientation: *A Literature Study of Research Results*

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Abstract Architectural researchers have conducted researches on the architectural orientation of vernacular settlements, both explicitly and implicitly. The study results differ based on the understanding of the resident's culture of the community, their beliefs, and the context of their settlements. They understand that vernacular settlement architectural orientation results in a different orientation direction in one territory from another in Indonesia. Indonesia is an archipelago country with various tribes spread throughout the Indonesian archipelago. Each ethnic group has a different culture of living, so that the orientation of the Settlement as a form of relationship between tribal people and their "priority" is also different. The complexity of vernacular payments in Indonesia is fascinating to trace the grand conception through inductive studies. This study aimed to examine the conceptual orientation of the elaborate architectural direction of vernacular settlements in Indonesia using the literature method through the hermeneutic approach. The object of the study is the publication of research results in the form of journals and proceedings. The research results are (1) the conception of symbolic analogy, which means expressing an identity of immanent and transcendental relationships between people in a vernacular architectural territory with their "priority"; and (2) logical conception, understanding the existence of a place of residence as a necessity of life.

Keywords: *settlement culture, orientation conception, vernacular settlement, symbolic analogy, logical conception*

I. INTRODUCTION

Human civilization's development started from nomadic life [1]–[4]. Movement of humans to survive by looking for food from one place to another. The nomadic life will continue until human civilization recognizes the technology, the formation of social relations, culture, and the concept of belief. As a result, humans have a social and cultural bond regulated in local rules in a system where life is carried out, called settlements. The living system is still in groups and cooperates in building a vernacular residential environment by utilizing local human and natural resources.

The development of settling culture in Indonesia began in prehistoric times with the arrival of Indians with the culture and concepts of Hinduism. A cultural relationship between local culture (Indonesia now) and Indian culture produces a culture with regional genius characteristics [5]–[7]. The formation of a new civilization through the Indonesian nation's wise attitude in responding to cultural influences from outside through creating a culture with

local characteristics, indicating the existence of external cultural influences, but regional characteristics still maintained in giving new cultural features. Before this cultural relationship occurred, the Indonesian nation was not a nation without an identity in residential architectural spatial planning. The Indonesian country, long before touching this culture, had an ancient belief concept, namely (1) animism by believing in spirits or ancestors; and (2) dynamism, which believes that a large tree or large stone has a soul or spirit [8], [9]. This concept influences the architecture of vernacular settlements throughout Indonesia. This concept of belief (animism and dynamism) affects Settlement spatial planning, especially in settlement orientation. Usually, the direction of vernacular settlements influenced by the view of ancestors or gods that believed to reside on the top of a mountain or land that is higher than the surrounding land [10]–[21]. In addition to the concept of mountains or higher land, there is also a settlement orientation based on the rising sun's direction, which provides a light and life to the local community [22], [23].

The orientation of vernacular settlements is based not only on the local cosmological concept but also on the place that provides the source of life [24]–[26]. This pattern

occurs in coastal settlements, rivers, and lakes. The settlements' orientation is towards rivers, lakes, and the sea to get fortune and necessities of life to catch fish and other marine resources for consumption and trading purposes. Usually, this phenomenon founded in vernacular settlements along rivers in the Kalimantan area and the Bugis tribe's settlements who live as fishermen at sea. According to [27], the housing pattern is associated with economic sources, such as fishermen settlements facing the sea and farmers' settlements facing rice fields.

Many studies on the concept of the orientation of vernacular settlement architecture in Indonesia have been conducted. These studies can be grouped based on location, namely (1) orientation of settlements in mountainous or upland areas [12], [28]–[38]; and (2) orientation of settlements in lowland and coastal areas [39]–[45]. These studies have different local orientations influenced by the history of settlement formation, the influence of local beliefs, the effect of cardinal directions, the impact of topographical conditions, the result of the local population's livelihoods as being influenced by changes in settlement dynamics.

This study aimed to examine the conceptual orientation of vernacular settlement architecture on the research's textual results. The contextual analysis is the results of research related to the direction of vernacular settlements in Indonesia. The research method used was library research with a hermeneutic approach. The hermeneutic approach analyzes the meaning of a closed, unknown, difficult to understand, foreign, or challenging to include the open and easy-to-understand context. [46]–[48]. The implies an understanding that the aspects studied are textual through the conceptual dialogue of universal knowledge. The research results are carried out by finding themes regarding the research results' orientation directions and conducting a conceptual discussion.

This study shows that there are various variants of the architectural orientation of vernacular settlements in Indonesia. There are many vernacular settlements in Indonesia with different locations, different climatic and topographical conditions, other concepts of belief, and various local wisdom in different contexts to understand this orientation. Therefore, the researcher was willing to study with the literature method through the hermeneutic approach with the results in the form of a variant of settlement orientation based on the locus, a different understanding of the direction, and housing influence dynamics spatial layout of settlements.

II. RESEARCH METHOD

The object of study in this research is the research results that have been published in the form of journals and proceedings so that the research method used is the literature method with a hermeneutic approach. The literature method is a type of qualitative research on literature that has been carried out by the previous study at the analytical and emic perspective stages and prioritizes

philosophical and theoretical analysis [47], [49]. In this context, the data studied and analyzed results from research on the orientation of vernacular settlement architecture in Indonesia, not an empirical study, but the author's opinions (perspectives) regarding the topic. The hermeneutic approach will lead to an analysis of the meaning of the conceptual and theories put forward by these researchers [46]–[48].

The research results on the orientation of vernacular settlement architecture are the object of study in this study. Therefore, the data collection method used was the library method and is secondary to the sources of journals and research proceedings. These data were collected through a coding strategy on orientation direction, basic conception, and locus. The data collection results were then analyzed using the inductive method by interpreting generalizations through a conceptual dialogue approach. These data are presented using descriptive qualitative methods, tables, and pictures.

The steps or procedures of this research are (1) topic selection, namely the orientation of the vernacular settlement architecture based on the cultural characteristics of vernacular settlements in Indonesia, which is the orientation as a forerunner to the formation of a residential spaces hierarchy; (2) the focus of the study, namely the conception of the direction which is based on researches on vernacular settlement architecture in the orientation context; (3) collecting data sources from journal kinds of literature and research result proceedings; (4) analysis, namely exploring these journals through coding methods; (5) induction, namely generalization through the linkages between the themes found in the analysis stage; and (6) synthesis, namely conducting a hermeneutic study of the results of induction through a conceptual dialogue approach to produce a typological meaning of orientation for vernacular settlement architecture in Indonesia.

III. RESULTS AND DISCUSSION

A. Analysis: Literature Study of Research Results

This literature study consists of studies of research results in the form of journals and proceedings. This study emphasizes the concept of living, the idea of the direction of orientation, and the locus of the object being studied and carries out the induction stage in the form of finding themes. There are 15 research results in the form of journals and proceedings whose substance will be reviewed.

The Matabesi tribe is one of the tribes in the Belu Regency that still adheres to local customs and culture. One form of its culture is a ritual culture related to residential spatial planning with an orientation towards Mount Lakaan. The primary or sacred direction towards Mount Lakaan as a symbol of creating a harmonious relationship between humans and natural forces. The Matabesi people believe that the most extraordinary power besides God is natural rulers who can provide strength, health, and prosperity. The orientation towards Mount Lakaan is a symbol of respect

for nature [31]. The themes of the findings in the above study are (1) Mount Lakaan as the orientation direction; (2) harmonization with nature; and (3) ritual as an attitude in maintaining harmony. (figure. 1)

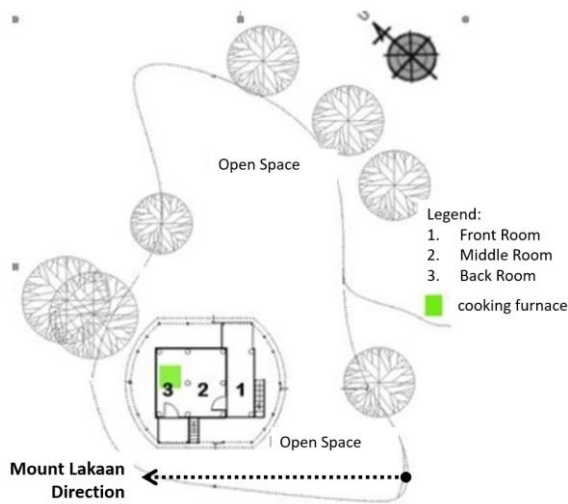


Figure 1. Orientation direction of Matabesi tribe settlement buildings [31]

Sekardadi Village settlement is one of the settlements in the highlands with the highest topography on Mount Batur. This Settlement has the concept of *Hulu* (top) and *Teben* (bottom) orientation. Sekardadi Village is a derivative of the main village in Kintamani, namely Bayung Gede Village, which still holds the principle of respect for ancestors who have died and reside on the top of a mountain (Mount Batur). The settlement pattern of Sekardadi Village is linear by following the *Hulu* (top) and *teben* (bottom) axes, where the center of orientation is towards *Kaja*, namely Mount Batur, which has a sacred value/valued as "above" [28]. The substance of the description above is (1) Mount Batur as the center of orientation, (2) the conception of respect for the ancestors, and (3) contextual upland settlements. (figure 2)



Figure 2. Orientation direction of Sekardadi Village settlement [28]

The traditional Settlement of Kajuara Hamlet is in a hilly area and has a contour height variant. The orientation direction varies depending on the land or site of the house. The higher ground symbolizes the upper world (God) and becomes the house orientation direction. The orientation of the traditional settlements of Kajuara Hamlet is towards the four cardinal directions, with the best order considering the customary and legal rules, namely East-West and towards higher ground. A house that has countered is oriented to the higher ground as a symbol of the world above (God). A home that is on a flat contour makes the road as the center of orientation as a road circulation accessibility factor, the best direction for houses that are in a balanced shape is the West (valued as salvation) and East (valued as sustenance) [34]. The substance of the description above is (1) high contours, roads, West and East directions as an alternative orientation; (2) the concept of divinity with a high land symbol; (3) the conception of the order of safety and sustenance; and (4) contextual settlements in hilly areas. (figure 3.)

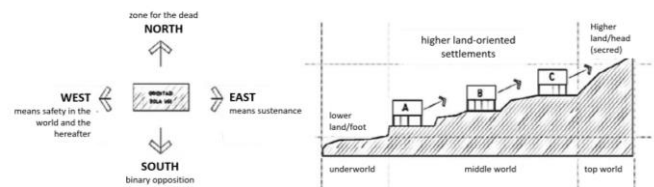


Figure 3. Orientation direction of Kajuara Hamlet settlement [34]

The Settlement of Segantar Hamlet is in a highland area. The concept of society in Segantar Hamlet is the harmony between man, nature, and God. The Settlement can be seen from the acculturation of beliefs between local beliefs, Hinduism and Islam. Locals believe that nature is the most extraordinary power, so that it needs to be respected; Hindus believe in God as the highest power and the Islamic concept of God. This conception affects the orientation of the settlements in Segantar Hamlet, namely Mount Rinjani, and the sunrise's direction as a sacred direction where the gods and ancestors who have died reside and provide livelihood in the order of the rising sun. The Segantar community also believes in the conception of respecting older people; the space associated with parents is in the orientation of Mount Rinjani and the East [50]. The themes of the findings from the above explanation are (1) Mount Rinjani as a sacred direction; (2) the direction of the sun rising as a spiritual direction; (3) conception of belief in ancestors and gods; and (4) contextual upland settlements.(figure 4.)

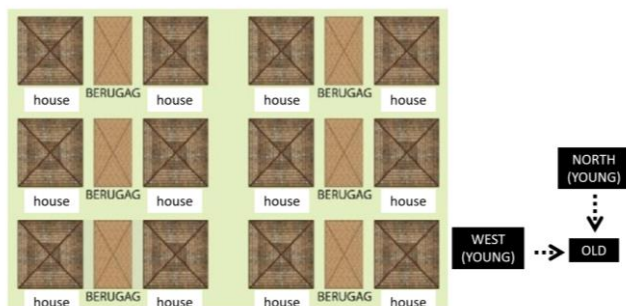


Figure 4. Orientation direction of Segantar Hamlet settlement [50]

Kaenbaun Village is a village consisting of several tribes and is in a highland area. Several tribes from their respective settlement patterns. These tribal groups are the Basan, Timo, Fon, and Tausi tribes. The four tribes have different house orientations, namely: The Basan tribe is oriented towards Mount Batu as the starting place for the founding of Kaenbaun Village, the Timo Tribe is oriented towards Biboki, which is their area of origin, the Foni Tribe leads to Oekusi (part of the state of Timor Leste) which is their origin, and the Taus people point to the Neten (the top of the mountain) where the holy spring is located. In general, the locus of vernacular research is oriented towards settlement patterns with a single ethnic group, in contrast to that in Kaenbaun Village, which has four tribes with cluster settlement patterns. [38]. The themes of the findings from the above study are (1) Mount Batu as a religious orientation; (2) place of origin as the primary orientation; (3) springs as the main orientation; (4) conception of sources; and (5) contextual settlements in upland areas. (figure 5)

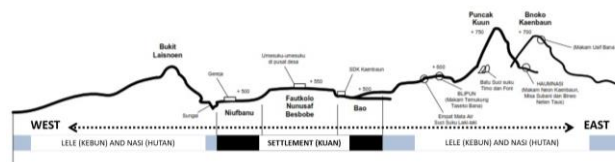


Figure 5. Orientation direction of Kaenbaun Village settlement [38]

The Settlement of the Atoni tribe in the Tamkesi village on Timor Island is upland. These settlements have orientation variants, namely (1) orientation on the outer and inner space aspects; the internal space has a higher value than the outer margin; (2) direction based on site aspects, buildings on a higher site have a high value compared to buildings on a low site; (3) orientation based on the element of form, namely a building that has an entrance and a roof until it touches the ground is a building that has a higher value than other facilities; (4) orientation based on the climate cycle, namely buildings that are on the top of the hill have a higher value than those underneath because the upper part is safer from climatic influences than the facilities in the valley [32]. The themes of the findings in the above research are (1) high contours are considered primary; (2) the inner space is highly rated; (3) building form as identity orientation; (4) contextual contoured areas. (figure 6.)



Figure 6. Orientation direction of Atoni tribe settlement [32]

Pinggan Village is one of the Bali Aga Villages located in a highland area. It has a linear settlement pattern following contour movements and a village road as the village axis. The orientation of settlements and yard units follows the luan and Teben ways interpreted differently from the conceptions of luan and Teben in other colonies. The direction of the luan (primary/sacred value) is towards the Puncak Penulisan Temple. Based on Pinggan Village's history, Puncak Penulisan Temple is part of the place where the Pinggan Village community came from [36]. The themes of the findings from the above study are (1) Pura Puncak Tulisan as the primary orientation; (2) conception of origins; and (3) contextual upland settlements. (figure 7)

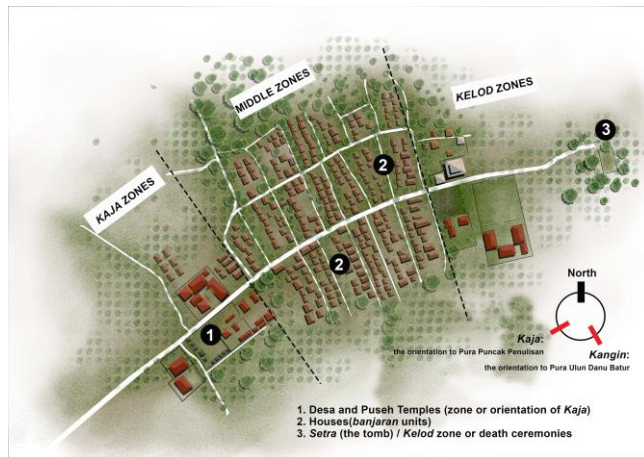


Figure 7. Orientation direction of Pinggan village settlement [36]

Pengotan Village is in a highland area. It is a new village formed in ancient times, originating from Karangasem Regency, namely on Mount Abang's slopes, Pura Tuluk Biyu. The Kawitan (initial/ancestral place) of the Pengotan Traditional Village community comes from a village on the slopes of Mount Abang, to be precise in the East (*Kangin*) from the current position Pengotan Traditional Village. Therefore, the orientation is linear from Pengotan Village towards Pura Tuluk Biyu as the place of origin of the Pengotan Village community [12]. The themes of the findings from the above study are (1) Pura Tuluk Biyu as a direction of religious orientation; (2) original conception; and (3) contextual upland settlements. (figure 8)



Figure 8. Orientation direction of Pengeton village settlement [12]

Singengu is an upland settlement with a linear settlement pattern with an axis in a village road that crosses the *Bincar* (sunrise direction) - *Banom* (sunset direction) axis. There are two concepts in its spatial layout: (1) *Bincar*

- *Banom* orientation; and (2) a hierarchy of spaces - sacred, neutral, and profane. The development starting from the direction of *Banom* towards *Bincar*, which has a philosophy that the sun rises as the source of life for living things in the world, so with the movement towards the rising sun, life will continue. The houses have a linear pattern facing the axis of the *Bincar* - *Banom*, which is interpreted as sacred space, the inner area as a neutral space, and the rear is called the profane space [35]. The above study has findings themes: (1) the direction of *Bincar* (sunrise) as the primary orientation; (2) the conception of the source of life; and (3) contextual upland settlements. (figure 9)

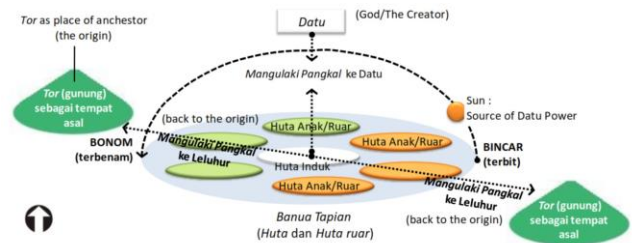


Figure 9. Orientation direction of Singengu village settlement [35]

The Cikakak Settlement is in a lowland area. It is formed from kinship and tradition also orientation based on the tomb of Kiai H. Mustolih and the Saka Tunggal mosque. The settlement pattern is a combination of cluster and linear designs. The unique characteristic of Cikakak Village is that the people still use the Abode calendar because the people are the Aboge *Kejawen* group. The Aboge *Kejawen* community is divided into two, namely the Islamic santri community and the *Kejawen* community. The orientation of the santri community houses towards the mosque (Allah) and the *Kejawen* community towards *Punden Pedhayangan* (ancestral/grave of ancestors in Cikakak Village) [51]. The above study resulted in the themes of the findings: (1) religious orientation towards *Punden Pedhayangan* and mosque; (2) the conception of ancestors; (3) the conception of God; (4) contextual lowland settlements. (figure 10)

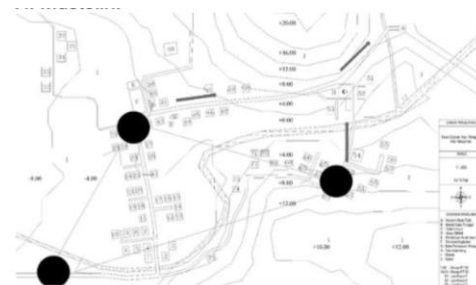


Figure 10. Orientation direction of Cikakak village settlement [51]

Musi River is viewed from a distance between the buildings and the river, the buildings' orientation, and housing buildings' typology. The results showed that the building masses of the people living along the Musi River have a direction towards the road, land, and river

topography. The primary orientation is towards the river because the river is the local community's source of life. Buildings in the upstream zone have a direction toward the road and land topography, the mass of buildings in the middle have an orientation to the river and the land topography. In contrast, those downstream have a direction toward the river [52]. The above study resulted in the themes of the findings: (1) orientation to the river; (2) road orientation; (3) direction to high ground; (4) conception of livelihood sources; (5) concept of accessibility; (6) the context of the riverside settlements. (figure 11)

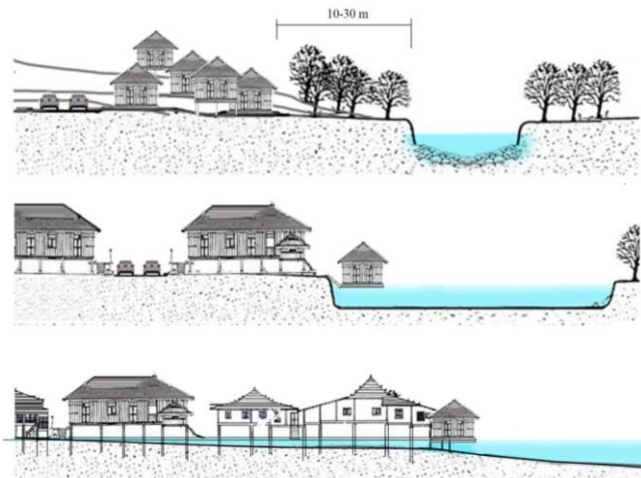


Figure 11. Orientation direction of buildings along the Musi river [52]

The settlements along the coast in the Sulawesi area cannot be separated from the coast's natural character and livelihood source for the local community. The growth of settlements is a response to a place to get a source of life and stage architecture in response to the coast's natural conditions. The development occurred with the growth of other settlements along the beach, which formed a linear settlement pattern with the following orientation: (1) private orientation as the primary orientation towards the coast as a source of livelihood; and (2) direction towards roads valued as public or secular. The space oriented towards the river is called the backroom, and conversely, the area oriented towards the road is called the front room [26]. The themes of the above research are (1) the beach as the primary (sacred) orientation; (2) the conception of a place of livelihood; (3) contextual coastal area settlements. (figure 12)

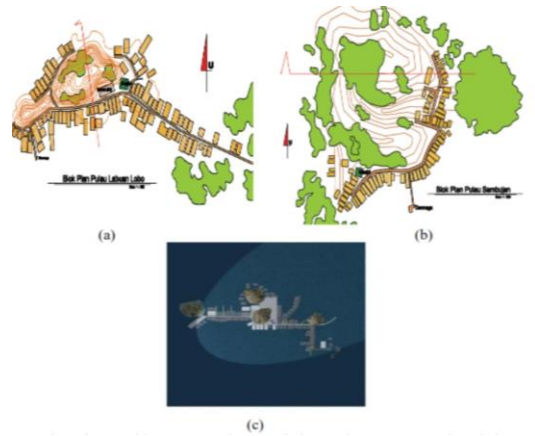


Figure 12. Orientation direction of buildings in coastal areas of Sulawesi [26]

The Settlement of the Bugis tribe in Kendari is influenced by the place or location of their livelihood. The Bugis people generally occupy the coast of the sea and rivers to live. Bugis Settlement is because the river and sea are the sources of livelihood for the Bugis tribe. The Affects the orientation of the Bugis settlement towards the sea or river with a linear settlement pattern. However, the direction of the Bugis settlement is generally oriented to the four cardinal points. What should not be done regarding orientation is not to turn your back from the place of livelihood as a source of life [42]. The themes of the findings in the above research are (1) the primary orientation towards the sea or river; (2) the spatial conception of the source of life; and (3) contextual coastal settlements. (figure 13)

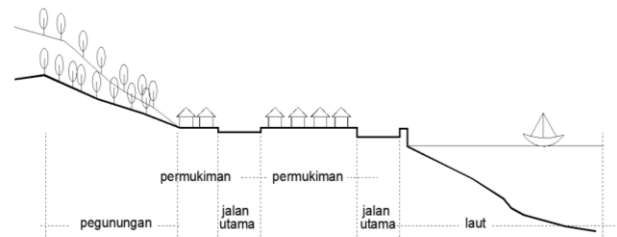


Figure 13. Orientation direction of Bugis tribe settlement [42]

The Bajo tribe usually chooses to live not far from the seacoast because the life of the Bajo tribe is very dependent on the natural resources of the sea. Orientation forms the settlements on the waterfront with a linear settlement pattern along the coastline. The population growth led to an increase in the number of Bajo Tribe settlements in Wiring Village. The Bajo tribe's house in Wiring Village is divided into two, namely a home on the land (hoarding) and a home above the sea. The two's orientation is different, namely the groups of houses on the ground oriented towards the road and those above the sea are oriented towards the sea. [39]. The themes of the findings in the above research are (1) primary orientation to the sea; (2) the conception of a place of livelihood; and (3) contextual coastal settlements (figure 14)

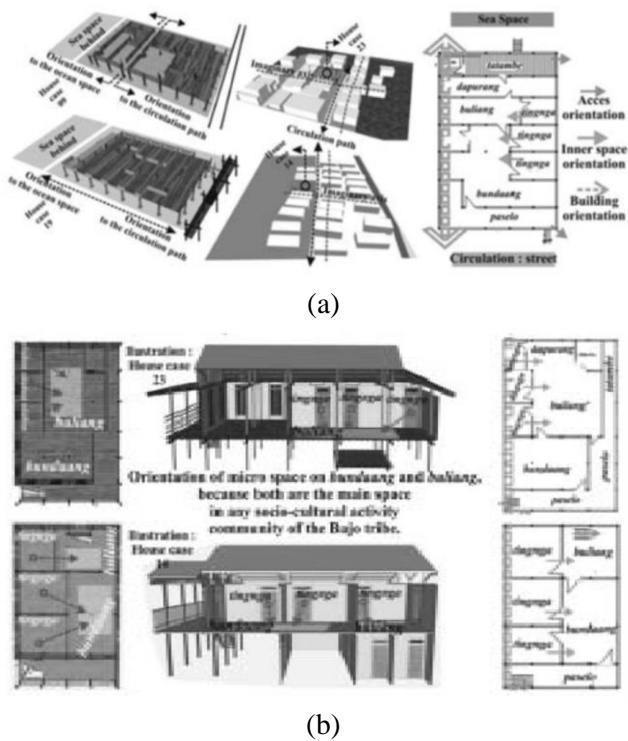


Figure 14. (a) Orientation of environmental meso space and axis of shelter plan; (b) Orientation of micro space and axis of shelter plan [39]

The settlements of the Toraja people are influenced by cosmology (1) *Puang Matua* (the Creator) is in the north/above/sky; (2) *Deata* is in the East direction; (3) *Tomembali Puang* is in the West direction; and (4) *Tolindo* is the earth as a theme for human life. Toraja Traditional House (*Tongkonan*) orientation is determined by the cosmology of the direction of the sun rising (the place of the *Deatas/Gods*) and the sun setting (the home of the ancestors). The layout of the stairs, the kitchen, and the birth activity area is in the East part as a symbol of birth, and the activities of death are in the West [30]. The themes of the findings in the above description are (1) the direction of the sunrise as a religious orientation; (2) the conception of birth and death; and (3) contextual upland Settlement. (figure 15)

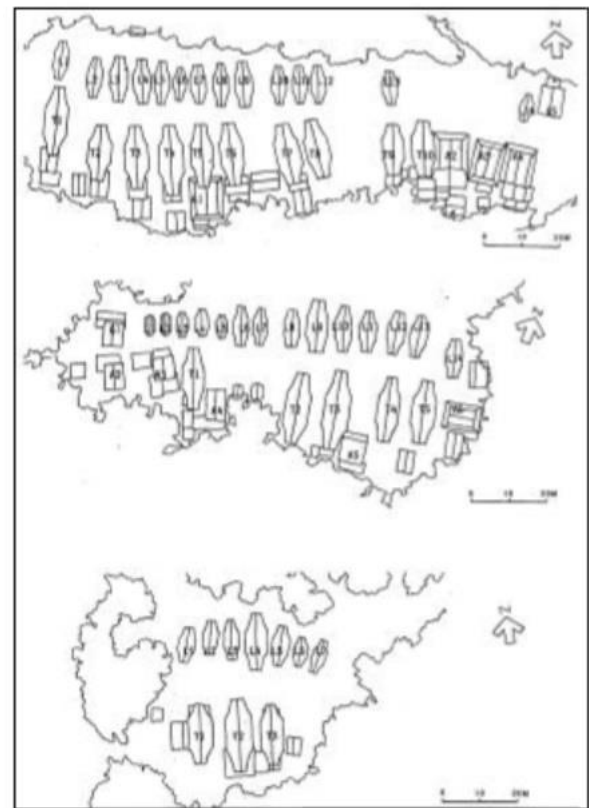


Figure 15. Orientation direction of Toraja traditional house [30]

Research Results can be grouped into two, namely (1) contextual themes related to vernacular settlement locus in the highlands/mountains and coastal areas (beaches, lakes, or rivers); and (2) orientation themes in the form of directions to mountains/highland, sea/river/ lake, direction to the East, direction of origin, and direction of springs. The themes of these findings can be seen in the Table 1 below.

Table 1. Themes of Findings in Literature Studies of Research Results

No	Settlements	Context		Orientation				
		High Land	Coast	Mount/ High Land	Sea/ River	East Direction	place of origin	Springs
1.	Permukiman Suku Matabesi	•		•				
2.	Desa Sekardadi	•		•				
3.	Dusun Kejuara	•		•		•		
4.	Dusun Segantar	•		•		•		
5.	Desa Kaenbaun	•		•			•	•
6.	Kampung Tamkesi	•		•				
7.	Desa Pinggan	•					•	
8.	Desa Pengotan	•					•	
9.	Singengu	•				•		
10.	Desa Cikakak		•					•
11.	Permukiman sepanjang Sungai Musi		•		•			
12.	Permukiman sepanjang Pantai Sulawesi		•		•			
13.	Suku Bugis		•		•			
14.	Suku Bajo		•		•			
15.	Toraja	•				•		

Source: Author, 2021

The table above shows that (1) settlements located in highland areas or mountainous areas generally have a primary orientation towards the mountains/higher land; (2) settlements situated in coastal areas have a primary direction towards the sea/coast/lake/river; and (3) there are settlements located in upland areas and coastal areas oriented towards the place of origin of the community themselves. There is an inconsistency in the orientation, namely the settlements in upland and coastal areas, which are generally towards the mountains and towards the coast/sea/river/lake, have an orientation towards the place of the community origin. In general, these villages are part of the main towns that experienced migration due to natural disasters or war. The community themselves still holds the concept of ancestors and the origin of their existence [15], [17], [18].

B. Synthesis: Conceptual Dialogue

The concept of orientation towards the mountain/high land correlates with understanding the place where the ancestors and gods' spirits reside in elevated areas [15], [17], [18], [33]. This conception understands the life philosophy after death. Ancestors who have died are no longer in this world but in another world, above the human world towards the heavens, likewise understanding the gods residing in the sky. The sky's concept is a place above the human world's space/place, visually being or having a "high" value. The part of the earth's highest surface is mountains or the topography, which is higher than the surrounding land. The hill's top represents the sky's conception as the ancestors or the gods' dwelling place so that the orientation with the concept of the ancestors and the gods is towards the mountain or plateau. The peak a symbol of a home for Gods who can protect and provide a livelihood to humanity who are under it. Whereas mountains are a source of water and natural resources for human life, dense forests supply food at the hills' foot. Therefore, a place that gives life needs to be respected through the Settlement orientation towards the mountains or highlands.

The development of community settlement patterns in the context of location states that the residents generally choose areas along rivers, beaches, and lakes [24]–[26]. These areas are also a link between places so that they are suitable for trade, such as settlements along rivers in Kalimantan, where the river is an essential part of people's lives as a transportation route and a place to get sustenance. Rivers, seas, and lakes are parts of the earth with aquatic ecosystems with various marine biota ecosystems. Humans need these biota sources to live, such as fish, shellfish, and other biota, whether for direct consumption or sale/marketing. The conception of rivers, seas, and lakes cause the pattern of people to settle in looking for these places, to make it easier to find food sources. Therefore, the settlements along the coast, rivers, and lake banks have an orientation towards these places. Because these places

provide a source of life, it is necessary to protect and preserve them through the concept of orientation towards rivers, seas, and lakes.

Understanding the settlement orientation towards the rising sun (towards the East) can be traced through belief and logic. The rising sun's direction as a symbol of life or birth and its opposition is the West, which means death or darkness. Following human thought, usually towards analogy, not logic [53], [54]. The rising sun is associated with the focus of birth, and the opposition to sunset rule (the end) is associated with death. Apart from that, dividing the universe can be based on the binary opposition concept, namely contradictory, contrast, or the opposite [55], [56]. Between the rising and setting of the sun as part of binary opposition. The first (the direction of the rising sun) is the "main" so that the vernacular community settlements' orientation is in that direction. Another approach is that morning sunlight has an excellent effect on human health; this impact window openings and the vernacular residential buildings' path, generally towards the rising sun. The approach is used in vernacular architecture, but in the development of the building's current orientation, the building's eastern side is used for morning lighting through window openings.

The concept of vernacular settlement orientation towards the place of origin can be interpreted as an attachment to the past space and time of the community concerned [12], [13], [36]. Generally, this happened in main villages that experienced village splits due to natural disasters or war. The communities that form these settlements still have substantial ties to their existence in the town of origin, respect, appreciate and show their attachment to space and time. The orientation of the settlements is towards their original place of residence.

IV. CONCLUSION

The study of the architectural orientation of vernacular settlements in Indonesia produces a concept that varies from one Settlement to another. The study results' complexity is due to the locus factor and people's understanding of living culture. The results of this study indicate that there are conceptions of orientation that can be grouped into (1) orientation towards mountains/higher land; (2) orientation towards the sea/river/lake; (3) orientation towards the rising sunshine; and (4) orientation towards the place of origin. These orientations have meaning (1) a symbolic analogy towards the "principal" and (2) logically towards the site that provides the source of life. The direction of "the principal" means respecting and glorifying Gods/ancestors in a transcendental relationship and maintaining awareness of the place of origin through immanent relationships. Transcendental and immanent relationships are manifested in the symbol of high mountains/land and the direction of a place in the orientation of vernacular settlements. Logical conception provides a meaning related to space awareness that offers benefits in fulfilling basic human and economic needs.

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