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Submitted

The Anatomy of Bugis House in South Sulawesi, Indonesia

Local Wisdom Concept and System of Building Houses as a Reflection of Human Manifestation

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Abstract: Talungen village in Bone Regency is a Bugis village having a specific characteristic with its suspended house called the Bugis House. The Bugis in this village consider the house to be itself, so the concept and system of building their house is based on the human manifestation. The purpose of this study is to reveal the local wisdom about the concept and system of building Bugis houses based on the anatomy of the human body. The methodology of this study used qualitative methods with the Case Study Approach. The analysis method used is the Discovering Cultural Themes. The results showed that the Bugis community in Talungeng Village used human manifestation especially the homeowners (husband and wife) as the concept and system for building the house, both vertically and horizontally, meaning that the lives of the homeowners will be harmonious with nature in order to be safe and fortunate inside the house.

1. INTRODUCTION

The suspended houses in Talungeng Village are the traditional houses of Bugis tribe that have been known for centuries. A suspended house made of wood represents a tradition that survives long for the Islamic community in South Sulawesi which is also wide-spread throughout Malay (Robinson, 2005). The Bugis suspended house is made of wood with no professional architects (academics) involving during the construction, it involves the assistance of *Sanro Bola*, a Bugis traditional expert who is considered to have tacit knowledge on the procedures for building a house, which must be followed and obeyed even though the knowledge is intangible (Beddu, 2006).

The Bugis house in Talungeng Village has a rectangular plan with a gable roof. This shape in accordance with what is stated by Mardanas (1985). The structure of the house is influenced by that of the cosmos; the upper, middle and under wolrds. The upper world is for the holy realm, the middle for human and the underworld for interaction with the surrounding environment. A customary law is a kind of custom that must be obeyed by the owner of the house. Within Bugis community, the house and the customary law are considered as the provisions of Dewwata Seuwwae (God Almighty). The violation of order will bring harm to those who commit it. Therefore, the prediction of floods, winds, earthquakes is deemed to have been represented by the consideration of choosing the location and orientation of the house (Abbas, 2016).

This is in accordance with what is stated by Robinson (2005) that the Bugis house is highly influenced by the structure of the cosmos; the upper, middle, and under worlds in which the

Bugis consider that the house is human manifestation. According to Bugis people, a house is where they will live in forever. The whole stages of their lives starting from birth, marriage and death run in their house so the house must reflect themselves. As a human manifestation, it is built based on the values that can provide safety, harmony and sustenance for the people (Data, 1985). Therefore, all the occupying parts of the Bugis house will be considered as sacred areas, because the Bugis considers the house to be a place to inhabit forever. A sacred space is a place having a sacred function related to religious activities, for instance to do worship / ritual activities. The activities done in this area designate distinguishing characteristics from other areas. It generally has a specific form and boundary. In a particular society order, the ritual function is a cultural attribute, a very important factor in producing a setting both public and private and produces a certain spatial structure (Knowles, 1996). Whereas Broadbent (1980) states that space in traditional houses is an expression form of local cultural identity, including sacred space.

In traditional Bugis houses, the sacred (holy) area in the vertical structure is in *rakkeang*. It is a space above the body of the house starting from the ceiling to the slope of the roof. It is used to store rice and other agricultural products. According to *Lontaraq Galigo*, rice is Sangiang-Serri, the incarnation of We Oddang Riu, the daughter of Batara Guru. Therefore, the Bugis people in the past considered that rice sacred so that the *rakkeang* was a symbol of *botting langi* (the upper world) where Sangiang-Serri (rice) resided (Shima, 2006). In a horizontal structure, the area of *ale bola* (the body of the house) in the Bugis house is a sacred area in carrying out various traditional ceremonial activities such as marriage ceremonies, birth to funeral initiations and so on (Yunus, 2012). In connection with the birth initiation ceremony in the Bugis house, the ceremony most strongly maintained by the Bugis is a life-cycle ritual, especially relating to before and after the birth of a child (Pelras, 2006). It shows that the Bugis house becomes a part of the culture manifestation of the Bugis community. Various cultural processes are conducted inside the house as a part of belief which has developed in the Bugis community.

Therefore the Bugis house (*Bola Ugi*) is also a cultural product that is manifested physically and in accordance with the cultural conditions of the Bugis community (Hartawan et al., 2015). The realization went through a long process by considering living in harmony with nature. Therefore, the Bugis house is both micro form of the universe and human body reflecting the behavior and nature of human. The theoretical background on this case has been stated by Hikmah (2018) on traditional Balinese-Indonesian homes. In belief concept of Balinese community, the traditional buildings are built with the concept of human relations with nature. Philosophically, human relations with nature are called Bhuwana Agung consisting of three elements: Atma, Sarira and Tri Kaya. Atma or holy place in a house is considered as the head in human body. It is a place of worship in a Balinese house. Sarira is the manifestation of body part. In the form of a building, Sarira is the yard of traditional Balinese house. While the back of the Bali house is called Nista Mandala, the occupant is called Tri Kaya. The basis of this theory shows that there is a relationship between the dimensions of the human body and the shape of a house in mass based on the function of each building mass. In other words, the manifestation of the human body dimensions at the Bali House is separated from each building. So the manifestation of the human body is carried out on a horizontal building mass at the site, because traditional Balinese house consists of several masses of buildings in a large yard, belonging to a nuclear family. The manifestation of human body parts in traditional Balinese house site is still in use today. Similarly, the concept and system of building Bugis house in Telungeng Village are based on human body parts. The research on such concept and system have never been conducted in the context of Bugis house so it is interesting to study to discover the possibility of another connection between the dimensions of human body and the Bugis suspended house also how

the dimensions of human body affects the form of traditional Bugis house horizontally, vertically or both. It will add to the theoretical repertoire in architectural concepts of traditional house.

2. RESEARCH AREA

Talungeng Village is located in Barebbo District, from Bone Regency, South Sulawesi. Bone Regency is located 174 km to the East of Makassar city. The natives of Bone Regency are Bugis tribes who occupy almost all the parts of the city and village. The district is positioned $4^{\circ} 13' - 5^{\circ} 6' \text{ LS}$ and between $119^{\circ} 42' - 120^{\circ} 30' \text{ BT}$. The area of Bone Regency is 4,559 km², with an average population density of Bone Regency of 162 people per km². Barebbo district itself has 18 villages. One of them is Talungeng Village with 276 families with the population of 1164 people, the area of Talungeng village is 6.80 km², with a population density of 171 / km², it is denser than the average population of Bone Regency. With its unique characteristics, Talungeng Village, Barebbo District has a homogeneous population structure and is dominated by Bugis tribes. In general, the community in Talungeng Village, Barebbo Subdistrict is in the stage of the development process, including the way of thinking which is still traditional. Bugis houses are still commonly found in this village with traditional building system as well. The process of building a house in this village is was carried out by mutual cooperation. The construction is assisted by Sanro Bola, people who are considered experts and understand the procedures and intricacies of constructing Bugis houses in accordance with the the hereditary customs.



Figure 1. Map of Bone Regency, Barebbo District and Talungeng Village

3. RESEARCH METHODE

3.1 Metodology and Approach

The research method used in this study was a qualitative method (Creswell, 2008) because the research was carried out in traditional settlement which is natural and still firmly holds on traditions and customs in building houses. The research is also called natural research as it is carried out in a natural environment in the village (Sugiyono, 2014). Qualitative research aimed to find meaning from the data obtained in the field. The meaning revealed in the

research includes the relationship meaning among the dimensions in human body as the manifestation of traditional Bugis house.

In general, the research approach uses architectural approach (artifact) and ethnographic approach (living culture) (Creswell in Sugiyono (2014)), with the nature of descriptive research (Groat & Wang, 2002). The architectural approach explains the physical conditions of traditional Bugis houses, parts of the house layout (lower part, body of the house and upper part of the house), symbolism, the aesthetics of the house as a whole in Bugis house. While ethnographic research explains about the system of people's knowledge in building a house associated with the immunity of the human body. It aims to understand the point of view of indigenous people in the relationship of building their houses to the dimensions of the human body, to gain views on their world (Spradley, 2006). Ethnographic approaches are carried out by studies of group culture in natural conditions through observation and interviews.

It was stated by Daymon (Daymon,2008) who explained that ethnographic research was possibly carried out in the form of descriptions, such as records about a community group produced by the previous researchers. The purpose of the description is to describe the social reality in a group so the ethnographic readers can easily understand it.

3.2 Method and Technique of Data Collection

Viewed from setting aspect, data was collected in the settings of traditional Bugis houses and from the data source, the research comprised primary data and secondary data sources. Data collection techniques in the research were participant observation, in-depth interviews, documentation studies through recording images through photos or films and also reconstructing social scalese.

related to vertical and horizontal parts of the house, the environment around the house, the process of building and occupying the suspended house, etc. The observation method was used to collect physical data of the houses, the settlements and the surrounding of the houses. The documents were used to collect secondary data in the form of manuscripts / texts, books, research results related to the study. Whereas the interview was used to get the meaning of local wisdom of every concept, system, symbol, form and activity related to the construction of a Bugis house in Telungeng Village, Bone Regency in relation to human manifestation.

3.2.1. Participatory Observation

Spradley (1980 in Susan Stainback, 1988) states that in participatory observation, the researchers observe what people do, listen to what they say, and participate in their activities. With this participatory observation, the data obtained will be more complete, sharp and the researchers are able to know the meaning level of each visible behavior (Sugiyono, 2007). The benefit of observation is that the researchers can see things unobserved by others, especially for people living in the environment because those things have been considered "ordinary" so that they will not be revealed in interviews. Besides, the researchers will be able to understand the context of data in the overall social situation, so a holistic view will be obtained. The observation method is used to collect physical data on houses, settlements and the environment around Bugis house in Talungeng village.

The research used passive participation in which the researchers do not participate in doing what the informant does. There are several activities in the research location not allowing the researchers to take part in doing what the informant does, such as building houses that require special skills. However, the researchers also feel and observe the behaviors and words, linked to the parts of Bugis house in Talungeng village. According to Spadley (1980 in Nasution, 2002), the object of research observed in

qualitative research is called a social situation consisting of three components: space, actor and activity. first, space aspect covers the settlement space along with physical aspects of Bugis suspended house in Talungeng village. second, actors cover people involved in social situations, namely the occupants of the house and panre bola (house builders). the last, activity is carried out by people in an ongoing social situation, namely the activity of building a Bugis house.

The stages of participatory observation are descriptive observations where the researcher conducts general and comprehensive exploration also does a description of all that is seen, heard and felt. All data is recorded and the results of this observation are concluded in an unregulated state. This stage is called the grand tour observation, and the researcher produces the first conclusion. in the research, it is the description of the entire environment of Bugis house in Talungeng village. The next observation is focused observation where at this stage the researcher has conducted a mini tour observation, an observation that has been narrowed to focus on the dimensions of the human body associated with the physical aspects of the parts of the house. The selected observation is a further stage to describe the research focus in order to obtain more detailed data on Bugis suspended house.

3.2.2. In-depth interview

To get more in-depth information about participants, the researchers used in-depth interviews. According to Esterberg (2002) interviews are a meeting of two people to exchange information and ideas through question and answer, so that meaning can be constructed in a particular topic. In the research, the interviews were conducted with residents of Bugis suspended house in accordance with the chosen sample by panrita bola to obtain the meaning of local wisdom from each concept, system, symbol, form and activities related to the construction of Bugis house in Talungeng Village, Bone Regency, along with analogy to the anatomy of the human body.

The residents of the house interviewed were those who were considered to have knowledge and understand the ins and outs of building houses both generally and specifically. In addition, the residents must possess a representative house with a complete form and in accordance with the tradition of building a house. The method of interviewing is done by choosing residents who are considered to be most aware of the concept of building a house based on the dimensions of the human body. The residents will expose the facts and meanings. After that, the researcher will move on to the second house sample to interview other residents with the same questions. And so on, the interview is carried out on a relay basis. Whereas in-depth interviews with Panrita Bola were conducted by choosing the one considered to understand the concept and had the knowledge and experience of being Panrita Bola from generation to generation. The interviews with panrita bola cover determination of the house size reflecting the body size of the husband and wife also the meaning contained in each size, form and space produced.

3.3 Samples

The sample in qualitative research is not called a respondent, but as a resource person, or participant, informant, friend and teacher in the research. The sample in qualitative research is also not a statistical sample, but a theoretical sample. In this qualitative research, the participants of the data source were selected by purposive and snowball sampling. Purposive sampling is a technique of sampling data sources with certain considerations. This particular consideration, for example, is the person who is considered to know the best about what we hope for or who has the power and authority in the social situation or object of the house researched to accommodate what the researchers need in collecting data. Snowball sampling is a sampling technique for data sources, from fewer to more data. when the small number of data sources has not been able to provide satisfactory data, other data sources will be

obtained. Thus the number of sample data sources is getting bigger. Faisal (1990) citing the opinion of Spradley (1980) suggests that the social situation in the initial sample is strongly recommended for a social situation as the beginning of many other domains. in the research, the sample taken was suspended houses in Talungeng Village that still apply the anatomy concept of the human body in constructing their houses. The number of samples is not limited, but if the interview is already done enough, then the sample is considered sufficient. Therefore, the research took several samples from a total of 44 houses with the typical characteristics of Bugis houses. The initial sample as the information source is the residents who were considered to have sufficient knowledge and understanding on the houses. The figure 2 below shows a map of a village layout covering the types of houses taken as a sample.

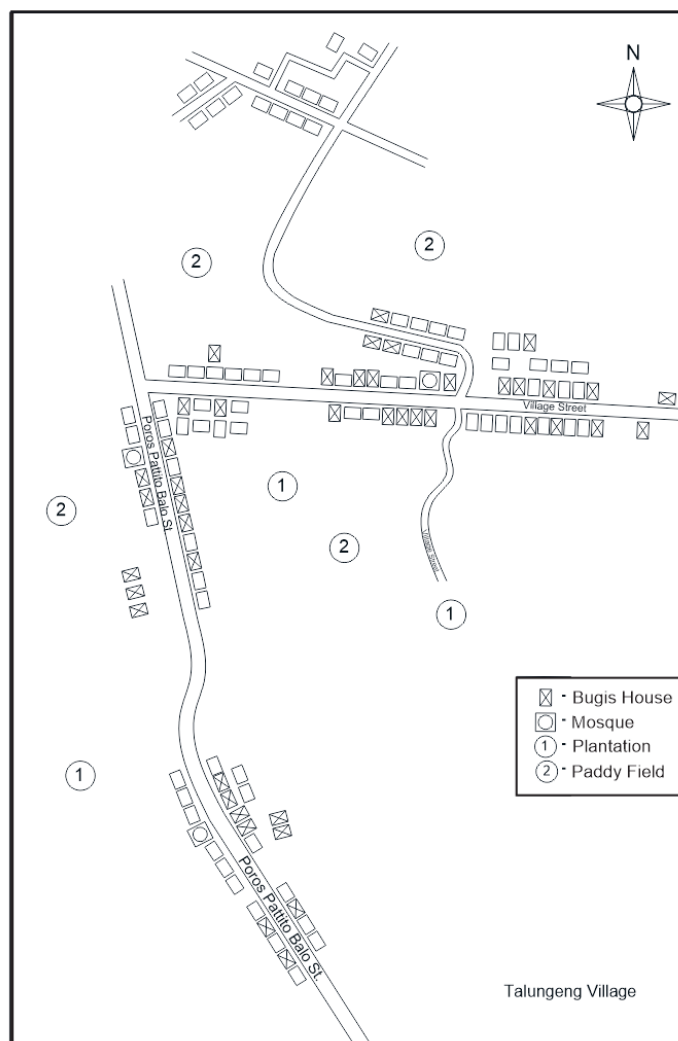


Figure 2. Map of a village layout covering the types of houses taken as a sample

3.4 Data Analysis Method

The data analysis method used in this study is the Discovering Cultural Themes method to uncover the findings of local wisdom concepts and systems to build houses based on the human manifestation in Bugis houses in Telungeng Village. The analysis gathers the focus of

culture, meaning and values and physical cultural symbols on the construction of the Bugis house which is analogous to the parts and symbols of the human body. The analysis using Discovering Cultural Themes obtained the relationship in the symbols and parts of the Bugis house reflecting the human body. It is used to discover a holistic finding of the concept and system of building a Bugis house both vertically and horizontally based on the cosmological view of the Bugis in Talungeng Village, Bone Regency. Based on the existing analysis, a reconstruction in a descriptive form of the concept and system of Bugis house construction was designed. It is harmonized with the human manifestation to give comfort, harmony, security and well-being both in the world and in the hereafter. The final step is to draw a conclusion.

4. FINDINGS AND DISCUSSION

4.1 The Concept and Meanings of Bugis Houses in Talungeng Village

The house for the Bugis people reflects themselves. Everything related to the Bugis house must be based on the structure of the human body that is harmonized with nature. This is in accordance with the cosmological understanding of the Bugis people that nature is divided into three structures, namely the upper, middle and lower worlds. Likewise with the structure of the body; head (top), body (center) and feet (bottom). It is manifested into the structure of the Bugis house which consists of three levels; roof / *rakkeang* (above), the body of the house / *Ale bola* (center) and under the house / *awa bola* (bottom). Therefore, the house is shaped in a suspended way. The concept of the suspended house has become a tradition in constructing house from generation to generation (Naing, 2011).

In addition, the Bugis people in Talungeng Village and the Bugis in general embrace an ontological view of life that understands the universe universally. The life philosophy of the Bugis people in Bone Regency is *sulapa 'eppa'* which means self-improvement. It means that all aspects of human life will be perfect if formed from four elements: water, soil, fire and wind. As mentioned, the traditional house of the Bugis people is a suspended house, with a rectangular plan with a gable roof. Therefore a house for the Bugis is considered perfect if it is in a rectangular shape (Naing, 2011). The shape of a Bugis suspended house is stated by Mardanas (Mardanas, 1985).

The architecture of the Bugis House of Bone has a broad meaning. For the Bugis community of Bone, a house is built not only as a shelter from rain and the heat of the sun but also related to philosophical values used as a way of life. The meaning and good values behind the construction of a house are interpreted and held as a way of life to be implemented in everyday life (Marwati, et al., 2016).

Likewise the concept of the Bugis house cannot be separated from the local wisdom of the Bugis people in Talungeng Village. Various local wisdoms as the living traditions of the Talungeng community in building houses begins with the concept of determining the house orientation, situating the main door of the house, the spatial planning and the concept of the structure Bugis house. The concept aims as the safety and comfort of living in the house, so that the arrangement of the concept of the house must be adapted to the parts of the human body in relation to the harmony with the nature.

4.1.1 The Concept of Orientation and Placement of the Main of Bugis Houses in Talungeng Village

Orientasi The house orientation of the Bugis community is very important and sacred, where there are several elements used as guidelines for orientation, namely mountains, roads, rivers, sun, sea and wind direction. However, in general the orientation of the Bugis house layout is distinguished on *bola mabbuju* (longitudinal house) which is a house that extends in the east-west direction and *bola-mpareq* (transverse house) that is a house that stretches north-south (Shima, 2006). The orientation of the Bugis house in Talungeng Village uses the direction of the wind, namely east, west and south but north. According to the local wisdom of the Bugis of Bone, a north-oriented house means '*ko no 'ki diattang dia 'bokori Watangpone lo diattang*', meaning that people go down from the house to the North means to turn away from Watampone, in which the people are not supposed to turn their backs on their origin.

This is also in line with what was stated by Idawarni that the west direction is considered sacred because it is direction of Muslims (qibla) (Idawarni, 2011). Whereas the east as the direction of the sun symbolizes fertility and the spirit of life. This is consistent with what Altman and Chemens said that in the cosmology of the Poeblo Indians in America, they involve the east where the sun rises and take it as a very sacred direction. The sun is considered a "father" helps the growth of their plants and leads their journey in hunting towards their house in the west (Altman and Chemens (1984).

The house orientation for Bugis people in Talungeng village in particular and all Bugis people in South Sulawesi in general, can not be separated from the direction of the main door or entrance. The entrance of the house is analogous to the 'mouth' where the food is taken in through it before entering the body. In other words, the entrance is the transition between the outside 'world' and the 'world' inside the house. The orientation of the house facing the four directions is believed to be good for the lives of the owner of the house, depending on the position of the entrance. The position of the entrance is not always the same as the orientation of the house. If the orientation of the house is believed right by the local community, the position of the door of the house will follow the orientation. On the contrary, if the orientation is considered to be bad, the entrance direction will be placed to in a good direction.

For this reason, the orientation that is considered good for the Bugis Bone community in Talungeng village is east, west and south, so that the entrance of the house is to follow these directions. The houses oriented towards the east with the entrance also facing the east (Bugis: *dilau* ') means that the owner of the house will always feel good and blessed, comfortable and healthy because the sun rising in the east is source of energy, which also the source of life.

The local wisdom of the Telungeng village community states that "*Nakko no'ki in Lau* (East) *Yaro Mata EssoE* (Sun) *Menre 'Malolo, Jaji Malessi Pappineddingnge, Makecce' Tuwongengnge*". When the sun rises in the east above the house oriented to the east, the people will not step in their own shadows during the daytime. Stepping on the shadows when being in the house during the day brings a bad thing. It is not considered good because of not being exposed to the direct sunlight, resulted in a feeling unwell, lack of enthusiasm and easily get sick. The orientation of the house with the entrance to the east can be seen in the following figure 3.

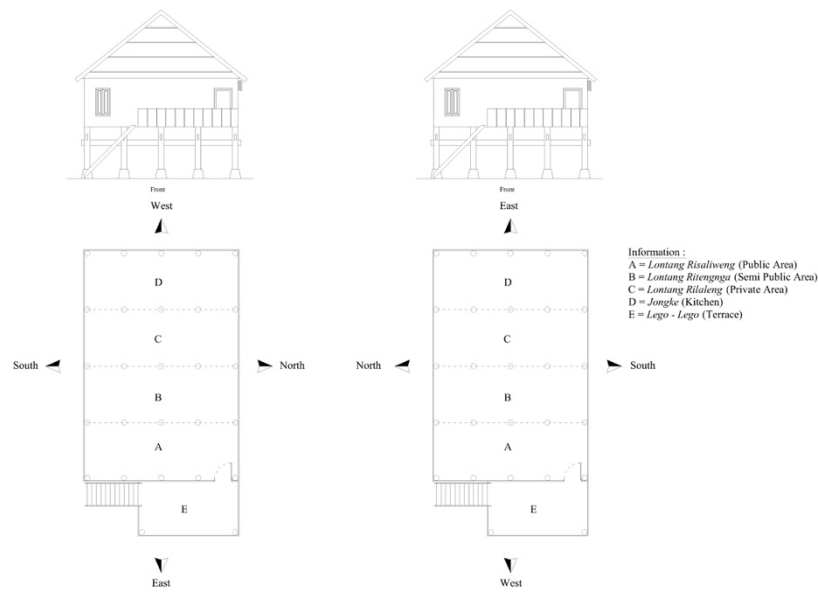


Figure 3. The Orientation of the House with The Entrance to the East and West

According to the local wisdom of the local community, the orientation of the Bugis house to the west with the entrance facing the west (Bugis language: *diaja*) is also believed to be good because the house faces the qibla (Bugis language: *dioloi kibla 'E*). The Qibla direction for the Bugis community is believed to be very good for the orientation as it is the center of orientation of the Muslims to pray. Therefore, the house oriented towards Qibla is will always bring good things; blessings of life and the salvation both of the world and the dayafter because Qibla is is direction of all those who perform prayer. The orientation of the house with the entrance to the West can be seen in the following figure 3.

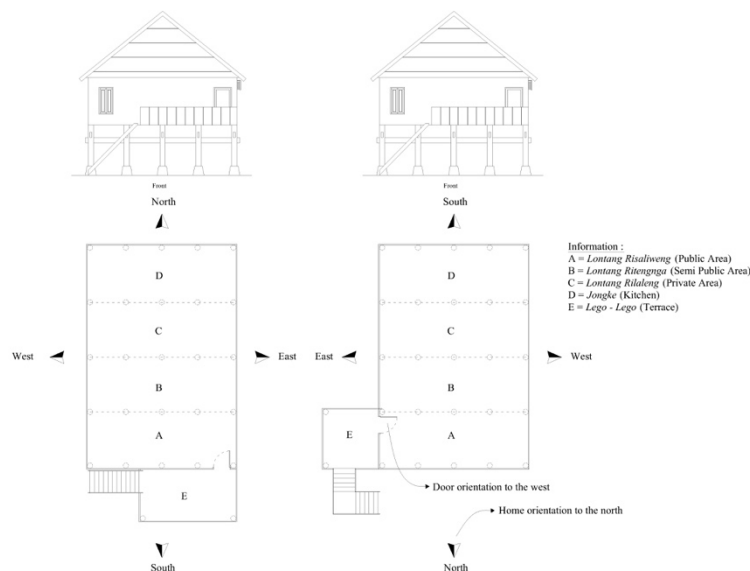


Figure 4. The Orientation of the House with The Entrance to the South and North

Similarly, the house oriented to the south with the entrance of the house facing the south (Bugis language: *diattang*), is also believed that the the owner of the house will have a good life and happines, both phisically and spiritually. This is in line with the view of the Bugis of Bone that the house oriented to the south with the door facing to the south means "*no 'ki ri*

atuwongengnge" or always being in a comfortable life. The orientation of the house with the entrance to the south can be seen in the following figure 4.

The house oriented to the north (Bugis: *diawang*) is believed to be not appropriate to position the entrance to the north because it means to welcome death (Bugis language: *no'ki riamatengengnge*). The deficiency is adjusted by situating the entrance oriented east on the left side of the house or the door facing west on the right side of the house. The position of the entrance is not always at the front wall, it can be alternatively on the side wall of the house. The orientation of the house to the north with the position of the entrance of the house to the north can be seen in the following figure 4.

4.1.2 Konsep The Concept of Occupying the Bugis House in Talungeng Village

The house as a place to live for the Bugis in Talungeng village is related to spatial planning in the house. The spatial planning in the house in the village has a unique concept and is different from the Bugis house concept in general, especially relating to its function as a shelter for occupant and a place to conduct sacred processions from birth, marriage and death which are all performed in the house (Robinson, 2006). However, the concept of occupying above has different spatial planning and function in each zone / area (Bugis: *Lontang / Latte'*) in Talungeng Village in particular.

Similar with the concept of Bugis house in general, the area to live in is located in the middle (Bugis: *Ale Bola*) in a vertical arrangement; the upper area is the roof and roof space (Bugis: *Rakkeang*) and the lower area is under the house (Bugis: *Awa Bola*). Horizontally, the floor plan or the area for residing is divided into areas called *lontang / latte'* where each area has a different function and division. The horizontal distribution of areas in the Bugis house is in the figure 5 as follows.

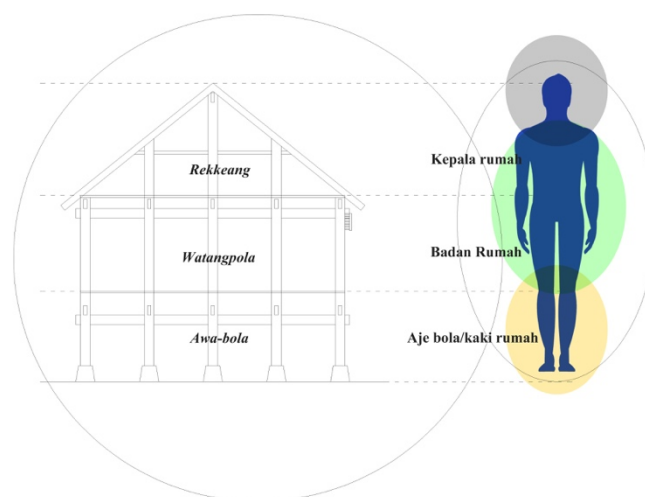


Figure 5. The Structure of The Bugis House Is Vertically Analogous To The Anatomy of The Human Body

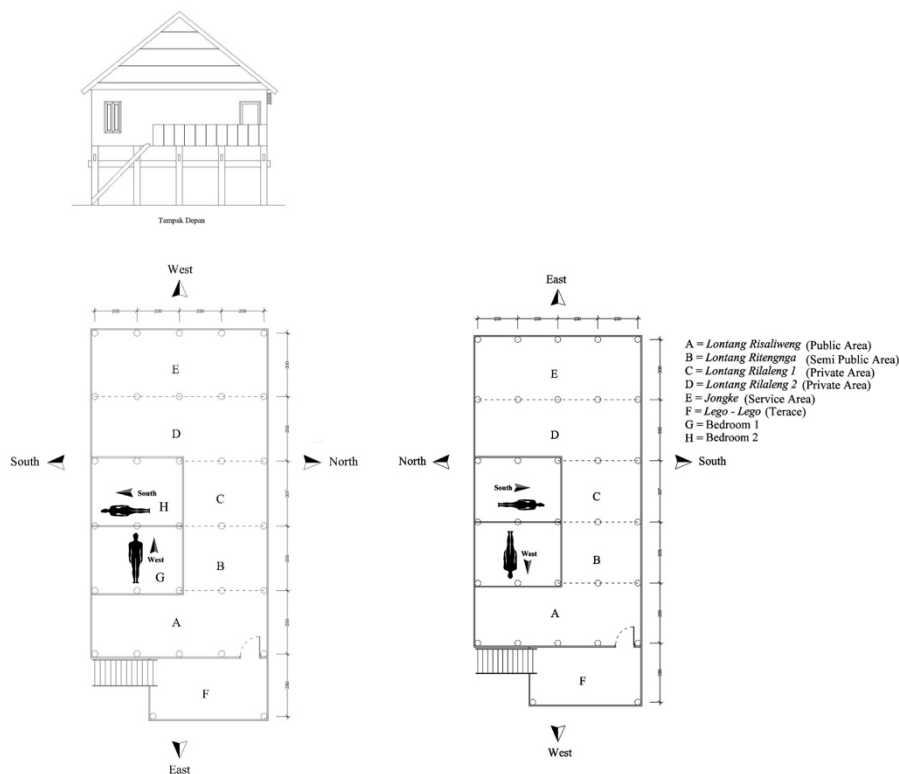
In the picture above shows that the concept of spatial planning in Bugis houses in Bone is horizontally divided into the front area, usually called *lego-lego* or terrace that functions as the area to welcome guest or transitional area before entering the living room. The stairs of the house stick onto the terrace, and on the front wall is situated the entrance and front windows. The size of the terrace is 2.95 meters. The length of the entrance can not exceed size of the other areas because the terrace for the Bugis tribe is symbolized as a child. It

means that when the occupants (husband and wife) have children, they are expected to be obedient and dedicated to their parents.

Besides *lego-lego*, there is a public area / living room (Bugis: *lontang risaliweng*). This area serves as a place to welcome guests, both family and relatives who come to visit the house, to take place the proposal ceremony, and to conduct sacred rituals for the groom. In the ancient Bugis house, there was not any furniture in this area but a mat on the floor. However, along with the development of civilization, this area is furnished with chairs and tables to entertain the visiting guests. The length of this area is 3.00 meters, 0.05 meters longer than *Lego-lego*. *Lontang risaliweng* (public area) for Bugis people is considered a Parental Symbol, so that the authority and influence of parents must be greater than children (*lego-lego* / terrace). The authority of parents who are high in this area is reflected in the function of this area as a place to run the proposal ceremony and welcome guests. For Bugis people, accepting the proposal is the authority of the parents, not children.

The next is a middle area (Bugis: *Lontang / latte ri tengngah*) which is private because in this area there is a bedroom and family room. The bedroom in Bugis houses in this village is ruled by the belief that a good position for the bedroom is facing east with the head being in the west. Besides, the sleeping position which is believed to be good is facing the North with the head in the south. These two positions are the best positions because they avoid sleeping positions facing the Qibla (Muslim orientation during prayer) and also avoid turning their backs on the city center of Watampone (picture of sleeping position on floor plan can be seen in the following figure 6).

Figure 6. Sleeping Position on Floor Plan



In everyday life, the nature of this area is private, because it is also symbolized as a Parent. In this area, a mother gives birth in a room or outside the room.

However, this area can turn into a semi-private area if the family perform marriage initiation (Bugis: *Mappaci*) as a part of rituals the day before the wedding. In addition, it is also used to lay and

bathe the body. The size of this area is 3.05 meters, 0.05 meters longer than the previous area. It means that longer the house the bigger the size meaning the owner will earn more livelihood. It applies to the next area, namely the back area (Bugis: *Lontang ri laleng*) *Lontang Lontang ri laleng* (back / private area) is the fourth plot in the floor plan. This area is private because it is for the young girl's bedroom which is always protected. In *lontang*

rilaleng, it is also used as a place to eat together and a place to perform aqiqah rituals for people in Talungeng Village. The size of this area is 3.07 meters which also means that the longer the length of the house, the bigger the size (Bugis: '*mattama pede*' *malowang*) 2.95m from the length of the house from terrace, *lontang ri saliweng* of 3.00 m, *lontang ri tengngah* of 3.05m, and *lontang rilaleng* of 3.07 m). If the house has an additional plot (Bugis: *Lontang*) then the size of the next plot is returned to the original size before the highest size namely 3.05 meters, and the last plot is kitchen (Bugis: *jongke*) which is an area service that functions as a cooking place, a place to clean the kitchen equipment and a place to bathe the body in the first stage (Bugis: *cemme tuwo-tuwo*). In the Bugis Bone community, bodies are bathed twice. The first bath is done when the body is still warm, where the body is bathed in a sitting position because it is considered alive, so it can still be bathed in the kitchen area (Bugis: *Jongke*). When the body is stiff, it will be bathed for the second time in the area / plot / *Lontang ri Tengngah* (Bugis). The length of *jongke* is smaller than the previous plot, which is back to 3.0 meters. It means that the fortune obtained by the occupants of the house will not be reduced or will not be exhausted by returning to number 3, with an explanation that from terrace of 2.95m, *lontang ri saliweng* of 3.00 m, *lontang ri tengngah* of 3.05 m, and *lontang rilaleng* of 3.07 m (the size keeps increasing inward), and the next area throws back to the size of 3.05 meters and 3.00 meters. The pictures of the size and meaning of the Bugis houses can be seen in the following figure.

In a straight line on the floor plan, to separate each space element of on the house plan, the partition or dividing wall is used. It distinguishes the function of each room. Each dividing wall or space separator has a doorway, the main entrance connecting the terrace with the living room using wooden doors that are quite strong, such as iron wood. To connect the living room and the middle room uses wood walls or furniture as a barrier equipped with a door hole. For private spaces such as bedrooms, generally have a doorway equipped with a door leaf, and some only have a doorway.

In addition, the local wisdom of the Bugis Bone community in determining the width of Bugis houses is based on plot size (Bugis: *baliang*), while the length of the house is based on the number of plots on the back (*lontang / latte*). Each *lontang* has a different size as described above. The width of Bugis houses in this village averages 4 *baliang*, the size of each *baling* is 2 meters so that the average width of the house is of 4 *baliang* is 8 meters. For the determination of the length of the house is based on *lontang*, an average length of the house as a place to occupy is 15.12 meters. Determination of the length of the body is different from the determination of the length of the roof cover serving to protect the body of the house. Determining the size of the roof based on the length of each roof material made from palm leaves (*Bakkaweng*), commonly called *pari*. Therefore, there is a term based on the length of the house, for example a *pitumpari* house (seven *pari*) or a house with a roof that has 7 *pari*. For a shorter / smaller size called *limampari* (five *pari*) or a house with a roof length of 5 *pari*. The length of 1 *pari* is 2 meters (Figure 6). The length of the Bugis house roof must exceed the length of the house. The excess length of the roof in the Bugis house is called *bulena* (overstek). *Bulena* functions as a protector of rainwater and sunlight. It protects when the sun shines at a 45 degree and when it is perpendicular to the house, so that the house is protected from high humidity during the rain and also avoids high heat exposure during the day (Figure 7)



Figure 7. The Size of The Roof Based on The Length of Each Roof Material Made From Palm Leaves (*Bakkaweng*), Commonly Called *Pari*

4.1.3 The concept of Bugis House Structure as a Reflection of the Anatomy of the Human Body for Disaster Mitigation

The suspended Bugis house derives from a long process of adaptation to the surrounding environment. The

natural conditions in Indonesia, including the Bugis land, did not escape disaster. Both disasters caused by earthquakes or climate change. The manifestation of adaptation of the house and nature (macro cosmos) and humans in addition to shape and size, also in the structure of the Bugis house. So, the shape of the Bugis suspended house is a replica of the universe in the physical dimension of the occupants of the house. It means that the houses and the occupants will always be in harmony with nature and the environment, also avoid natural disasters such as earthquakes, floods and storms. It is different from the relationship concept between the dimensions of the human body and its manifestation in a traditional Balinese house, in which the house site belongs to a family, consisting of several building masses. The mass of the building consists of the main house, the place of worship / shrine, kitchen, food warehouse, and a gathering place. The relationship between this dimension with nature and house is not only analogous to the physical form of a house but also outside parts of the house, such as yard of the house, and the back of the house. However, in traditional Bugis houses in Talungeng Village, the relationship between the dimensions of human body and the house is manifested only in the physical whole of a house not in outside parts. This is due to the physical form of a traditional Balinese house building consisting of several masses (horizontal), while the form of a traditional Bugis house building only consists of a building (vertical and horizontal).

In addition, based on the experience of settling in Bugis people, it has been proven that the traditional suspended house of Bugis have provided good protection against disasters due to extreme natural changes. However, the earthquake that causes a shaking does not cause the Bugis suspended house to collapse or reverse. Floods as high as 2 meters will not bother the community because the height of the lower part of the house is above 2 meters and even the tornado can not lift or overturn the house to the left or right or the front to the back.

The structure of the Bugis house which is strong and can prevent natural disasters is a symbol of the anatomy of the human body, especially its owner. So that the proportion of the height and width of the house will always be in harmony with the nature and the homeowners who occupy it. It is reflected in the structure of the Bugis house, comprising the parts of the house, is vertically analogous to the anatomy of the human body, as well as the standing position of human (Figure 4). Where the leg of human are analogous to the leg of the house / under the house (Bugis: *aje bola*) in the form of pillars (Bugis: *Alliri*) standing on the stone

foundations, the human body is analogous to the body of the house (Bugis: *ale bola*) is the living area, and the head of human is analogous to the head of the house / roof (Bugis: *ulu bola*) and human navel is analogous to the pole of the house (Bugis: *possi bola*). Some anatomical parts of the human body such as collarbone is analogous to the part of the house called *bate-bate* (Bugis). The backbone in human is called *aju lakke* in the house (Bugis). It is a flat wood that is placed on the roof. Furthermore, the vein in human body is called *arateng* or *pattolo* or *bare*. *Arateng* and *Pattolo*' (Figure 8).

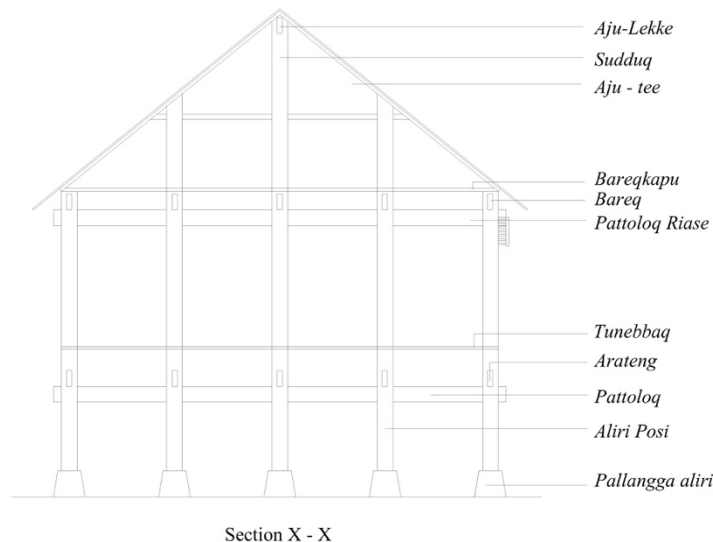


Figure 8. The Size of The Roof Based on The Length of Each Roof Material Made From Palm Leaves (*Bakkaweng*), Commonly Called *Pari*

Relation to disaster mitigation, the parts of the Bugis house structure have an important role in disaster defense. The legs of the house / pillars of the house stand firmly without connection from the top of the ground to the edge of the upper part of the roof, so that the house stays strong and survives when it is hit by strong winds. If there is wind on the top of the house, then the bottom is still mutually reinforcing. Even if the strong wind disaster is very strong, the house is only lifted but does not cause a break. *Arateng* is a long flat beam with a length equal to the length of a house (Bugis: *ale bola*) which serves as a barrier for poles and *Pattolo*' is a flat beam with a length equal to the width of the house whose function is to hold the pillars that have been collected by *Arateng*. The function of *Arateng* and *Pattolo* in disaster mitigation is that when an earthquake and strong wind occur, the house will not be rolled forward / behind and on the left / right side.

The pillars of the Bugis suspended house freely stand on a foundation commonly called *umpak* or *pallangga* (Bugis). The function of the *pallangga* in disaster mitigation is that when there is a strong shaking during an earthquake, the only ones moving are the *pallangga*, while the house piles and their structure do not move, so that the house will not collapse or roll over. Besides that, when a long dry season occurs, the land will fall (Bugis: *makkeppi* '), so that the only ones going down following the ground are the foundation because there is no connection with the pole above, while the frame of the house will not go down into the ground. The fact above shows that the Bugis house structure is very strong in anticipating natural disasters, so that it can save the houses and occupants from calamity. The structure of the Bugis suspended house which can mitigate natural disasters can be seen in the figure 9.

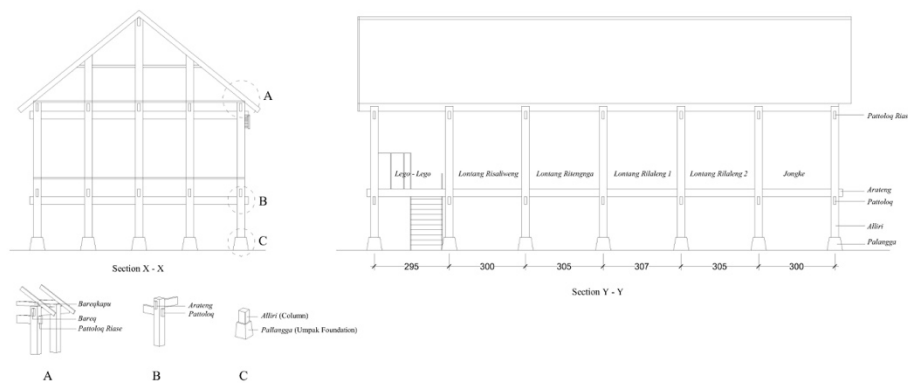


Figure 9. The Structure of The Bugis Suspended House Which Can Mitigate Natural Disasters

4.2 Horizontal Anatomy of the Bugis House

For the Bugis, the house is a reflection of the human body of its occupants, which is manifested in the concepts and procedures for building a house. The analogy of the human body is manifested into the physical form of the house, both in a horizontal form in the arrangement of the body of the house (Bugis: *ale bola*) as a place to live in, and the vertical form of the house in structural and constructive ways. Horizontally, the Bugis house which functions as a place to inhabit, analogous to the human body in lying position. Horizontally, a house as a place to live in consists of a spatial organization that has functions that support the activities of the occupants in Bugis houses. It is reflected in the arrangement of the Bugis house plan where all parts of the human body from the head to toe, are reflected in the parts and functions of the Bugis suspended house in Talungeng Village, Bone Regency.

In the human body there is a top (face) consisting of eyes, mouth and nose. Eyes for humans are very important because the eyes reflect our hearts and minds, they also observe all the events that occur in humans and the surrounding environment. Likewise at the Bugis house, the eye is analogous to the terrace (Bugis: *lego-lego*) as the welcoming area, before entering the house. It means that the terrace is a part of the house that functions to accommodate the guests or people who come before entering the house, so that the level of security and safety of the occupants will be detected from the terrace. If the guests coming considered not necessary to enter the house and are considered dangerous to the occupants, then the terrace can function as a welcoming area or a final stop area. Therefore the terrace is an important part of a Bugis house which is an 'eye' which oversees and selects guests.

On the face of the human body, there is also a mouth. This mouth is analogous to the living room at the Bugis house plan, which is also called *Lontang / latte risaliweng*. The mouth functions to be used to speak, so that the function of the living room is in addition to welcoming guests with polite manner of speech, also used to accept the girl's proposal and a place to do the *ijab qabul* (marry off of the child). During the proposal ceremony in *lontang risaliweng*, the bride and groom will talk and discuss and take very important decisions with a deliberation. The meaning of the analogy of the mouth as a part of the human body with the living room in the house is the importance of maintaining good manners and good delivery in welcoming guests so that it will have a positive influence on the respect and fortune for the homeowners.

Furthermore, the chest in the human body is analogous to the middle part of the house (Bugis) which functions as the parent's bed, a place to perform a marriage initiation before the wedding day, a place to bathe and lay the body. Besides, in *lontang ri tengnga* can also be placed the son's bedroom, because the son can replace the position of the male parent in

welcoming guests. The meaning of the analogy of the chest part of the human body with the middle area in the Bugis house is that the chest covers heart and liver which are important parts (spearhead) in the anatomical system of the body. Likewise in the middle of the house (*lontang ri tengnga*) is an important area because it is a gathering place for family members in everyday life, in which the living rooms for parents and the son are placed as the spearhead of the family and also as a place for various important rituals in the process of human life. The stomach in the human body is analogous to the internal part of the house in the third plot (Bugis: *lontang rilaleng*) after the middle part of the house (Bugis: *lontang ritengnga*) on the second plot. In *lontang ri laleng*, the girl's bedroom and dining room are placed. Inside the house, there is also the nave of the house (Bugis: *Possi Bola*) which is the main pillar or that of the teacher for all the pillars contained in the Bugis house structure. In the navel, some rituals are performed for the safety of the occupants of the house. The meaning of the stomach in the human body is analogous to *lontang rilaleng* in the Bugis house plan, which is that the stomach functions to keep the food in the human body and *lontang rilaleng* is where people eat so that the human body stays healthy and gets protection from the Almighty. The legs in human, from thighs to toes, are analogous to a kitchen or *Jongke* (Bugis) which is located on the rear of the house plan. The kitchen or *Jongke* at the Bugis house functions as a service room, a place to process and cook food for all family members. It means that the analogy of leg in human is used to stand when cooking food and cleaning kitchen equipment that requires strong legs to serve the family members. In addition, the kitchen is also used to bathe the body on the first stage immediately after the death when the body is still warm so that it can still be seated for bathing.

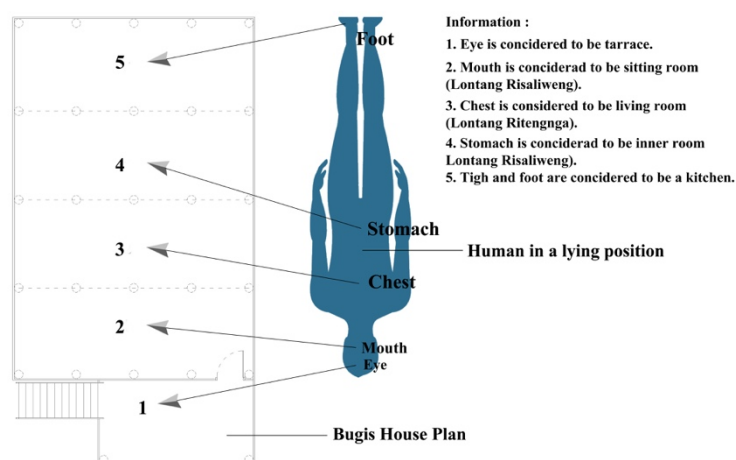


Figure 10. Horizontal Anatomy of The Bugis House

4.3 Vertical Anatomy of Bugis Houses

The concept of the macrocosm and the microcosm as a cosmological notion that is believed by the Bugis, analogizes the human body into the form of a house and as a reflection of the universe which consists of three vertically arranged levels, namely the upper, the middle and the lower worlds. Vertically, the Bugis house arrangement is analogous to the shape of the human body in a standing position, having the meaning that the Bugis house shape is a reflection of harmony with the universe (nature) with humans who have undergone a long

process of adaptation for centuries. It is different from the concept of other traditional houses in Sulawesi like traditional houses in Toraja called Tongkonan and in Mandar tribe called Boyang. Vertically, the houses in Toraja do not analogize the human body into parts of the house, but vertically, the houses are built based on three layers of rectangles reflecting human life, namely birth, life, worship and death. These layers describe a harmonious relationship between the macrocosm and the microcosm. Horizontally, The rectangular shape on each layer of the house is a symbol of four directions. Whereas the traditional house of Mandar has a three-story vertical concept, the uppermost part of the arrangement is called Tapang with a roof and attic, the second arrangement is called Roang Hayang which as a residential space, and the third arrangement is called Naong Boyang or under the house. This shows that Bugis houses have a unique concept because they are built based on the anatomy of the human body.

Therefore, in building a Bugis house vertically, the sizes of the houses are taken from the proportion of the human body, in this case, that in the occupants of the house (husband and wife). It means that the house built must be balanced and harmonious with the occupants of the house, so that it will provide safety both in the world and in the hereafter. To determine the measurement of the leg of the house (Bugis: *Aje Bola*) or under the bottom of the house, then taken from the husband's height. However, it depends on the number of the steps people need. If the steps are 11, then the height of the bottom of the house is taken from the height of the husband when he stands raising his arms straight up while making a fist. Whereas if the stairs are only 9, the height of the bottom of the house is taken from the height of the husband when he stands lifting his arms up by bending the elbows and still making a fist (figure 11). It means that the area under the house is the area of the husband who functions as a breadwinner outside the house who must bear the responsibility of providing for all family members, and support all household activities that are above the house (Bugis, *Ale Bola*). Whereas the meaning of the size of the husband's fist means fortune, in which the happy marriage life will always be grasped. If they are sick, it is believed to be cured soon, because the fist is symbolized by strength and enthusiasm. Therefore, the size of the pole and the height of the bottom part of the house must be taken from the height of the husband when standing, not that of the wife.

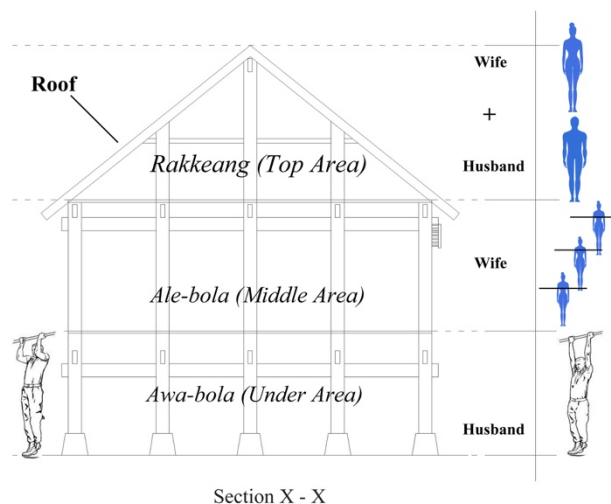


Figure 11 . Vertical Anatomy of The Bugis House

The height of the house (bugis: *ale bola*) is taken from three times of the height of the wife when standing, to the chest. It means that the domestic area inside the Bugis house is the area of the wife in which the wife is in charge and responsible for managing and completing household work, such as cleaning the house, cooking, babysitting, serving the needs of the husband, etc. While the meaning of the size of the wife at the chest level, not as high as the human stomach or mouth, because it is analogous that the wife's chest with breast, so that the life of the family of the householder will always be sufficient. Whereas if the height taken up to the stomach of the wife, it means that people's stomach is always full but the food will easily be defecated, so fortune will not last long. In addition, it is not taken from the height of the wife to the mouth, because the mouth is considered a hole throwing up so the fortune easily fades away.

On the roof of the Bugis suspended house (the height from the ceiling to the tip of the highest part which is triangular), the size is taken from the wife and husband's heights. The way to determine the size is by taking half of the husband's height and a quarter of the wife's because in the Bugis tradition, the husband is the leader of the family and the wife is the husband's companion so the size taken from the husband's height must be bigger than of the wife. For example a husband's height is 170 cm and the the wife's height is 158, then the height of the roof of the house is the husband ($170: 2$) + wife ($15: 4$) is 124.5 cm. The meaning of the measurement of the roof taken from the height of the husband and wife is that the husband is the breadwinner in which the size must be larger, and the wife as the one who is a companion means the size must be smaller. In addition, the measurement also means that the fortune of the occupants of the house will increase, both fortune or match for the son or daughter.

5. CONCLUSION

For For most of Bugis community in Talungeng Village, Bone regency, the concept and system of building houses are based on anatomy of human body. Vertically, the relationship between the concept of Bugis house space and the human body is divided into three spatial structures, namely the upper space (roof and attic) analogous to the human head, the second space for human body and the space under the house or third arrangement is considered as the human leg. Besides that Bugis house was built based on the concept of detailed functions of human body parts such as eyes, mouth, hands, chest, stomach and legs. Specifically, Bugis house is built based on the body anatomy of the husband and wife who inhabit the house, which is manifested in the concept of vertical and horizontal housing construction. The construction of the Bugis house concept vertically analogizes the anatomy of the human body in a standing position, with the structure of the Bugis house from the bottom up (legs, body and head). While horizontally, it is analogous to the anatomy of human body when lying down. The concept of physical development of Bugis houses by analogy to the anatomy of the human body (husband and wife) led to the creation of residential spaces of different sizes. The meaning and value of building house that reflects the anatomy of the human body (husband and wife) aims to create safety, comfort and harmony, both with family members and the surrounding natural environment. This concept is very unique because it is not found in the concept of building a traditional stage house in the Mandar and Toraja tribes in Sulawesi. However, due to the rapid flow of modernization and globalization, some of the construction of Bugis houses in this village has shifted gradually both in physical and material forms. Even so, in terms of understanding the concept of the house, the community still understands the anatomical concepts in housing construction and adheres to existing local wisdom.

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[Editor's Comments]

Associate Editor

Comments to the Author:

#Reviewer 1

The Anatomy of Bugis House in South Sulawesi, Indonesia

The paper presents a typology of housing in Talungen village, Bone Regency that has a specific characteristic with its suspended house called the Bugis House. It shows to what extends beliefs of homeowners is synchrony with the design of their homes that is based on the anatomy of the human body. Such an analogy that insures harmony with nature reveals the local wisdom about the concept and system of building. For an outsider reader, it helps understand the interaction between anthropology and architecture and thus represents a certain contribution to the literature.

The methodology of the study is based on the qualitative approach having Bugis Houses in Talungeng Village as a case Study. One of the deficiencies of the study is the absence of any indication of the representativeness of the selected sample. One house may not reflect the dominant typology. A layout of the village where this type is shown is mapped or statistics of predominant types would help overcome this weakness.

Many philosophic concept and beliefs that stand behind the analogy between the cosmos and the house and between the anatomy and the house could not be verified and thus make the study very subjective. We cannot say whether the belief on the 4 components of Nature (water, soil, fire and Wind) is right or not, true or not. A questionnaire would help the authors convince the readers about the findings. A lexical list of the local terms translated into English would also be added to the study.

In terms of style, there is a lot of repetition regarding analogy between the human body and the house design. (P2, P4, P5, P11x2: is a symbol of the anatomy of the human body). A thorough proof editing of English is also required (Ex, P7: that the the owner of the house will have a good life and happines, both phisically and Spiritually).

Conclusion is mostly confirmation of what has been said in the text. It would be better, especially for architects-readers, the most concerned with this study to grasp the relationships between the local norms and standards that stem from the human body and the present practices, metrics anthropometry used nowadays. Also may be the state of such practices whether they still exist or are vanishing due to globalization and modernity.

#Reviewer 2

This article intends to analyze an original housing pattern in relation with body and its anatomy. Here, it is attempted to examine the dimensions of the housing space by focusing on the proportion of the human body and the space is also searched semantically by dealing with human parts partially. Although the article presents an interesting topic and it is suitable for the journal, the literature that establish the theoretical background is limited. There is no reference to existing architectural debates and researches particularly focusing on body-space relationships. The position of the author in these theoretical discourses and his contributions to this research field are not clear. At the same time, the article needs more clarification on how does analyzing and understanding the relationship between the morphological structure of the house and the human body enrich the debates on traditional housing in the theoretical and practical sense.

Although the author refers to the qualitative research together with the ethnographic approaches, methodology and data collection techniques of the study should be reconfigured in a specific way. The author is satisfied with giving general descriptions of the literature, however the author should address how these methodologies and approaches are brought together in relation to their own work. Furthermore, there is not enough information about the interviews in the data collection techniques and the information obtained from these interviews.

The text contains a large number of repetitions. By eliminating these repetitions, the text should be made more refined and fluid. In this sense, the structure of the manuscript could also be reviewed. The article needs to be reviewed by a native English speaker. Rather than being general statements, content of the sentences should be enriched. External narratives / images for the houses could be supported with indoor figures to describe exhibited life and its spatial form.

The article can also be revised considering the followings:

How can we evaluate the spatial elements that separates the interior of the house linearly? How are these thresholds, spatial sections constructed?

The features that distinguish Bugis houses from the traditional houses in the region could be more clearly described. Vertical anatomy of Bugis House requires more clarity.

The conclusion could be enriched by discussing the relation between body and space with the findings of the study on traditional housing.

#Reviewer 3

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1. First of all, grammar and typos need to be thoroughly reviewed and corrected. The redundancy use of prepositions, such as "The manifestation of adaptation of the house and nature (macro cosmos) and humans in addition to shape and size, also in the structure of the Bugis house" make the text quite confusing.
2. A whole paragraph on page 10 beginning with the sentence that "In everyday life, the nature of this area is private, because it is also symbolized as a Parent." is exactly same as a paragraph on page 9.
3. Section 3, research methods should be discussed in details, such as how many houses in the village did the authors take surveys in? Is the research target including just one single house or quite a few numbers of vernacular houses in this area. How representative are these houses? How many local residents have the authors interviewed? In the interviews, were there only one or two house occupants included? Or there was in-depth interviews with the Sanro Bola as the paper mentioned.
4. The conclusions could be further tightened and the value of the conclusions should be discussed.

[Reviewer(s)' Comments]

Reviewer: 1

Comments to the Author

IRSPSD-2019-0006-B

The Anatomy of Bugis House in South Sulawesi, Indonesia

The paper presents a typology of housing in Talungen village, Bone Regency that has a specific characteristic with its suspended house called the Bugis House. It shows to what extends beliefs of homeowners is synchrony with the design of their homes that is based on the anatomy of the human body. Such an analogy that insures harmony with nature reveals the local wisdom about the concept and system of building. For an outsider reader, it helps understand the interaction between anthropology and architecture and thus represents a certain contribution to the literature.

The methodology of the study is based on the qualitative approach having Bugis Houses in Talungeng Village as a case Study. One of the deficiencies of the study is the absence of any indication of the representativeness of the selected sample. One house may not reflect the dominant typology. A layout of the village where this type is shown is mapped or statistics of predominant types would help overcome this weakness.

Many philosophic concept and beliefs that stand behind the analogy between the cosmos and the house and between the anatomy and the house could not be verified and thus make the study very subjective. We cannot say whether the belief on the 4 components of Nature (water, soil, fire and Wind) is right or not, true or not. A questionnaire would help the authors convince the readers about the findings. A lexical list of the local terms translated into English would also be added to the study.

In terms of style, there is a lot of repetition regarding analogy between the human body and the house design. (P2, P4, P5, P11x2: is a symbol of the anatomy of the human body). A thorough proof editing of English is also required (Ex, P7: that the the owner of the house will have a good life and happiness, both physically and Spiritually).

Conclusion is mostly confirmation of what has been said in the text. It would be better, especially for architects-readers, the most concerned with this study to grasp the relationships between the local norms and standards that stem from the human body and the present practices, metrics anthropometry used nowadays. Also may be the state of such practices whether they still exist or are vanishing due to globalization and modernity.

Reviewer: 2

Comments to the Author

This article intends to analyze an original housing pattern in relation with body and its anatomy. Here, it is attempted to examine the dimensions of the housing space by focusing on the proportion of the human body and the space is also searched semantically by dealing with human parts partially. Although the article presents an interesting topic and it is suitable for the journal, the literature that establish the theoretical background is limited. There is no reference to existing architectural debates and researches particularly focusing on body-space relationships. The position of the author in these theoretical discourses and his contributions to this research field are not clear. At the same time, the article needs more clarification on how does analyzing and understanding the relationship between the morphological structure of the house and the human body enrich the debates on traditional housing in the theoretical and practical sense.

Although the author refers to the qualitative research together with the ethnographic approaches, methodology and data collection techniques of the study should be reconfigured in a specific way. The author is satisfied with giving general descriptions of the literature, however the author should address how these methodologies and approaches are brought together in relation to their own work. Furthermore, there is not enough information about the interviews in the data collection techniques and the information obtained from these interviews.

The text contains a large number of repetitions. By eliminating these repetitions, the text should be made more refined and fluid. In this sense, the structure of the manuscript could also be reviewed. The article needs to be reviewed by a native English speaker. Rather than being general statements, content of the sentences should be enriched. External narratives / images for the houses could be supported with indoor figures to describe exhibited life and its spatial form.

The article can also be revised considering the followings:

How can we evaluate the spatial elements that separates the interior of the house linearly? How are these thresholds, spatial sections constructed?

The features that distinguish Bugis houses from the traditional houses in the region could be more clearly described. Vertical anatomy of Bugis House requires more clarity.

The conclusion could be enriched by discussing the relation between body and space with the findings of the study on traditional housing.

Reviewer: 3

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4. The conclusions could be further tightened and the value of the conclusions should be discussed.

Submission Paper

Revised 01

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Cc: puteri@gmail.com

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06-Jun-2019

IRSPSD-2019-0006-B.R1 - The Anatomy of Bugis House in South Sulawesi, Indonesia

Dear authors,

Thanks for your submission of revised manuscript. However, all the author information included in the paper (including in the main-text and headers) need to be deleted before we process it for peer-review. Could you please make the revision at your earliest convenience and send the files (MS-word format is preferred) back to us via this email and we could replace the files for you. Thank you for your cooperation!

Sincerely,

Li Li

Editorial Secretary, International Review for Spatial Planning and Sustainable Development
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**Submission
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Re: International Review for Spatial Planning and Sustainable Development

From: Naidah Naing (naidahnaing@yahoo.com)

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Dear editors,

I would like to convey my apology for the inconvenience due to late revision

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The Anatomy of Bugis House in South Sulawesi, Indonesia

Local Wisdom Concept and System of Building Houses as a Reflection of Human Manifestation

Key words: Local Wisdom, Bugis House, human reflection

Abstract: Talungen village in Bone Regency is a Bugis village having a specific characteristic with its suspended house called the Bugis House. The Bugis in this village consider the house to be itself, so the concept and system of building their house is based on the human manifestation. The purpose of this study is to reveal the local wisdom about the concept and system of building Bugis houses based on the anatomy of the human body. The methodology of this study used qualitative methods with the Case Study Approach. The analysis method used is the Discovering Cultural Themes. The results showed that the Bugis community in Talungeng Village used human manifestation especially the homeowners (husband and wife) as the concept and system for building the house, both vertically and horizontally, meaning that the lives of the homeowners will be harmonious with nature in order to be safe and fortunate inside the house.

1. INTRODUCTION

The suspended houses made of wood in Talungeng Village are the traditional houses of Bugis tribe that have been known for centuries. It represents a tradition that survives long for the Islamic community in South Sulawesi which is also wide-spread throughout Malay (Robinson, 2005). During the construction, there are no professional architects (academics) involved, it is built with the assistance of *Sanro Bola* instead, a Bugis traditional expert who is considered to have tacit knowledge on the procedures for building a house, which must be followed and obeyed even though the knowledge is intangible (Beddu, 2006).

The house in Talungeng Village has a rectangular plan with a gable roof. This shape in accordance with what is stated by Mardanas (1985). The structure of the house is influenced by that of the cosmos; the upper, middle and under worlds. The upper world is for the holy realm, the middle for human and the underworld for interaction with the surrounding environment. A customary law is a kind of custom that must be obeyed by the owner of the house. Within Bugis community, the house and the customary law are considered as the provisions of Dewwata Seuwwae (God Almighty). The violation of order will bring harm to those who commit it. Therefore, the prediction of floods, winds, earthquakes is deemed to have been represented by the consideration of choosing the location and orientation of the house (Abbas, 2016).

This is in accordance with what is stated by Robinson (2005) that the Bugis house is highly influenced by the structure of those three types of cosmos in which they consider the house as human manifestation. They believe that a house is a place to live in forever, as reflection of themselves as the whole stages of their lives starting from birth, marriage and death run

in the house. As a human manifestation, it is built based on the values that can provide safety, harmony and sustenance for the people (Data, 1985). Therefore, all the occupying parts of the house will be considered as sacred areas, because they consider the house as a place to inhabit forever. A sacred space is a place having a sacred function related to religious activities, for instance to do worship or ritual activities. The activities done in this area designate distinguishing characteristics from other areas. It generally has a specific form and boundary. In a particular society order, the ritual function is a cultural attribute, a very important factor in producing a setting both public and private and produces a certain spatial structure (Knowles, 1996). Whereas Broadbent (1980) states that space in traditional houses is an expression form of local cultural identity, including sacred space.

In traditional Bugis houses, the sacred (holy) area in the vertical structure is in *rakkeang*. It is a space above the body of the house starting from the ceiling to the slope of the roof. It is used to store rice and other agricultural products. According to *Lontaraq Galigo*, rice is Sangiang-Serri, the incarnation of We Oddang Riu, the daughter of Batara Guru. Therefore, rice used to be thought sacred so that *rakkeang* became a symbol of *botting langi* (the upper world) where Sangiang-Serri resided (Shima, 2006). In a horizontal structure, the area of *ale bola* (the body of the house) is a sacred area in carrying out various traditional ceremonial activities such as marriage ceremonies, birth to funeral initiations and so on (Yunus, 2012). In connection with the birth initiation ceremony taking place in the house, the ceremony most strongly maintained by the Bugis is a life-cycle ritual, especially relating to before and after the birth of a child (Pelras, 2006). It shows that house becomes a part of the culture manifestation as various cultural processes are conducted inside the house as a part of belief which has developed in the Bugis community.

Therefore, *Bola Ugi* (Bugis house) is also a cultural product physically manifested and it is in line with the cultural conditions of the Bugis community (Hartawan et al., 2015). The realization went through a long process by considering living in harmony with nature.

Therefore, the house is both micro form of the universe and human body reflecting the behaviour and nature of human. The theoretical background on this case has been stated by Hikmah (2018) on traditional Balinese-Indonesian houses in which the traditional buildings are built with the concept of human relations with nature. Philosophically, human relations with nature are called *Bhuwana Agung* consisting of three elements: *Atma*, *Sarira* and *Tri Kaya*. *Atma* or holy place in a house is considered as the head in human body used as a place of worship; *Sarira* is the manifestation of the body analogous to the yard; the back part is called *Nista Mandala* and the occupant is called *Tri Kaya*. The basis of this theory shows the relationship between the dimensions of human body and the form of the house in mass based on the function of each building mass. In other words, the manifestation of the human body dimensions in Bali House is separated from each building. So, it is carried out on a horizontal building mass at the site consisting of several building masses in a large yard, belonging to a nuclear family. This kind of manifestation in building houses site is still in use today.

Similarly, the concept and system of building Bugis house in Telungeng Village are based on human body parts. The research on such concept and system has never been conducted in the context of Bugis house previously. Therefore, it is interesting to discover the possibility of another connection between the dimensions of human body and the house. Besides, it also aims to know how the dimensions of human body affect the form of traditional Bugis house horizontally, vertically or both. It will add to the theoretical repertoire in architectural concepts of traditional house.

2. RESEARCH AREA

Talungeng Village is located in Barebbo District, from Bone Regency, South Sulawesi. Bone Regency is located 174 km to the East of Makassar city. The natives of Bone Regency are Bugis tribes who occupy almost all the parts of the city and village. The district is positioned $4^{\circ} 13' - 5^{\circ} 6' \text{ LS}$ and between $119^{\circ} 42' - 120^{\circ} 30' \text{ BT}$. The area of Bone Regency is 4,559 km², with an average population density of Bone Regency of 162 people per km². Barebbo district itself has 18 villages. One of them is Talungeng Village with 276 families with the population of 1164 people, the area of Talungeng village is 6.80 km², with a population density of 171 / km², it is denser than the average population of Bone Regency. With its unique characteristics, Talungeng Village, Barebbo district has a homogeneous population structure and is dominated by Bugis tribes. In general, the community in Talungeng Village, Barebbo district is in the stage of the development process, including the way of thinking which is still traditional. Bugis houses are still commonly found in this village with traditional building system as well. The process of building a house in this village is carried out by mutual cooperation. The construction is assisted by *Sanro Bola*, people who are considered experts and understand the procedures and intricacies of constructing houses in accordance with the hereditary customs.

Figure 1. Map of Bone Regency, Barebbo District and Talungeng Village

3. RESEARCH METHOD

3.1 Methodology and Approach

The research method used was a qualitative method (Creswell, 2008) because it was carried out in traditional settlement which is natural and still firmly holds on traditions and customs in building houses. It is also called natural research as it is carried out in a natural environment in the village (Sugiyono, 2014). Qualitative research aimed to find meaning from the data obtained in the field. The meaning revealed in the research includes the relationship meaning among the dimensions in human body as the manifestation of traditional Bugis house.

In general, the research approach used architectural approach (artifact) and ethnographic approach (living culture) (Creswell in Sugiyono (2014)), with the nature of descriptive research (Groat & Wang, 2002). The architectural approach explains the physical conditions of traditional Bugis houses, parts of the house layout (lower part, body of the house and upper part of the house), symbolism and aesthetics of the house as a whole in the house. While ethnographic research explains about the system of people's knowledge in building a house associated with the immunity of the human body. It aims to understand the point of view of indigenous people in the relationship of building their houses to the dimensions of the human body, to gain views on their world (Spradley, 2006). Ethnographic approaches are carried out by studies of group culture in natural conditions through observation and interviews.

It was stated by Daymon (Daymon, 2008) that ethnographic research is possibly carried out in the form of descriptions, such as records about a community group produced by the previous researchers. The purpose of the description is to describe the social reality in a group so the ethnographic readers can easily understand it.

3.2 Method and Technique of Data Collection

Viewed from setting aspect, the data were collected in the settings of traditional Bugis houses and from the data sources: primary data and secondary data. Data collection techniques in the research were participant observation, in-depth interviews, documentation studies through recording images (photos or films) and also reconstructing social scale.

3.2.1. Participatory Observation

Spradley (1980 in Susan Stainback, 1988) states that in participatory observation, the researchers observe what people do, listen to what they say, and participate in their activities. With this participatory observation, the data obtained will be more complete, sharp and the researchers are able to know the meaning level of each visible behavior (Sugiyono, 2007). The benefit of observation is that the researchers can see things unobserved by others, especially for people living in the environment because those things have been considered "ordinary" so that they will not be revealed in interviews. Besides, the researchers will be able to understand the context of data in the overall social situation, so a holistic view will be obtained. The observation method is used to collect physical data on houses, settlements and the environment around Bugis house in Talungeng village.

The research used passive participation in which the researchers do not participate in doing what the informant does. There are several activities in the research location not allowing the researchers to take part in doing what the informant does, such as building houses that require special skills. However, the researchers also feel and observe the behaviors and words, linked to the parts of the house in Talungeng village. According to Spradley (1980 in Nasution, 2002), the object of research observed in qualitative research is called a social situation consisting of three components: space, actor and activity. first, space aspect covers the settlement space along with physical aspects of Bugis suspended house in Talungeng village. second, actors cover people involved in social situations, namely the occupants of the house and *panre bola* (house builders). the last, activity is carried out by people in an ongoing social situation, namely the activity of building a Bugis house.

The stages of participatory observation are descriptive observations where the researcher conducts general and comprehensive exploration also does a description of all that is seen, heard and felt. All data is recorded and the results of this observation are concluded in an unregulated state. This stage is called the grand tour observation, and the researcher produces the first conclusion. In the research, it is the description of the entire environment of Bugis house in Talungeng village. The next observation is focused observation where at this stage the researcher has conducted a mini tour observation, an observation that has been narrowed to focus on the dimensions of the human body associated with the physical aspects of the parts of the house. The selected observation is a further stage to describe the research focus in order to obtain more detailed data on Bugis suspended house.

3.2.2. In-depth interview

To get more in-depth information about participants, the researchers used in-depth interviews. According to Esterberg (2002) interviews are a meeting of two people to exchange information and ideas through question and answer, so that meaning can be constructed in a particular topic. In the research, the interviews were conducted with residents of Bugis suspended house in accordance with the chosen sample by *panrita bola* to obtain the meaning of local wisdom from each concept, system,

symbol, form and activity related to the construction of Bugis house in Talungeng Village, Bone Regency, along with analogy to the anatomy of the human body.

The residents of the house interviewed were those who were considered to have knowledge and understand the ins and outs of building houses both generally and specifically. In addition, the residents must possess a representative house with a complete form and in accordance with the tradition of building a house. The method of interviewing is done by choosing residents who are considered to be most aware of the concept of building a house based on the dimensions of the human body. The residents will expose the facts and meanings. After that, the researcher will move on to the second house sample to interview other residents with the same questions. And so on, the interview is carried out on a relay basis. Whereas in-depth interviews with *Panrita Bola* were conducted by choosing the one considered to understand the concept and had knowledge and experience from generation to generation. The interviews contain determination of the house size reflecting the body size of husband and wife. Besides, it also aims to discover the meaning in each size, form and space produced.

3.3 Samples

The sample in qualitative research is not called a respondent, but as a resource person, or participant, informant, friend and teacher in the research. The sample in qualitative research is also not a statistical sample, but a theoretical sample. In this qualitative research, the participants of the data source were selected by purposive and snowball sampling. Purposive sampling is a technique of sampling data sources with certain considerations. This particular consideration, for example, is the person who is considered to know the best about what we hope for or who has the power and authority in the social situation or object of the house researched to accommodate what the researchers need in collecting data. Snowball sampling is a sampling technique for data sources, from fewer to more data. when the small number of data sources has not been able to provide satisfactory data, other data sources will be obtained. Thus the number of sample data sources is getting bigger. Faisal (1990) citing the opinion of Spradley (1980) suggests that the social situation in the initial sample is strongly recommended for a social situation as the beginning of many other domains. in the research, the sample taken was suspended houses in Talungeng Village that still apply the anatomy concept of the human body in constructing their houses. The number of samples is not limited, but if the interview is already done enough, then the sample is considered sufficient. Therefore, the research took several samples from a total of 44 houses with the typical characteristics of Bugis houses. The initial sample as the information source is the residents who were considered to have sufficient knowledge and understanding on the houses. The figure 2 below shows a map of a village layout covering the types of houses taken as a sample.

Figure 2. Map of a village layout covering the types of houses taken as a sample

3.4 Data Analysis Method

The data analysis method used in the research was Discovering Cultural Themes to uncover the findings of local wisdom concepts and systems to build houses based on the human manifestation in Bugis houses in Talungeng Village. The analysis gathered the focus of culture, meaning and values and physical cultural symbols on the house construction. The analysis using Discovering Cultural Themes obtained the relationship in the symbols and parts of the house reflecting human body. It was used to discover a holistic finding of the concept and system of building a house both vertically and horizontally based on the

cosmological view of the Bugis in Taqlungeng Village, Bone Regency. Based on the existing analysis, a reconstruction in a descriptive form of the concept and system of Bugis house construction was designed. It was harmonized with human manifestation to give comfort, harmony, security and well-being both in the world and in the hereafter. The final step was to draw a conclusion.

4. FINDINGS AND DISCUSSION

4.1 The Concept and Meanings of Bugis Houses in Talungeng Village

The house for the Bugis people reflects themselves. Everything related to the house must be based on the structure of the human body that is harmonized with nature. This is in accordance with the cosmological understanding of the Bugis people that nature is divided into three structures, namely the upper, middle and lower worlds. Likewise with the structure of the body; head (top), body (center) and feet (bottom). It is manifested into the structure of the Bugis house which consists of three levels: *rakkeang*, *ale bola* (the body of the house), and *awa bola* (under the house) in a form of suspended house. Constructing this type of house has become a tradition from generation to generation (Naing, 2011).

In addition, Bugis people in general and the residents of this village embrace an ontological view of life that understands the universe universally. Their life philosophy is *sulapa 'eppa'* which means self-improvement. It means that all aspects of human life will be perfect if formed from four elements: water, soil, fire and wind. As mentioned, the traditional suspended house built in a rectangular plan with a gable roof is considered perfect (Naing, 2011). The form of this house is also stated by Mardanas (Mardanas, 1985). From the results of purposive interviews, it was found that most of Bugis suspended houses in Talungeng Village were oriented to a rectangular shape (*sulapa 'eppa'*), whether it's a floor plan, or a wall. Every homeowner interviewed has an understanding of the *sulapa 'eppa'* concept. The understanding and application of this concept was carried out with the help of *Sanro Bola*.

The architecture of the house in Bone has a broad meaning. They believe that a house is built not only as a shelter from rain and the heat of the sun but also related to philosophical values used as a way of life. The meaning and good values behind the construction of a house are interpreted and held as a way of life to be implemented in everyday life (Marwati, et al., 2016).

Likewise the concept of the Bugis house cannot be separated from the local wisdom of the Bugis people in Talungeng Village. Various local wisdoms as the living traditions of the Talungeng community in building houses begins with the concept of determining the house orientation, situating the main door of the house, the spatial planning and the concept of the structure Bugis house. The concept aims as the safety and comfort of living in the house, so that the arrangement of the concept of the house must be adapted to the parts of the human body in relation to the harmony with the nature.

4.1.1 The Concept of Orientation and Placement of the Main of Bugis Houses in Talungeng Village

House orientation is very important and sacred involving several elements used as guidelines, namely mountains, roads, rivers, sun, sea and wind direction. However, in general, the orientation in Bugis house layout is distinguished on *bola mabbuju* (longitudinal

house), a house extending in the east-west direction and *bola-mpareq* (transverse house), a house that stretches north-south (Shima, 2006). The orientation in this village uses the directions of east, west and south but north. Based on the local wisdom, a north-oriented house means '*ko no'ki diattang dia'bokori Watangpone lo diattang*', meaning that people going down from the house to the North means turning away from Watampone where the people are not supposed to turn their backs on their origin.

This is also in line with what was stated by Idawarni that the west direction is considered sacred because it is direction of Muslims (qibla) (Idawarni, 2011). Whereas the east as the direction of the sun symbolizes fertility and the spirit of life. This is consistent with what Altman and Chemens said that in the cosmology of the Pueblo Indians in America, they involve the east where the sun rises and take it as a very sacred direction. The sun is considered a "father" helps the growth of their plants and leads their journey in hunting towards their house in the west (Altman and Chemens (1984).

The house orientation for Bugis people in Talungeng village in particular and all Bugis people in South Sulawesi in general, can not be separated from the direction of the main door or entrance. The entrance of the house is analogous to the 'mouth' where the food is taken in through it before entering the body. In other words, the entrance is the transition between the outside 'world' and that inside the house. The orientation of the house facing the four directions is believed to be good for the lives of the owner of the house, depending on the position of the entrance. The position of the entrance is not always the same as the orientation of the house. If the orientation of the house is believed right by the local community, the position of the door of the house will follow the orientation. **On the contrary, if the orientation is considered to be bad, the entrance direction will be placed toward a good direction.**

For this reason, the orientation considered good for the Bugis Bone community in Talungeng village is east, west and south, so that the entrance of the house is to follow these directions. The houses oriented towards the east with the entrance also facing the east (Bugis: *dilau'*) means that the owner of the house will always feel good and blessed, comfortable and healthy because the sun rising in the east is source of energy, which also the source of life. The local wisdom of the Telungeng village community states that "*Nakko no'ki in Lau (East) Yaro Mata EssoE (Sun) Menre 'Malolo, Jaji Malessi Pappineddingnge, Makecce' Tuwongengnge*". When the sun rises in the east above the house oriented to the east, the people will not step in their own shadows during the daytime. Stepping on the shadows when being in the house during the day brings a bad thing. It is not considered good because of not being exposed to the direct sunlight, resulted in a feeling unwell, lack of enthusiasm and easily get sick.

In addition, according to the local wisdom of the local community, the orientation of the Bugis house to the west with the entrance facing the west (Bugis: *diaja*) is also believed to be good because the house faces the qibla (Bugis: *dioloi kibla'E*). The Qibla direction for the Bugis community is believed to be very good for the orientation as it is the center of orientation of the Muslims to pray. Therefore, the house oriented towards Qibla is will always bring good things; blessings of life and the salvation both of the world and the day after because Qibla is is direction of all those who perform prayer.

The orientation of the house with the entrances to the East and West can be seen in the following figure 3.

Figure 3. The Orientation of the House with The Entrance to the East and West

Similarly, the house oriented to the south with the entrance of the house facing the south (Bugis language: *diattang*), is also believed that the the owner of the house will have a good life and happines, both phisically and spiritually. This is in line with the view of the Bugis of Bone that the house oriented to the south with the door facing to the south means "*no'ki ri atuwongengnge*" or always being in a comfortable life.

The house oriented to the north (Bugis: *diawang*) is believed to be not appropriate to position the entrance to the north because it means to welcome death (Bugis language: *no'ki riamatengengnge*). The deficiency is adjusted by situating the entrance oriented east on the left side of the house or the door facing west on the right side of the house. The position of the entrance is not always at the front wall, it can be alternatively on the side wall of the house. The orientation of the house to the South and North with the position of the entrance of the house to the north can be seen in the following figure 4.

Figure 4. The Orientation of the House with The Entrance to the South and North

4.1.2 The Concept of Occupying the Bugis House in Talungeng Village

The house as a place to live for the Bugis in Talungeng village is related to spatial planning in the house. It has a unique concept and is different from the other Bugis house concept in general, especially relating to its function as a shelter for occupant and a place to conduct sacred processions from birth, marriage and death which are all performed in the house (Robinson, 2006). However, the concept of occupying above has different spatial planning and function in each area (Bugis: *Lontang / Latte'*) in Talungeng Village in particular. Similar with the concept of Bugis house in general, the area to live in is located in the *ale bola* in a vertical arrangement; the upper area is the roof and *rakkeang* and the lower area is *awa bola*. Horizontally, the floor plan or the area for residing is divided into *lontang* where each area has a different function and division. The vertical distribution of areas in the Bugis house is in the figure 5 as follows.

Figure 5. The Structure of The Bugis House Is Vertically Analogous To The Anatomy of The Human Body

The picture above shows that the concept of spatial planning in Bugis houses in Bone is horizontally divided into the front area, usually called *lego-lego* or terrace that functions as the area to welcome guest or transitional area before entering the living room. The stairs of the house stick onto the terrace, and on the front wall is situated the entrance and front windows. The size of the terrace is 2.95 meters. The length of the entrance cannot exceed size of the other areas because the terrace for the Bugis tribe is symbolized as a child. It means that when the occupants (husband and wife) have children, they are expected to be obedient and dedicated to their parents.

Besides *lego-lego*, there is a public area or living room (Bugis: *lontang risaliweng*). This area serves as a place to welcome guests, both family and relatives who come to visit the house, to take place the proposal ceremony, and to conduct sacred rituals for the groom. In the ancient house, there was not any furniture in this area but a mat on the floor. However, along with the development of civilization, this area is furnished with chairs and tables to entertain the visiting guests. The length of this area is 3.00 meters, 0.05 meters longer than

lego-lego. *Lontang risaliweng* for Bugis people is considered a Parental Symbol, so that the authority and influence of parents must be greater than children symbolized as *lego-lego*. The authority of parents who are high in this area is reflected in the function of this area as a place to run the proposal ceremony and welcome guests. For Bugis people, accepting the proposal is the authority of the parents, not children.

The next is *lontang ri tengngah* which is private because in this area there is a bedroom and family room. The bedroom settlement is ruled by the belief that a good position for the bedroom is facing east with the head being in the west. Besides, the sleeping position believed to be good is facing the north with the head in the south. These two positions are the best positions because they avoid sleeping positions facing the Qibla and also avoid turning their backs on the city center of Watampone (picture of sleeping position on floor plan can be seen in the following figure 6).

Figure 6. Sleeping Position on Floor Plan

In everyday life, the nature of this area is private where a mother gives birth in a room or outside the room. However, this area can turn into a semi-private area if the family perform marriage initiation (Bugis: *Mappaci*) as a part of rituals the day before the wedding. In addition, it is also used to lay and bathe the body. The size of this area is 3.05 meters, 0.05 meters longer than the previous area. It means that longer the house the bigger the size meaning the owner will earn more livelihood. It applies to the next area, namely *lontang ri laleng*.

Lontang ri laleng is the fourth plot in the floor plan. This area is private because it is for the young girl's bedroom which is always protected. In *lontang ri laleng*, it is also used as a place to eat together and a place to perform aqiqah rituals. The size of this area is 3.07 meters which also means that the longer the length of the house, the bigger the size (Bugis: '*mattama pede*' *malowang*) 2.95m from the length of the house from terrace, *lontang ri saliweng* of 3.00 m, *lontang ri tengngah* of 3.05m, and *lontang rilaleng* of 3.07 m). If the house has an additional *lontang* then the size of the next plot is returned to the original size before the highest size of 3.05 meters, and the last plot is kitchen (Bugis: *jongke*) which is an area service that functions as a cooking place, a place to clean the kitchen equipment and a place to bathe the body in the first stage (Bugis: *cemme tuwo-tuwo*). In the Bugis Bone community, bodies are bathed twice. The first bath is done when the body is still warm, where the body is bathed in a sitting position because it is considered alive, so it can still be bathed in *Jongke* area. When the body is stiff, it will be bathed for the second time in *lontang ri tengngah*. The length of *jongke* is smaller than the previous plot, which is back to 3.0 meters. It means that the fortune obtained by the occupants of the house will not be reduced or will not be exhausted by returning to number 3, with an explanation that from terrace of 2.95m, *lontang ri saliweng* of 3.00 m, *lontang ri tengngah* of 3.05 m, and *lontang ri laleng* of 3.07 m (the size keeps increasing inward), and the next area throws back to the size of 3.05 meters and 3.00 meters. The pictures of the size and meaning of the Bugis houses can be seen in the following figure.

Figure 7. Size of the areas in Bugis house

In a straight line on the floor plan, to separate each space element of on the house plan, the partition or dividing wall is used. It distinguishes the function of each room. Each dividing wall or space separator has a doorway, the main entrance connecting the terrace

with the living room using wooden doors that are quite strong, such as iron wood. To connect the living room and the middle room uses wood walls or furniture as a barrier equipped with a door hole. For private spaces such as bedrooms, generally have a doorway equipped with a door leaf, and some only have a doorway.

In addition, the local wisdom of the Bugis Bone community in determining the width of Bugis houses is based on size of the area (Bugis: *baliang*), while the length of the house is based on the number of *lontang* on the back. Each *lontang* has a different size as described above. The width of Bugis houses in this village averages 4 *baliang*, the size of each *baliang* is 2 meters so that the average width of the house is of 4 *baliang* is 8 meters. For the determination of the length of the house is based on *lontang*, an average length of the house as a place to occupy is 15.12 meters. Determination of the length of the body is different from the determination of the length of the roof cover serving to protect the body of the house. Determining the size of the roof based on the length of each roof material made from palm leaves (Bugis: *Bakkaweng*), commonly called *pari*. Therefore, there is a term based on the length of the house, for example a *pitumpari* house (seven *pari*) or a house with a roof that has 7 *pari*. For a shorter / smaller size called *limampari* (five *pari*) or a house with a roof length of 5 *pari*. The length of 1 *pari* is 2 meters (Figure 6). The length of the Bugis house roof must exceed the length of the house. The excess length of the roof in the Bugis house is called *bulena* (overstek). *Bulena* functions as a protector of rainwater and sunlight. It protects when the sun shines at a 45 degree and when it is perpendicular to the house, so that the house is protected from high humidity during the rain and also avoids high heat exposure during the day (Figure 8)

Figure 8. The Size of The Roof Based on The Length of Each Roof Material Made From Palm Leaves (*Bakkaweng*), Commonly Called *Pari*

4.1.3 The concept of Bugis House Structure as a Reflection of the Anatomy of the Human Body for Disaster Mitigation

The suspended Bugis house derives from a long process of adaptation to the surrounding environment. The natural conditions in Indonesia, including the Bugis land, did not escape disaster. Both disasters caused by earthquakes or climate change. The manifestation of adaptation of the house and nature (macro cosmos) and humans in addition to shape and size, also in the structure of the Bugis house. So, the shape of the Bugis suspended house is a replica of the universe in the physical dimension of the occupants of the house. It means that the houses and the occupants will always be in harmony with nature and the environment, also avoid natural disasters such as earthquakes, floods and storms. It is different from the relationship concept between the dimensions of the human body and its manifestation in a traditional Balinese house, in which the house site belongs to a family, consisting of several building masses. The mass of the building consists of the main house, the place of worship / shrine, kitchen, food warehouse, and a gathering place. The relationship between this dimension with nature and house is not only analogous to the physical form of a house but also outside parts of the house, such as yard of the house, and the back of the house. However, in traditional Bugis houses in Talungeng Village, the relationship between the dimensions of human body and the house is manifested only in the physical whole of a house not in outside parts. This is due to the physical form of a

traditional Balinese house building consisting of several masses (horizontal), while the form of a traditional Bugis house building only consists of a building (vertical and horizontal).

In addition, based on the experience of settling in Bugis people, it has been proven that the traditional suspended house of Bugis have provided good protection against disasters due to extreme natural changes. However, the earthquake that causes a shaking does not cause the Bugis suspended house to collapse or reverse. Floods as high as 2 meters will not bother the community because the height of the lower part of the house is above 2 meters and even the tornado can not lift or overturn the house to the left or right or the front to the back.

The structure of the Bugis house which is strong and can prevent natural disasters is a symbol of the anatomy of the human body, especially its owner. Therefore, the proportion of the height and width of the house will always be in harmony with the nature and the homeowners who occupy it. It is reflected in the structure of the Bugis house, comprising the parts of the house, is vertically analogous to the anatomy of the human body, as well as the standing position of human (Figure 4). Where the leg of human are analogous to *aje bola* in the form of pillars (Bugis: *Alliri*) standing on the stone foundations, the human body analogous to *ale bola* is the living area, and the head of human is for *ulu bola* and human navel is analogous to the centre of the house (Bugis: *possi bola*). Some anatomical parts of the human body such as collarbone is analogous to the part of the house called *bate-bate*. The backbone in human is called *aju lekke* in the house, it is a flat wood placed on the roof. Furthermore, the vein in human body is called *arateng* or *pattolo* or *bare*. *Arateng* and *Pattolo* (Figure 9).

Figure 9. The Size of The Roof Based on The Length of Each Roof Material Made From Palm Leaves (*Bakkaweng*), Commonly Called *Pari*

Related to disaster mitigation, the parts of the Bugis house structure have an important role in disaster defense. The pillars of the house stand firmly without connection from the top of the ground to the edge of the upper part of the roof, so that the house stays strong and survives when it is hit by strong winds. If there is wind on the top of the house, then the bottom is still mutually reinforcing. Even if the strong wind disaster is very strong, the house is only lifted but does not cause a break. *Arateng* is a long flat beam with a length equal to the length of *ale bola* which serves as a barrier for poles and *pattolo* is a flat beam with a length equal to the width of the house whose function is to hold the pillars that have been collected by *Arateng*. The function of *Arateng* and *Pattolo* in disaster mitigation is that when an earthquake and strong wind occur, the house will not be rolled forward / behind and on the left / right side.

The pillars of the Bugis suspended house freely stand on a foundation commonly called *umpak* or *pallangga*. The function of the *pallangga* in disaster mitigation is that when there is a strong shaking during an earthquake, the only ones moving are *pallangga*, while the house piles and their structure do not move, so that the house will not collapse or roll over. Besides that, when a long dry season occurs, the land will fall (Bugis: *makkeppi*), so that the only ones going down following the ground are the foundation because there is no connection with the pole above, while the frame of the house will not go down into the ground. The fact above shows that the Bugis house structure is very strong in anticipating natural disasters, so that it can save the houses and occupants from calamity. The structure

of the Bugis suspended house which can mitigate natural disasters can be seen in the figure 10.

Figure 10. The Structure of The Bugis Suspended House Which Can Mitigate Natural Disasters

4.2 Horizontal Anatomy of the Bugis House

For the Bugis, the house is a reflection of the human body of its occupants, which is manifested in the concepts and procedures for building a house. The analogy of the human body is manifested into the physical form of the house, both in a horizontal form in the arrangement of *ale bola* as a place to live in, and the vertical form of the house in structural and constructive ways. Horizontally, the Bugis house which functions as a place to inhabit, analogous to the human body in lying position. Horizontally, a house as a place to live in consists of a spatial organization that has functions that support the activities of the occupants in Bugis houses. It is reflected in the arrangement of the Bugis house plan where all parts of the human body from the head to toe are reflected in the parts and functions of the house in Talungeng Village, Bone Regency.

The face in human consists of eyes, mouth and nose. Eyes for humans are very important because the eyes reflect our hearts and minds, they also observe all the events that occur in humans and the surrounding environment. Likewise at the Bugis house, the eye is analogous to *lego-lego* as the welcoming area, before entering the house. It means that the terrace is a part of the house that functions to accommodate the guests or people who come before entering the house, so that the level of security and safety of the occupants will be detected from the terrace. If the guests coming considered not necessary to enter the house and are considered dangerous to the occupants, then the terrace can function as a welcoming area or a final stop area. Therefore the terrace is an important part of a Bugis house which is an 'eye' which oversees and selects guests.

On the face of the human body, there is also a mouth. This mouth is analogous to the living room at the Bugis house plan, which is also called *lontang ri saliweng*. The mouth functions to be used to speak, so that the function of the living room is in addition to welcoming guests with polite manner of speech, also used to accept the girl's proposal and a place to do the *ijab qabul* (marrying off of the child). During the proposal ceremony in *lontang ri saliweng*, the bride and groom will talk and discuss and take very important decisions with a deliberation. The meaning of the analogy of the mouth as a part of the human body with the living room in the house is the importance of maintaining good manners and good delivery in welcoming guests so that it will have a positive influence on the respect and fortune for the homeowners.

Furthermore, the chest in the human body is analogous to *lontang ri tengngah* which functions as the parent's bed, a place to perform a marriage initiation before the wedding day, a place to bathe and lay the body. Besides, in *lontang ri tengnga* can also be placed the son's bedroom, because the son can replace the position of the male parent in welcoming guests. The meaning of the analogy of the chest part of the human body with the middle area in the Bugis house is that the chest covers heart and liver which are important parts (spearhead) in the anatomical system of the body. Likewise in *lontang ri tengngah* is an important area because it is a gathering place for family members in everyday life, in which

the living rooms for parents and the son are placed as the spearhead of the family and also as a place for various important rituals in the process of human life.

The stomach in the human body is analogous to the internal part of the house in *lontang rilaleng* after *lontang ritengnga* on the second plot. In *lontang ri laleng*, the girl's bedroom and dining room are placed. Inside the house, there is *possi bola* as the main pillar of all the pillars in house structure. Here are some rituals performed for the safety of the occupants of the house. The meaning of the stomach in the human body is analogous to *lontang ri laleng* in the Bugis house plan, which is that the stomach functions to keep the food in the human body and *lontang ri laleng* is where people eat so that the human body stays healthy and gets protection from the Almighty.

The legs in human, from thighs to toes, are analogous to *jongke* which is located on the rear of the house plan. *Jongke* functions as a service room, a place to process and cook food for all family members. It means that the analogy of leg in human is used to stand when cooking food and cleaning kitchen equipment that requires strong legs to serve the family members. In addition, the kitchen is also used to bathe the body on the first stage immediately after the death when the body is still warm so that it can still be seated for bathing.

Figure 11. Horizontal Anatomy of The Bugis House

4.3 Vertical Anatomy of Bugis Houses

The concept of the macrocosm and the microcosm as a cosmological notion that is believed by the Bugis, analogizes the human body into the form of a house and as a reflection of the universe which consists of three vertically arranged levels, namely the upper, the middle and the lower worlds. Vertically, the Bugis house arrangement is analogous to the shape of the human body in a standing position, having the meaning that the Bugis house shape is a reflection of harmony with the universe (nature) with humans who have undergone a long process of adaptation for centuries. It is different from the concept of other traditional houses in Sulawesi like traditional houses in Toraja called Tongkonan and Boyang in Mandar. Vertically, the houses in Toraja do not analogize the human body into parts of the house, but vertically, the houses are built based on three layers of rectangles reflecting human life, namely birth, life, worship and death. These layers describe a harmonious relationship between the macrocosm and the microcosm. Horizontally, the rectangular shape on each layer of the house is a symbol of four directions. Whereas the traditional house of Mandar has a three-story vertical concept, the uppermost part of the arrangement is called Tapang with a roof and attic, the second arrangement is called Roang Hayang which as a residential space, and the third arrangement is called Naong Boyang or under the house. This shows that Bugis houses have a unique concept because they are built based on the anatomy of the human body.

Therefore, in building a Bugis house vertically, the sizes of the houses are taken from the proportion of the human body, in this case, that in the occupants of the house (husband and wife). It means that the house built must be balanced and harmonious with the occupants of the house, so that it will provide safety both in the world and in the hereafter. To determine the measurement of *aje bola*, then taken from the husband's height. However, it depends on the number of the steps people need. If the steps are 11, then the height of the bottom of the house is taken from the height of the husband when he stands raising his arms straight up while making a fist. If the stairs are only 9, the height of the bottom of the

house is taken from the height of the husband when he stands lifting his arms up by bending the elbows and still making a fist (figure 11). It means that the area under the house is the area of the husband who functions as a breadwinner outside the house who must bear the responsibility of providing for all family members, and support all household activities above *ale bola*. Whereas the meaning of the size of the husband's fist means fortune, in which the happy marriage life will always be grasped. If they are sick, it is believed to be cured soon, because the fist is symbolized by strength and enthusiasm. Therefore, the size of the pole and the height of the bottom part of the house must be taken from the height of the husband when standing, not that of the wife.

Figure 12 . Vertical Anatomy of The Bugis House

The height of *ale bola* is taken from three times of the height of the wife when standing, to the chest. It means that the domestic area inside the Bugis house is the area of the wife in which the wife is in charge and responsible for managing and completing household work, such as cleaning the house, cooking, babysitting, serving the needs of the husband, etc. While the meaning of the size of the wife at the chest level, not as high as the human stomach or mouth, because it is analogous that the wife's chest with breast, so that the life of the family of the householder will always be sufficient. Whereas if the height taken up to the stomach of the wife, it means that people's stomach is always full but the food will easily be defecated, so fortune will not last long. In addition, it is not taken from the height of the wife to the mouth, because the mouth is considered a hole throwing up so the fortune easily fades away.

On the roof, the height from the ceiling to the tip of the highest part is triangular, the size is taken from the wife and husband's heights. The way to determine the size is by taking half of the husband's height and a quarter of the wife's because in the Bugis tradition, the husband is the leader of the family and the wife is the husband's companion so the size taken from the husband's height must be bigger than of the wife. For example a husband's height is 170 cm and the the wife's height is 158, then the height of the roof of the house is the husband $(170: 2) + \text{wife } (15: 4)$ is 124.5 cm. The meaning of the measurement of the roof taken from the height of the husband and wife is that the husband is the breadwinner in which the size must be larger, and the wife as the one who is a companion means the size must be smaller. In addition, the measurement also means that the fortune of the occupants of the house will increase, both fortune or match for the son or daughter.

5. CONCLUSION

For most of Bugis community in Talungeng Village, Bone regency, the concept and system of building houses are based on anatomy of human body. Vertically, the relationship between the concept of Bugis house space and the human body is divided into three spatial structures, namely the upper space (roof and attic) analogous to the human head; the second space as human body and the space under the house is considered as the human leg. Besides that Bugis house is built based on the concept of detailed functions of human body parts such as eyes, mouth, hands, chest, stomach and legs. Specifically, Bugis house is built based on the body anatomy of the husband and wife who inhabit the house, which is manifested in the concept of vertical and horizontal housing construction. The construction of the Bugis house concept vertically analogizes the anatomy of the human body in a

standing position, with the structure of the Bugis house from the bottom up (legs, body and head). While horizontally, it is analogous to the anatomy of human body when lying down. The concept of physical development of the house by analogy to the anatomy of the human body (husband and wife) led to the creation of residential spaces of different sizes. The meaning and value of building house that reflects the anatomy of the human body (husband and wife) aims to create safety, comfort and harmony, both with family members and the surrounding natural environment. This concept is very unique because it is not found in the concept of building a traditional stage house in the Mandar and Toraja tribes in Sulawesi. However, due to the rapid flow of modernization and globalization, some of the construction of Bugis houses in this village has shifted gradually both in physical and material forms. Even so, in terms of understanding the concept of the house, the community still understands the anatomical concepts in housing construction and adheres to existing local wisdom.

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GLOSSARY

<i>Ale bola</i>	: body of the house
<i>Awa bola</i>	: under the house
<i>Aju lekke</i>	: beams on top of the house
<i>Aju tee</i>	: small beam on the roof truss
<i>Alliri</i>	: pillar
<i>Arateng</i>	: cross beam connecting the pole horizontally below the floor beam
<i>Bare'</i> under the roof parallel to <i>arateng</i>	: the long flat beam is placed
<i>Bareqkapu</i>	: small beam on the ceiling (<i>rakkeang</i>)
<i>Bola ugi</i>	: Bugis house
<i>Bola mabbuju</i>	: longitudinal house
<i>Bola-mpareq</i>	: transverse house
<i>Botting langi</i>	: upper world
<i>Bakkaweng</i>	: palm leaves
<i>Bulena</i>	: overstek
<i>Dilau</i>	: east
<i>Diaja</i>	: west
<i>Diattang</i>	: south
<i>Diawang</i>	: north
<i>Jongke</i>	: kitchen
<i>Lontang/latte'/baliang</i>	: divided area in Bugis suspended house
<i>Lontang ri saliweng</i>	: front area
<i>Lontang ri laleng</i>	: rear or back area
<i>Lontang ri tengngah</i>	: middle area
<i>Lontaraq galigo</i>	: epic written myth of Bugis in South Sulawesi
<i>Mappacci</i>	: marriage initiation
<i>Makkeppi</i>	: shrink, subside
<i>Possi bola</i>	: centre of the house
<i>Pattolo Riase</i>	: longitudinal beam (in the direction of the house)
connecting the pillars of the house	
<i>Pallangga aliri</i>	: beam connecting two pillars
<i>Rakkeang</i>	: space under the roof
<i>Sanro bola</i>	: expert at building house
<i>Sulapa 'eppa'</i>	: rectangular shape
<i>Tunebbaq</i> and walls	: small beams supporting floors

The Anatomy of Bugis House in South Sulawesi, Indonesia

Local Wisdom Concept and System of Building Houses as a Reflection of Human Manifestation

Key words: Local Wisdom, Bugis House, human reflection

Abstract: Talungen village in Bone Regency is a Bugis village having a specific characteristic with its suspended house called the Bugis House. The Bugis in this village consider the house to be itself, so the concept and system of building their house is based on the human manifestation. The purpose of this study is to reveal the local wisdom about the concept and system of building Bugis houses based on the anatomy of the human body. The methodology of this study used qualitative methods with the Case Study Approach. The analysis method used is the Discovering Cultural Themes. The results showed that the Bugis community in Talungeng Village used human manifestation especially the homeowners (husband and wife) as the concept and system for building the house, both vertically and horizontally, meaning that the lives of the homeowners will be harmonious with nature in order to be safe and fortunate inside the house.

6. INTRODUCTION

The suspended houses made of wood in Talungeng Village are the traditional houses of Bugis tribe that have been known for centuries. It represents a tradition that survives long for the Islamic community in South Sulawesi which is also wide-spread throughout Malay (Robinson, 2005). During the construction, there are no professional architects (academics) involved, it is built with the assistance of *Sanro Bola* instead, a Bugis traditional expert who is considered to have tacit knowledge on the procedures for building a house, which must be followed and obeyed even though the knowledge is intangible (Beddu, 2006).

The house in Talungeng Village has a rectangular plan with a gable roof. This shape in accordance with what is stated by Mardanas (1985). The structure of the house is influenced by that of the cosmos; the upper, middle and under worlds. The upper world is for the holy realm, the middle for human and the underworld for interaction with the surrounding environment. A customary law is a kind of custom that must be obeyed by the owner of the house. Within Bugis community, the house and the customary law are considered as the provisions of Dewwata Seuwwae (God Almighty). The violation of order will bring harm to those who commit it. Therefore, the prediction of floods, winds, earthquakes is deemed to have been represented by the consideration of choosing the location and orientation of the house (Abbas, 2016).

This is in accordance with what is stated by Robinson (2005) that the Bugis house is highly influenced by the structure of those three types of cosmos in which they consider the house as human manifestation. They believe that a house is a place to live in forever, as reflection of themselves as the whole stages of their lives starting from birth, marriage and death run

in the house. As a human manifestation, it is built based on the values that can provide safety, harmony and sustenance for the people (Data, 1985). Therefore, all the occupying parts of the house will be considered as sacred areas, because they consider the house as a place to inhabit forever. A sacred space is a place having a sacred function related to religious activities, for instance to do worship or ritual activities. The activities done in this area designate distinguishing characteristics from other areas. It generally has a specific form and boundary. In a particular society order, the ritual function is a cultural attribute, a very important factor in producing a setting both public and private and produces a certain spatial structure (Knowles, 1996). Whereas Broadbent (1980) states that space in traditional houses is an expression form of local cultural identity, including sacred space.

In traditional Bugis houses, the sacred (holy) area in the vertical structure is in *rakkeang*. It is a space above the body of the house starting from the ceiling to the slope of the roof. It is used to store rice and other agricultural products. According to *Lontaraq Galigo*, rice is Sangiang-Serri, the incarnation of We Oddang Riu, the daughter of Batara Guru. Therefore, rice used to be thought sacred so that *rakkeang* became a symbol of *botting langi* (the upper world) where Sangiang-Serri resided (Shima, 2006). In a horizontal structure, the area of *ale bola* (the body of the house) is a sacred area in carrying out various traditional ceremonial activities such as marriage ceremonies, birth to funeral initiations and so on (Yunus, 2012). In connection with the birth initiation ceremony taking place in the house, the ceremony most strongly maintained by the Bugis is a life-cycle ritual, especially relating to before and after the birth of a child (Pelras, 2006). It shows that house becomes a part of the culture manifestation as various cultural processes are conducted inside the house as a part of belief which has developed in the Bugis community.

Therefore, *Bola Ugi* (Bugis house) is also a cultural product physically manifested and it is in line with the cultural conditions of the Bugis community (Hartawan et al., 2015). The realization went through a long process by considering living in harmony with nature.

Therefore, the house is both micro form of the universe and human body reflecting the behaviour and nature of human. The theoretical background on this case has been stated by Hikmah (2018) on traditional Balinese-Indonesian houses in which the traditional buildings are built with the concept of human relations with nature. Philosophically, human relations with nature are called *Bhuwana Agung* consisting of three elements: *Atma*, *Sarira* and *Tri Kaya*. *Atma* or holy place in a house is considered as the head in human body used as a place of worship; *Sarira* is the manifestation of the body analogous to the yard; the back part is called *Nista Mandala* and the occupant is called *Tri Kaya*. The basis of this theory shows the relationship between the dimensions of human body and the form of the house in mass based on the function of each building mass. In other words, the manifestation of the human body dimensions in Bali House is separated from each building. So, it is carried out on a horizontal building mass at the site consisting of several building masses in a large yard, belonging to a nuclear family. This kind of manifestation in building houses site is still in use today.

Similarly, the concept and system of building Bugis house in Telungeng Village are based on human body parts. The research on such concept and system has never been conducted in the context of Bugis house previously. Therefore, it is interesting to discover the possibility of another connection between the dimensions of human body and the house. Besides, it also aims to know how the dimensions of human body affect the form of traditional Bugis house horizontally, vertically or both. It will add to the theoretical repertoire in architectural concepts of traditional house.

7. RESEARCH AREA

Talungeng Village is located in Barebbo District, from Bone Regency, South Sulawesi. Bone Regency is located 174 km to the East of Makassar city. The natives of Bone Regency are Bugis tribes who occupy almost all the parts of the city and village. The district is positioned $4^{\circ} 13' - 5^{\circ} 6' \text{ LS}$ and between $119^{\circ} 42' - 120^{\circ} 30' \text{ BT}$. The area of Bone Regency is 4,559 km², with an average population density of Bone Regency of 162 people per km². Barebbo district itself has 18 villages. One of them is Talungeng Village with 276 families with the population of 1164 people, the area of Talungeng village is 6.80 km², with a population density of 171 / km², it is denser than the average population of Bone Regency. With its unique characteristics, Talungeng Village, Barebbo district has a homogeneous population structure and is dominated by Bugis tribes. In general, the community in Talungeng Village, Barebbo district is in the stage of the development process, including the way of thinking which is still traditional. Bugis houses are still commonly found in this village with traditional building system as well. The process of building a house in this village is carried out by mutual cooperation. The construction is assisted by *Sanro Bola*, people who are considered experts and understand the procedures and intricacies of constructing houses in accordance with the hereditary customs.



Figure 1. Map of Bone Regency, Barebbo District and Talungeng Village

8. RESEARCH METHOD

8.1 Methodology and Approach

The research method used was a qualitative method (Creswell, 2008) because it was carried out in traditional settlement which is natural and still firmly holds on traditions and customs in building houses. It is also called natural research as it is carried out in a natural environment in the village (Sugiyono, 2014). Qualitative research aimed to find meaning from the data obtained in the field. The meaning revealed in the research includes the relationship meaning among the dimensions in human body as the manifestation of traditional Bugis house.

In general, the research approach used architectural approach (artifact) and

ethnographic approach (living culture) (Creswell in Sugiyono (2014)), with the nature of descriptive research (Groat & Wang, 2002). The architectural approach explains the physical conditions of traditional Bugis houses, parts of the house layout (lower part, body of the house and upper part of the house), symbolism and aesthetics of the house as a whole in the house. While ethnographic research explains about the system of people's knowledge in building a house associated with the immunity of the human body. It aims to understand the point of view of indigenous people in the relationship of building their houses to the dimensions of the human body, to gain views on their world (Spradley, 2006). Ethnographic approaches are carried out by studies of group culture in natural conditions through observation and interviews.

It was stated by Daymon (Daymon, 2008) that ethnographic research is possibly carried out in the form of descriptions, such as records about a community group produced by the previous researchers. The purpose of the description is to describe the social reality in a group so the ethnographic readers can easily understand it.

8.2 Method and Technique of Data Collection

Viewed from setting aspect, the data were collected in the settings of traditional Bugis houses and from the data sources: primary data and secondary data. Data collection techniques in the research were participant observation, in-depth interviews, documentation studies through recording images (photos or films) and also reconstructing social scale.

3.2.3. Participatory Observation

Spradley (1980 in Susan Stainback, 1988) states that in participatory observation, the researchers observe what people do, listen to what they say, and participate in their activities. With this participatory observation, the data obtained will be more complete, sharp and the researchers are able to know the meaning level of each visible behavior (Sugiyono, 2007). The benefit of observation is that the researchers can see things unobserved by others, especially for people living in the environment because those things have been considered "ordinary" so that they will not be revealed in interviews. Besides, the researchers will be able to understand the context of data in the overall social situation, so a holistic view will be obtained. The observation method is used to collect physical data on houses, settlements and the environment around Bugis house in Talungeng village.

The research used passive participation in which the researchers do not participate in doing what the informant does. There are several activities in the research location not allowing the researchers to take part in doing what the informant does, such as building houses that require special skills. However, the researchers also feel and observe the behaviors and words, linked to the parts of the house in Talungeng village. According to Spradley (1980 in Nasution, 2002), the object of research observed in qualitative research is called a social situation consisting of three components: space, actor and activity. first, space aspect covers the settlement space along with physical aspects of Bugis suspended house in Talungeng village. second, actors cover people involved in social situations, namely the occupants of the house and panre bola (house builders). the last, activity is carried out by people in an ongoing social situation, namely the activity of building a Bugis house.

The stages of participatory observation are descriptive observations where the researcher conducts general and comprehensive exploration also does a description of all that is seen, heard and felt. All data is recorded and the results of this observation are concluded in an unregulated state. This stage is called the grand tour observation, and the researcher

produces the first conclusion. In the research, it is the description of the entire environment of Bugis house in Talungeng village. The next observation is focused observation where at this stage the researcher has conducted a mini tour observation, an observation that has been narrowed to focus on the dimensions of the human body associated with the physical aspects of the parts of the house. The selected observation is a further stage to describe the research focus in order to obtain more detailed data on Bugis suspended house.

3.2.4. In-depth interview

To get more in-depth information about participants, the researchers used in-depth interviews. According to Esterberg (2002) interviews are a meeting of two people to exchange information and ideas through question and answer, so that meaning can be constructed in a particular topic. In the research, the interviews were conducted with residents of Bugis suspended house in accordance with the chosen sample by *panrita bola* to obtain the meaning of local wisdom from each concept, system, symbol, form and activity related to the construction of Bugis house in Talungeng Village, Bone Regency, along with analogy to the anatomy of the human body.

The residents of the house interviewed were those who were considered to have knowledge and understand the ins and outs of building houses both generally and specifically. In addition, the residents must possess a representative house with a complete form and in accordance with the tradition of building a house. The method of interviewing is done by choosing residents who are considered to be most aware of the concept of building a house based on the dimensions of the human body. The residents will expose the facts and meanings. After that, the researcher will move on to the second house sample to interview other residents with the same questions. And so on, the interview is carried out on a relay basis. Whereas in-depth interviews with *Panrita Bola* were conducted by choosing the one considered to understand the concept and had knowledge and experience from generation to generation. The interviews contain determination of the house size reflecting the body size of husband and wife. Besides, it also aims to discover the meaning in each size, form and space produced.

8.3 Samples

The sample in qualitative research is not called a respondent, but as a resource person, or participant, informant, friend and teacher in the research. The sample in qualitative research is also not a statistical sample, but a theoretical sample. In this qualitative research, the participants of the data source were selected by purposive and snowball sampling. Purposive sampling is a technique of sampling data sources with certain considerations. This particular consideration, for example, is the person who is considered to know the best about what we hope for or who has the power and authority in the social situation or object of the house researched to accommodate what the researchers need in collecting data. Snowball sampling is a sampling technique for data sources, from fewer to more data. when the small number of data sources has not been able to provide satisfactory data, other data sources will be obtained. Thus the number of sample data sources is getting bigger. Faisal (1990) citing the opinion of Spradley (1980) suggests that the social situation in the initial sample is strongly recommended for a social situation as the beginning of many other domains. in the research, the sample taken was suspended houses in Talungeng Village that still apply the anatomy concept of the human body in constructing their houses. The number of samples is not limited, but if the interview is already done enough, then the sample is considered sufficient. Therefore, the research took several samples from a total of 44 houses with the typical characteristics of Bugis houses. The initial sample as the information source is the residents who were considered to have sufficient knowledge and understanding on the houses. The figure 2 below shows a map of a village layout covering the types of houses taken as a sample.

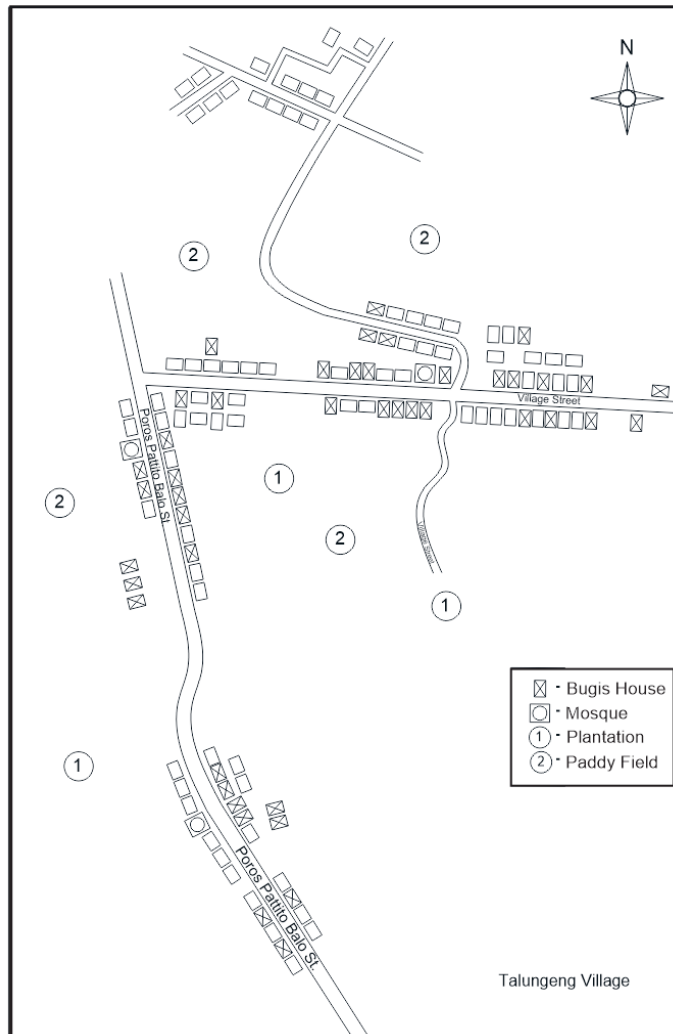


Figure 2. Map of a village layout covering the types of houses taken as a sample

8.4 Data Analysis Method

The data analysis method used in the research was Discovering Cultural Themes to uncover the findings of local wisdom concepts and systems to build houses based on the human manifestation in Bugis houses in Talungeng Village. The analysis gathered the focus of culture, meaning and values and physical cultural symbols on the house construction. The analysis using Discovering Cultural Themes obtained the relationship in the symbols and parts of the house reflecting human body. It was used to discover a holistic finding of the concept and system of building a house both vertically and horizontally based on the cosmological view of the Bugis in Taqlungeng Village, Bone Regency. Based on the existing analysis, a reconstruction in a descriptive form of the concept and system of Bugis house construction was designed. It was harmonized with human manifestation to give comfort, harmony, security and well-being both in the world and in the hereafter. The final step was to draw a conclusion.

9. FINDINGS AND DISCUSSION

9.1 The Concept and Meanings of Bugis Houses in Talungeng Village

The house for the Bugis people reflects themselves. Everything related to the house must be based on the structure of the human body that is harmonized with nature. This is in accordance with the cosmological understanding of the Bugis people that nature is divided into three structures, namely the upper, middle and lower worlds. Likewise with the structure of the body; head (top), body (center) and feet (bottom). It is manifested into the structure of the Bugis house which consists of three levels: *rakkeang*, *ale bola* (the body of the house), and *awa bola* (under the house) in a form of suspended house. Constructing this type of house has become a tradition from generation to generation (Naing, 2011).

In addition, Bugis people in general and the residents of this village embrace an ontological view of life that understands the universe universally. Their life philosophy is *sulapa 'eppa'* which means self-improvement. It means that all aspects of human life will be perfect if formed from four elements: water, soil, fire and wind. As mentioned, the traditional suspended house built in a rectangular plan with a gable roof is considered perfect (Naing, 2011). The form of this house is also stated by Mardanas (Mardanas, 1985). From the results of purposive interviews, it was found that most of Bugis suspended houses in Talungeng Village were oriented to a rectangular shape (*sulapa 'eppa'*), whether it's a floor plan, or a wall. Every homeowner interviewed has an understanding of the *sulapa 'eppa'* concept. The understanding and application of this concept was carried out with the help of *Sanro Bola*.

The architecture of the house in Bone has a broad meaning. They believe that a house is built not only as a shelter from rain and the heat of the sun but also related to philosophical values used as a way of life. The meaning and good values behind the construction of a house are interpreted and held as a way of life to be implemented in everyday life (Marwati, et al., 2016).

Likewise the concept of the Bugis house cannot be separated from the local wisdom of the Bugis people in Talungeng Village. Various local wisdoms as the living traditions of the Talungeng community in building houses begins with the concept of determining the house orientation, situating the main door of the house, the spatial planning and the concept of the structure Bugis house. The concept aims as the safety and comfort of living in the house, so that the arrangement of the concept of the house must be adapted to the parts of the human body in relation to the harmony with the nature.

9.1.1 The Concept of Orientation and Placement of the Main of Bugis Houses in Talungeng Village

House orientation is very important and sacred involving several elements used as guidelines, namely mountains, roads, rivers, sun, sea and wind direction. However, in general, the orientation in Bugis house layout is distinguished on *bola mabbuju* (longitudinal house), a house extending in the east-west direction and *bola-mpareq* (transverse house), a house that stretches north-south (Shima, 2006). The orientation in this village uses the directions of east, west and south but north. Based on the local wisdom, a north-oriented house means '*ko no'ki diattang dia'bokori Watangpone lo diattang*', meaning that people going down from the house to the North means turning away from Watampone where the people are not supposed to turn their backs on their origin.

This is also in line with what was stated by Idawarni that the west direction is considered sacred because it is direction of Muslims (qibla) (Idawarni, 2011). Whereas the east as the direction of the sun symbolizes fertility and the spirit of life. This is consistent with what Altman and Chemens said that in the cosmology of the Pueblo Indians in America, they involve the east where the sun rises and take it as a very sacred direction. The sun is considered a "father" helps the growth of their plants and leads their journey in hunting towards their house in the west (Altman and Chemens (1984).

The house orientation for Bugis people in Talungeng village in particular and all Bugis people in South Sulawesi in general, can not be separated from the direction of the main door or entrance. The entrance of the house is analogous to the 'mouth' where the food is taken in through it before entering the body. In other words, the entrance is the transition between the outside 'world' and that inside the house. The orientation of the house facing the four directions is believed to be good for the lives of the owner of the house, depending on the position of the entrance. The position of the entrance is not always the same as the orientation of the house. If the orientation of the house is believed right by the local community, the position of the door of the house will follow the orientation. **On the contrary, if the orientation is considered to be bad, the entrance direction will be placed toward a good direction.**

For this reason, the orientation considered good for the Bugis Bone community in Talungeng village is east, west and south, so that the entrance of the house is to follow these directions. The houses oriented towards the east with the entrance also facing the east (Bugis: *dilau'*) means that the owner of the house will always feel good and blessed, comfortable and healthy because the sun rising in the east is source of energy, which also the source of life. The local wisdom of the Telungeng village community states that "*Nakko no'ki in Lau (East) Yaro Mata EssoE (Sun) Menre 'Malolo, Jaji Malessi Pappineddingnge, Makecce' Tuwongengnge*". When the sun rises in the east above the house oriented to the east, the people will not step in their own shadows during the daytime. Stepping on the shadows when being in the house during the day brings a bad thing. It is not considered good because of not being exposed to the direct sunlight, resulted in a feeling unwell, lack of enthusiasm and easily get sick.

In addition, according to the local wisdom of the local community, the orientation of the Bugis house to the west with the entrance facing the west (Bugis: *diaja*) is also believed to be good because the house faces the qibla (Bugis: *dioloi kibla'E*). The Qibla direction for the Bugis community is believed to be very good for the orientation as it is the center of orientation of the Muslims to pray. Therefore, the house oriented towards Qibla is will always bring good things; blessings of life and the salvation both of the world and the day after because Qibla is is direction of all those who perform prayer.

The orientation of the house with the entrances to the East and West can be seen in the following figure 3.

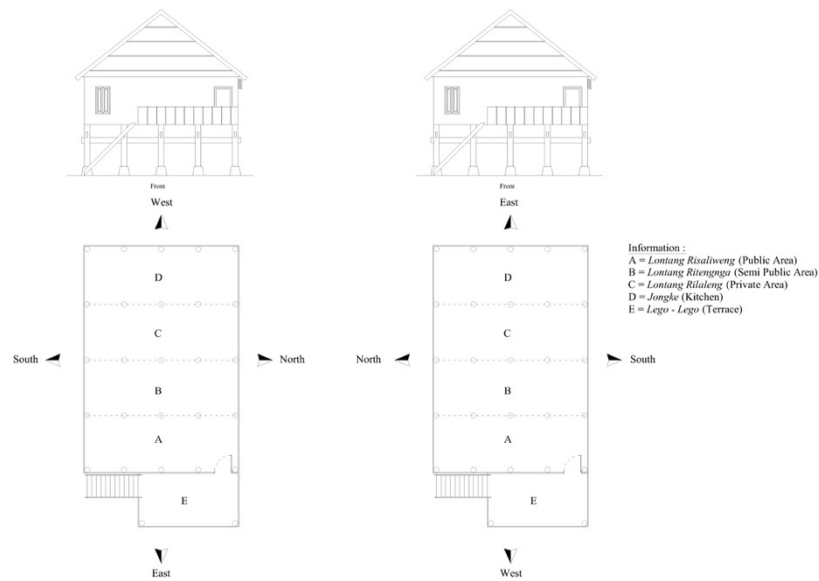


Figure 3. The Orientation of the

House with The Entrance to the East and West

Similarly, the house oriented to the south with the entrance of the house facing the south (Bugis language: *diattang*), is also believed that the the owner of the house will have a good life and happines, both phisically and spiritually. This is in line with the view of the Bugis of Bone that the house oriented to the south with the door facing to the south means "*no'ki ri atuwongengnge*" or always being in a comfortable life.

The house oriented to the north (Bugis: *diawang*) is believed to be not appropriate to position the entrance to the north because it means to welcome death (Bugis language: *no'ki riamatengengnge*). The deficiency is adjusted by situating the entrance oriented east on the left side of the house or the door facing west on the right side of the house. The position of the entrance is not always at the front wall, it can be alternatively on the side wall of the house. The orientation of the house to the South and North with the position of the entrance of the house to the north can be seen in the following figure 4.

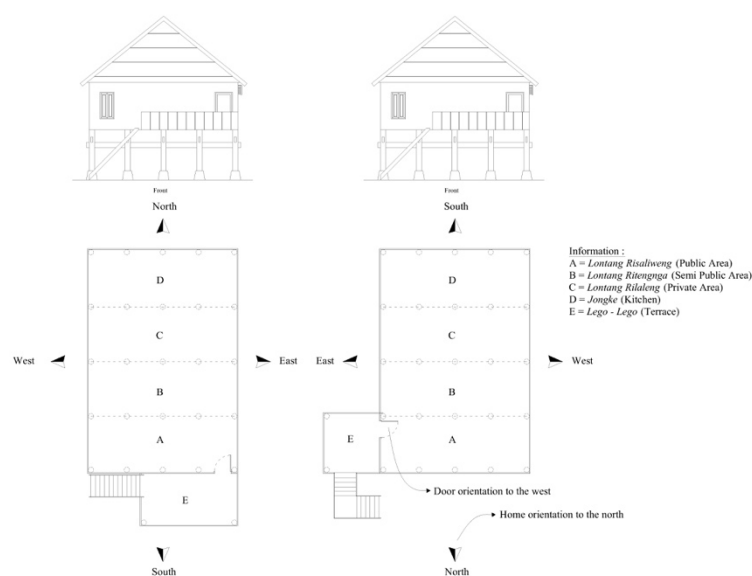


Figure 4. The Orientation of the House with The Entrance to the South and North

9.1.2 The Concept of Occupying the Bugis House in Talungeng Village

The house as a place to live for the Bugis in Talungeng village is related to spatial planning in the house. It has a unique concept and is different from the other Bugis house concept in general, especially relating to its function as a shelter for occupant and a place to conduct sacred processions from birth, marriage and death which are all performed in the house (Robinson, 2006). However, the concept of occupying above has different spatial planning and function in each area (Bugis: *Lontang / Latte'*) in Talungeng Village in particular. Similar with the concept of Bugis house in general, the area to live in is located in the *ale bola* in a vertical arrangement; the upper area is the roof and *rekkeang* and the lower area is *awa bola*. Horizontally, the floor plan or the area for residing is divided into *lontang* where each area has a different function and division. The vertical distribution of areas in the Bugis house is in the figure 5 as follows.

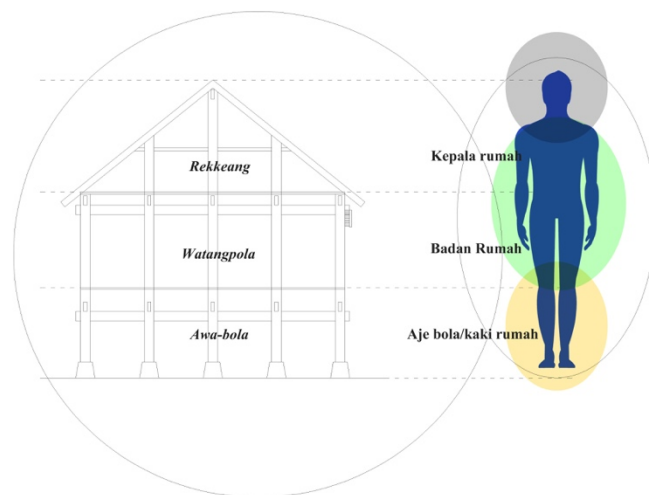


Figure 5. The Structure of The Bugis House Is Vertically Analogous To The Anatomy of The Human Body

The picture above shows that the concept of spatial planning in Bugis houses in Bone is horizontally divided into the front area, usually called *lego-lego* or terrace that functions as the area to welcome guest or transitional area before entering the living room. The stairs of the house stick onto the terrace, and on the front wall is situated the entrance and front windows. The size of the terrace is 2.95 meters. The length of the entrance cannot exceed size of the other areas because the terrace for the Bugis tribe is symbolized as a child. It means that when the occupants (husband and wife) have children, they are expected to be obedient and dedicated to their parents.

Besides *lego-lego*, there is a public area or living room (Bugis: *lontang risaliweng*). This area serves as a place to welcome guests, both family and relatives who come to visit the house, to take place the proposal ceremony, and to conduct sacred rituals for the groom. In the ancient house, there was not any furniture in this area but a mat on the floor. However, along with the development of civilization, this area is furnished with chairs and tables to entertain the visiting guests. The length of this area is 3.00 meters, 0.05 meters longer than *lego-lego*. *Lontang risaliweng* for Bugis people is considered a Parental Symbol, so that the authority and influence of parents must be greater than children symbolized as *lego-lego*.

The authority of parents who are high in this area is reflected in the function of this area as a place to run the proposal ceremony and welcome guests. For Bugis people, accepting the proposal is the authority of the parents, not children.

The next is *lontang ri tengngah* which is private because in this area there is a bedroom and family room. The bedroom settlement is ruled by the belief that a good position for the bedroom is facing east with the head being in the west. Besides, the sleeping position believed to be good is facing the north with the head in the south. These two positions are the best positions because they avoid sleeping positions facing the Qibla and also avoid turning their backs on the city center of Watampone (picture of sleeping position on floor plan can be seen in the following figure 6).

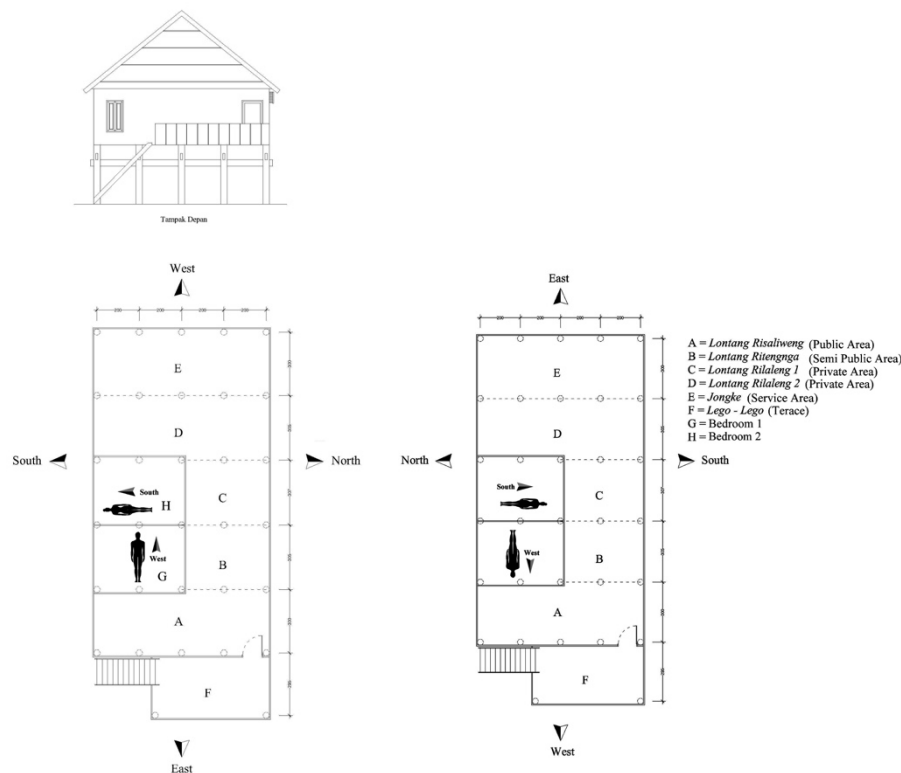


Figure 6. Sleeping Position on Floor Plan

In everyday life, the nature of this area is private where a mother gives birth in a room or outside the room.

However, this area can turn into a semi-private area if the family perform marriage initiation (Bugis: *Mappaci*) as a part of rituals the day before the wedding. In addition, it is also used to lay and

bathe the body. The size of this area is 3.05 meters, 0.05 meters longer than the previous area. It means that longer the house the bigger the size meaning the owner will earn more livelihood. It applies to the next area, namely *lontang ri laleng*.

Lontang ri laleng is the fourth plot in the floor plan. This area is private because it is for the young girl's bedroom which is always protected. In *lontang ri laleng*, it is also used as a place to eat together and a place to perform aqiqah rituals. The size of this area is 3.07 meters which also means that the longer the length of the house, the bigger the size (Bugis: *'mattama pede' malowang*) 2.95m from the length of the house from terrace, *lontang ri saliweg* of 3.00 m, *lontang ri tengngah* of 3.05m, and *lontang rilaleng* of 3.07 m). If the house has an additional *lontang* then the size of the next plot is returned to the original size before the highest size of 3.05 meters, and the last plot is kitchen (Bugis: *jongke*) which is an area service that functions as a cooking place, a place to clean the kitchen equipment and a place to bathe the body in the first stage (Bugis: *cemme tuwo-tuwo*). In the Bugis Bone community, bodies are bathed twice. The first bath is done when the body is still warm,

where the body is bathed in a sitting position because it is considered alive, so it can still be bathed in *Jongke* area. When the body is stiff, it will be bathed for the second time in *lontang ri tengngah*. The length of *jongke* is smaller than the previous plot, which is back to 3.0 meters. It means that the fortune obtained by the occupants of the house will not be reduced or will not be exhausted by returning to number 3, with an explanation that from terrace of 2.95m, *lontang ri saliweng* of 3.00 m, *lontang ri tengngah* of 3.05 m, and *lontang ri laleng* of 3.07 m (the size keeps increasing inward), and the next area throws back to the size of 3.05 meters and 3.00 meters. The pictures of the size and meaning of the Bugis houses can be seen in the following figure.

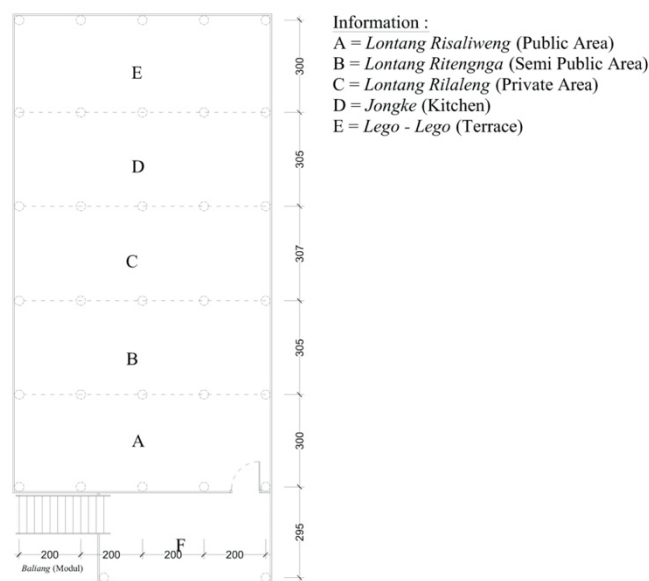


Figure 7. Size of the areas in Bugis house

In a straight line on the floor plan, to separate each space element of on the house plan, the partition or dividing wall is used. It distinguishes the function of each room. Each dividing wall or space separator has a doorway, the main entrance connecting the terrace with the

living room using wooden doors that are quite strong, such as iron wood. To connect the living room and the middle room uses wood walls or furniture as a barrier equipped with a door hole. For private spaces such as bedrooms, generally have a doorway equipped with a door leaf, and some only have a doorway.

In addition, the local wisdom of the Bugis Bone community in determining the width of Bugis houses is based on size of the area (Bugis: *baliang*), while the length of the house is based on the number of *lontang* on the back. Each *lontang* has a different size as described above. The width of Bugis houses in this village averages 4 *baliang*, the size of each *baliang* is 2 meters so that the average width of the house is of 4 *baliang* is 8 meters. For the determination of the length of the house is based on *lontang*, an average length of the house as a place to occupy is 15.12 meters. Determination of the length of the body is different from the determination of the length of the roof cover serving to protect the body of the house. Determining the size of the roof based on the length of each roof material made from palm leaves (Bugis: *Bakkaweng*), commonly called *pari*. Therefore, there is a term based on the length of the house, for example a *pitumpari* house (seven *pari*) or a house with a roof that has 7 *pari*. For a shorter / smaller size called *limampari* (five *pari*) or a house with a roof length of 5 *pari*. The length of 1 *pari* is 2 meters (Figure 6). The length of the Bugis house roof must exceed the length of the house. The excess length of the roof in the Bugis house is called *bulena* (overstek). *Bulena* functions as a protector of rainwater and sunlight. It protects when the sun shines at a 45 degree and when it is perpendicular to the

house, so that the house is protected from high humidity during the rain and also avoids high heat exposure during the day (Figure 8)



Figure 8. The Size of The Roof Based on The Length of Each Roof Material Made From Palm Leaves (*Bakkaweng*), Commonly Called *Pari*

9.1.3 The concept of Bugis House Structure as a Reflection of the Anatomy of the Human Body for Disaster Mitigation

The suspended Bugis house derives from a long process of adaptation to the surrounding environment. The

natural conditions in Indonesia, including the Bugis land, did not escape disaster. Both disasters caused by earthquakes or climate change. The manifestation of adaptation of the house and nature (macro cosmos) and humans in addition to shape and size, also in the structure of the Bugis house. So, the shape of the Bugis suspended house is a replica of the universe in the physical dimension of the occupants of the house. It means that the houses and the occupants will always be in harmony with nature and the environment, also avoid natural disasters such as earthquakes, floods and storms. It is different from the relationship concept between the dimensions of the human body and its manifestation in a traditional Balinese house, in which the house site belongs to a family, consisting of several building masses. The mass of the building consists of the main house, the place of worship / shrine, kitchen, food warehouse, and a gathering place. The relationship between this dimension with nature and house is not only analogous to the physical form of a house but also outside parts of the house, such as yard of the house, and the back of the house. However, in traditional Bugis houses in Talungeng Village, the relationship between the dimensions of human body and the house is manifested only in the physical whole of a house not in outside parts. This is due to the physical form of a traditional Balinese house building consisting of several masses (horizontal), while the form of a traditional Bugis house building only consists of a building (vertical and horizontal).

In addition, based on the experience of settling in Bugis people, it has been proven that the traditional suspended house of Bugis have provided good protection against disasters due to extreme natural changes. However, the earthquake that causes a shaking does not cause the Bugis suspended house to collapse or reverse. Floods as high as 2 meters will not bother the community because the height of the lower part of the house is above 2 meters and even the tornado can not lift or overturn the house to the left or right or the front to the back.

The structure of the Bugis house which is strong and can prevent natural disasters is a symbol of the anatomy of the human body, especially its owner. Therefore, the proportion of the height and width of the house will always be in harmony with the nature and the homeowners who occupy it. It is reflected in the structure of the Bugis house, comprising the parts of the house, is vertically analogous to the anatomy of the human body, as well as the standing position of human (Figure 4). Where the leg of human are analogous to *aje bola* in the form of pillars (Bugis: *Alliri*) standing on the stone foundations, the human body analogous to *ale bola* is the living area, and the head of human is for *ulu bola* and human navel is analogous to the centre of the house (Bugis: *possi bola*). Some anatomical parts of the human body such as collarbone is analogous to the part of the house called *bate-bate*. The backbone in human is called *aju lekke* in the house, it is a flat wood placed on the roof. Furthermore, the vein in human body is called *arateng* or *pattolo* or *bare*. *Arateng* and *Pattolo*' (Figure 9).

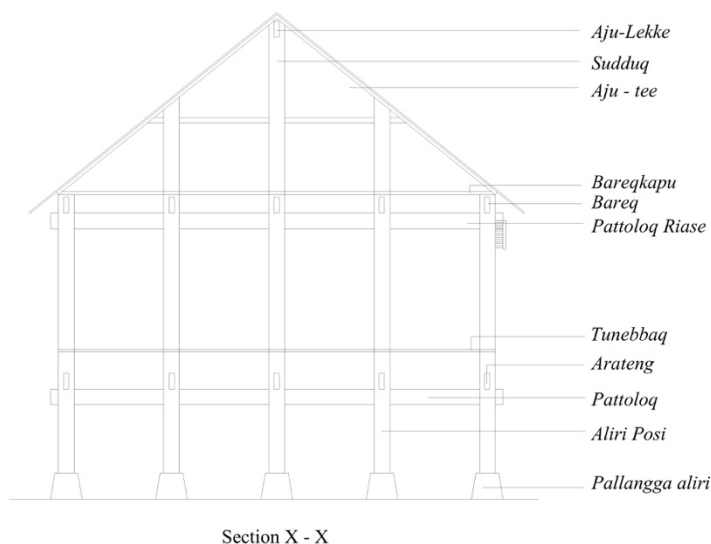


Figure 9. The Size of The Roof Based on The Length of Each Roof Material Made From Palm Leaves (*Bakkaweng*), Commonly Called *Pari*

Related to disaster mitigation, the parts of the Bugis house structure have an important role in disaster defense. The pillars of the house stand firmly without connection from the top of the ground to the edge of the upper part of the roof, so that the house stays strong and survives when it is hit by strong winds. If there is wind on the top of the house, then the bottom is still mutually reinforcing. Even if the strong wind

disaster is very strong, the house is only lifted but does not cause a break. *Arateng* is a long flat beam with a length equal to the length of *ale bola* which serves as a barrier for poles and *pattolo*' is a flat beam with a length equal to the width of the house whose function is to hold the pillars that have been collected by *Arateng*. The function of *Arateng* and *Pattolo* in disaster mitigation is that when an earthquake and strong wind occur, the house will not be rolled forward / behind and on the left / right side.

The pillars of the Bugis suspended house freely stand on a foundation commonly called *umpak* or *pallangga*. The function of the *pallangga* in disaster mitigation is that when there is a strong shaking during an earthquake, the only ones moving are *pallangga*, while the house piles and their structure do not move, so that the house will not collapse or roll over. Besides that, when a long dry season occurs, the land will fall (Bugis: *makkeppi*'), so that the only ones going down following the ground are the foundation because there is no connection with the pole above, while the frame of the house will not go down into the ground. The fact above shows that the Bugis house structure is very strong in anticipating natural disasters, so that it can save the houses and occupants from calamity. The structure

of the Bugis suspended house which can mitigate natural disasters can be seen in the figure 10.

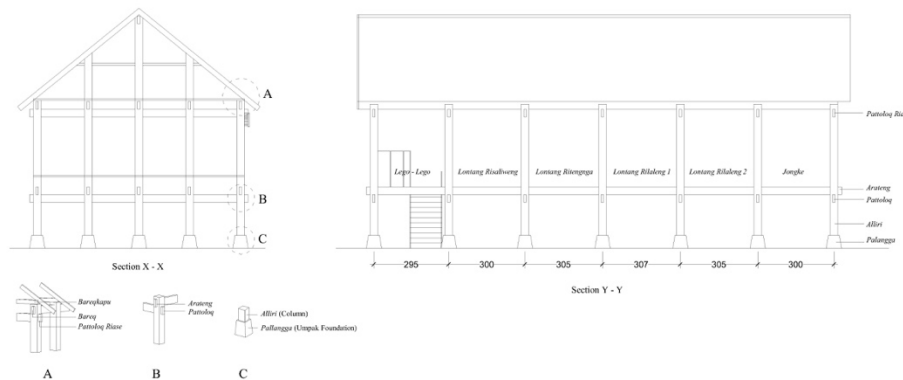


Figure 10. The Structure of The Bugis Suspended House Which Can Mitigate Natural Disasters

9.2 Horizontal Anatomy of the Bugis House

For the Bugis, the house is a reflection of the human body of its occupants, which is manifested in the concepts and procedures for building a house. The analogy of the human body is manifested into the physical form of the house, both in a horizontal form in the arrangement of *ale bola* as a place to live in, and the vertical form of the house in structural and constructive ways. Horizontally, the Bugis house which functions as a place to inhabit, analogous to the human body in lying position. Horizontally, a house as a place to live in consists of a spatial organization that has functions that support the activities of the occupants in Bugis houses. It is reflected in the arrangement of the Bugis house plan where all parts of the human body from the head to toe are reflected in the parts and functions of the house in Talungeng Village, Bone Regency.

The face in human consists of eyes, mouth and nose. Eyes for humans are very important because the eyes reflect our hearts and minds, they also observe all the events that occur in humans and the surrounding environment. Likewise at the Bugis house, the eye is analogous to *lego-lego* as the welcoming area, before entering the house. It means that the terrace is a part of the house that functions to accommodate the guests or people who come before entering the house, so that the level of security and safety of the occupants will be detected from the terrace. If the guests coming considered not necessary to enter the house and are considered dangerous to the occupants, then the terrace can function as a welcoming area or a final stop area. Therefore the terrace is an important part of a Bugis house which is an 'eye' which oversees and selects guests.

On the face of the human body, there is also a mouth. This mouth is analogous to the living room at the Bugis house plan, which is also called *lontang ri saliweg*. The mouth functions to be used to speak, so that the function of the living room is in addition to welcoming guests with polite manner of speech, also used to accept the girl's proposal and a place to do the *ijab qabul* (marrying off of the child). During the proposal ceremony in *lontang ri saliweg*, the bride and groom will talk and discuss and take very important decisions with a deliberation. The meaning of the analogy of the mouth as a part of the human body with the living room in the house is the importance of maintaining good manners and good

delivery in welcoming guests so that it will have a positive influence on the respect and fortune for the homeowners.

Furthermore, the chest in the human body is analogous to *lontang ri tengngah* which functions as the parent's bed, a place to perform a marriage initiation before the wedding day, a place to bathe and lay the body. Besides, in *lontang ri tengnga* can also be placed the son's bedroom, because the son can replace the position of the male parent in welcoming guests. The meaning of the analogy of the chest part of the human body with the middle area in the Bugis house is that the chest covers heart and liver which are important parts (spearhead) in the anatomical system of the body. Likewise in *lontang ri tengngah* is an important area because it is a gathering place for family members in everyday life, in which the living rooms for parents and the son are placed as the spearhead of the family and also as a place for various important rituals in the process of human life.

The stomach in the human body is analogous to the internal part of the house in *lontang rilaleng* after *lontang ritengnga* on the second plot. In *lontang ri laleng*, the girl's bedroom and dining room are placed. Inside the house, there is *possi bola* as the main pillar of all the pillars in house structure. Here are some rituals performed for the safety of the occupants of the house. The meaning of the stomach in the human body is analogous to *lontang ri laleng* in the Bugis house plan, which is that the stomach functions to keep the food in the human body and *lontang ri laleng* is where people eat so that the human body stays healthy and gets protection from the Almighty.

The legs in human, from thighs to toes, are analogous to *jongke* which is located on the rear of the house plan. *Jongke* functions as a service room, a place to process and cook food for all family members. It means that the analogy of leg in human is used to stand when cooking food and cleaning kitchen equipment that requires strong legs to serve the family members. In addition, the kitchen is also used to bathe the body on the first stage immediately after the death when the body is still warm so that it can still be seated for bathing.

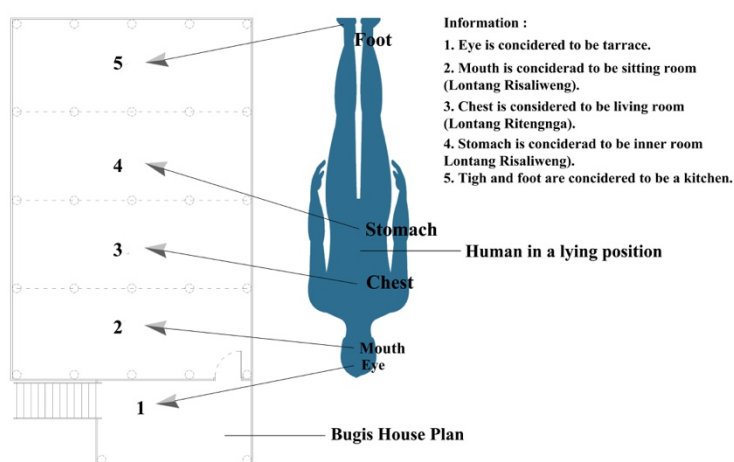


Figure 11. Horizontal Anatomy of The Bugis House

9.3 Vertical Anatomy of Bugis Houses

The concept of the macrocosm and the microcosm as a cosmological notion that is believed by the Bugis, analogizes the human body into the form of a house and as a reflection of the universe which consists of three vertically arranged levels, namely the upper, the middle and the lower worlds. Vertically, the Bugis house arrangement is analogous to the shape of the human body in a standing position, having the meaning that the Bugis house shape is a reflection of harmony with the universe (nature) with humans who have undergone a long process of adaptation for centuries. **It is different from the concept of other traditional houses in Sulawesi like traditional houses in Toraja called Tongkonan and Boyang in Mandar. Vertically, the houses in Toraja do not analogize the human body into parts of the house, but vertically, the houses are built based on three layers of rectangles reflecting human life, namely birth, life, worship and death. These layers describe a harmonious relationship between the macrocosm and the microcosm. Horizontally, the rectangular shape on each layer of the house is a symbol of four directions. Whereas the traditional house of Mandar has a three-story vertical concept, the uppermost part of the arrangement is called Tapang with a roof and attic, the second arrangement is called Roang Hayang which as a residential space, and the third arrangement is called Naong Boyang or under the house. This shows that Bugis houses have a unique concept because they are built based on the anatomy of the human body.**

Therefore, in building a Bugis house vertically, the sizes of the houses are taken from the proportion of the human body, in this case, that in the occupants of the house (husband and wife). It means that the house built must be balanced and harmonious with the occupants of the house, so that it will provide safety both in the world and in the hereafter. To determine the measurement of *aje bola*, then taken from the husband's height. However, it depends on the number of the steps people need. If the steps are 11, then the height of the bottom of the house is taken from the height of the husband when he stands raising his arms straight up while making a fist. If the stairs are only 9, the height of the bottom of the house is taken from the height of the husband when he stands lifting his arms up by bending the elbows and still making a fist (figure 11). It means that the area under the house is the area of the husband who functions as a breadwinner outside the house who must bear the responsibility of providing for all family members, and support all household activities above *aje bola*. Whereas the meaning of the size of the husband's fist means fortune, in which the happy marriage life will always be grasped. If they are sick, it is believed to be cured soon, because the fist is symbolized by strength and enthusiasm. Therefore, the size of the pole and the height of the bottom part of the house must be taken from the height of the husband when standing, not that of the wife.

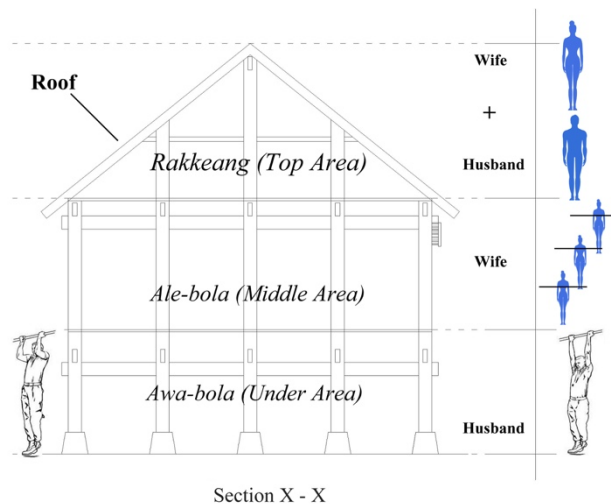


Figure 12 . Vertical Anatomy of The Bugis House

The height of *ale bola* is taken from three times of the height of the wife when standing, to the chest. It means that the domestic area inside the Bugis house is the area of the wife in which the wife is in charge and responsible for managing and completing household work, such as cleaning the house, cooking, babysitting, serving the needs of the husband, etc. While the meaning of the size of the wife at the chest level, not as high as the human stomach or mouth, because it is analogous that the wife's chest with breast, so that the life of the family of the householder will always be sufficient. Whereas if the height taken up to the stomach of the wife, it means that people's stomach is always full but the food will easily be defecated, so fortune will not last long. In addition, it is not taken from the height of the wife to the mouth, because the mouth is considered a hole throwing up so the fortune easily fades away.

On the roof, the height from the ceiling to the tip of the highest part is triangular, the size is taken from the wife and husband's heights. The way to determine the size is by taking half of the husband's height and a quarter of the wife's because in the Bugis tradition, the husband is the leader of the family and the wife is the husband's companion so the size taken from the husband's height must be bigger than of the wife. For example a husband's height is 170 cm and the the wife's height is 158, then the height of the roof of the house is the husband (170: 2) + wife (15: 4) is 124.5 cm. The meaning of the measurement of the roof taken from the height of the husband and wife is that the husband is the breadwinner in which the size must be larger, and the wife as the one who is a companion means the size must be smaller. In addition, the measurement also means that the fortune of the occupants of the house will increase, both fortune or match for the son or daughter.

10. CONCLUSION

For **most of Bugis community** in Talungeng Village, Bone regency, the concept and system of building houses are based on anatomy of human body. **Vertically, the relationship between the concept of Bugis house space and the human body is divided into three spatial structures, namely the upper space (roof and attic) analogous to the human head; the**

second space as human body and the space under the house is considered as the human leg. Besides that Bugis house is built based on the concept of detailed functions of human body parts such as eyes, mouth, hands, chest, stomach and legs. Specifically, Bugis house is built based on the body anatomy of the husband and wife who inhabit the house, which is manifested in the concept of vertical and horizontal housing construction. The construction of the Bugis house concept vertically analogizes the anatomy of the human body in a standing position, with the structure of the Bugis house from the bottom up (legs, body and head). While horizontally, it is analogous to the anatomy of human body when lying down. The concept of physical development of the house by analogy to the anatomy of the human body (husband and wife) led to the creation of residential spaces of different sizes. The meaning and value of building house that reflects the anatomy of the human body (husband and wife) aims to create safety, comfort and harmony, both with family members and the surrounding natural environment. This concept is very unique because it is not found in the concept of building a traditional stage house in the Mandar and Toraja tribes in Sulawesi. However, due to the rapid flow of modernization and globalization, some of the construction of Bugis houses in this village has shifted gradually both in physical and material forms. Even so, in terms of understanding the concept of the house, the community still understands the anatomical concepts in housing construction and adheres to existing local wisdom.

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GLOSSARY

<i>Ale bola</i>	: body of the house
<i>Awa bola</i>	: under the house
<i>Aju lekke</i>	: beams on top of the house
<i>Aju tee</i>	: small beam on the roof truss
<i>Alliri</i>	: pillar
<i>Arateng</i>	: cross beam connecting the pole horizontally below the floor beam
<i>Bare'</i> under the roof parallel to <i>arateng</i>	: the long flat beam is placed
<i>Bareqkapu</i>	: small beam on the ceiling (<i>rakkeang</i>)
<i>Bola ugi</i>	: Bugis house
<i>Bola mabbuju</i>	: longitudinal house
<i>Bola-mpareq</i>	: transverse house
<i>Botting langi</i>	: upper world
<i>Bakkaweng</i>	: palm leaves
<i>Bulena</i>	: overstek
<i>Dilau</i>	: east
<i>Diaja</i>	: west
<i>Diattang</i>	: south
<i>Diawang</i>	: north
<i>Jongke</i>	: kitchen
<i>Lontang/latte'/baliang</i>	: divided area in Bugis suspended house
<i>Lontang ri saliweng</i>	: front area
<i>Lontang ri laleng</i>	: rear or back area
<i>Lontang ri tengngah</i>	: middle area
<i>Lontaraq galigo</i>	: epic written myth of Bugis in South Sulawesi
<i>Mappacci</i>	: marriage initiation
<i>Makkeppi</i>	: shrink, subside
<i>Possi bola</i>	: centre of the house
<i>Pattolo Riase</i>	: longitudinal beam (in the direction of the house)
connecting the pillars of the house	
<i>Pallangga aliri</i>	: beam connecting two pillars
<i>Rakkeang</i>	: space under the roof
<i>Sanro bola</i>	: expert at building house
<i>Sulapa 'eppa'</i>	: rectangular shape
<i>Tunebbaq</i> and walls	: small beams supporting floors

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Sincerely,

Puteri Fitriaty, PhD in Engineering

Associate Editor, International Review for Spatial Planning and Sustainable Development

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[Reviewer(s)' Comments]

Comments to the Author:

#Reviewer 1

This topic is conceptually interesting and deserving to be thoroughly investigated. The thematic of cosmology applied to the built environment is a constant in a multiplicity of cultures at different latitudes, and a recurrent characteristic of vernacular architecture. In particular, the inquiry about formal aspects of building design, such as standardization of modules and orientation, ritualism and use of spaces, and relationships between construction, dimensions and human body seems interesting and should be systematized more appropriately.

Despite that, in my opinion, the promising potentialities of this research article remain largely unexpressed, and seemingly inappropriate for the journal if published in the current form. Following here, my main comments and observations about parts needing for major and minor revisions:

- Major Revisions -

1. The overall narrative looks scholastically edited, often indulging in repetition of names and concepts previously expressed, and sometimes talking at length about secondary or marginal aspects.
2. Some conclusions seem hastily reached, i.e. missing a proper development in between hypothesis and thesis, or giving the theory automatically verified without any further explication.
3. In Chapter 4.2, some comparisons between horizontal structure of the building and human body seems derived by an old popular wisdom manifested at similar degrees also elsewhere. Maybe, these should be properly referenced, e.g. as evidenced by interviews with village's inhabitants, or with local Sanro Bola etc.
4. Disaster mitigation's explications are excessively simplified and confused with ordinary structural integrity for any building construction.

- Minor Revisions -

5. Some words in Indonesian language don't have English translation, and not all of them are reported in the Glossary at the end.
6. The use of Italic sometimes is confusing (e.g. Lontaraq Galigo mentioned at page 2 is the name of an author or a ritual?)
7. Some figures are redundant (e.g. Figure 3 showing only a rotation of direction) or missing information (e.g. Figure 7 with wrong annotations)
8. The very small pictures of Bugis houses in Figure 1 should be magnified, and maybe their position marked on site map of Figure 2, in order to remark their variability in size and height as peculiar linkage between vertical dimensions and owner's height.
9. References of Creswell and Groats are duplicated.

Based on previous comments and observations, and considering the potentiality of this research article, I would suggest the Author to re-submit with a major revision of contents, especially overall English form and grammar followed by a thorough proof reading.

#Reviewer 3

Although I believe that the article has a certain contribution to the body of human knowledge in the domain of built environment, I still find the article below the required standards; one is minor and 2 others are major:

- 1- there is a lot of redundancy regarding the analogy between human body and the components of the Bugis house (the theme is repeated in most of the articles sections)
- 2-The article is mostly based on a superstitious mind. The total "adaptation" of the housing components to the human organs opens a lot of questioning about its validity and its extents. It thus reduces objectivity and the practical effects of the theory in the mind of the reader who is outside the Bugis culture.
- 3-I don't find a critical analysis to the approach in terms of limits and contradictions with regards to architectural practices. The contribution is mostly anthropological. Besides its cultural values, an outsider reader would question its relevance to the domain of architecture.

Submission Paper

Revised 02



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Vernacular Architecture of Buginese: *The Concept of Local-Wisdom in Constructing Buildings Based on Human Anatomy*

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Purpose: Several studies have been conducted on the concept of Bugis community house construction to understand its macro- and micro-cosmology. This study was, however, conducted to complement the multi-perception research on the relationship between architecture and local-wisdom by disclosing the formation of residential space plans. This involved the use of Bugis house as the subject and application of the horizontal and vertical philosophies perspectives based on the anatomical dimensions of a lying human body as its traditional architectural uniqueness. **Research Design & Methodology:** The study was conducted qualitatively in Talungeng Village, Bone Regency, Indonesia for a period of one year, 2018 – 2019, using the case study approach, phenomenology, and ethnography model. Data were collected through several eligible informants and analyzed using Discovering Cultural Themes method by associating studies with architecture. **Results & Findings:** This study showed the horizontal spatial organization and relations in the Bugis house plan deviates from the philosophy and function of human body parts in a lying position, which is believed to be a means to provide protection and comfort for residents while the vertical aspect involves the use of the house frame as the central pillar in proportion to the whole structure. The adoption of the human body as the framework is usually to provide mutual support for the building structure and ensure it has enough strength towards mitigating earthquakes, floods, and strong winds.

We chose IRSPD as the right place for our article submission on the grounds that IRSPD is a journal that we consider very good and is one of the best references recommended by our various colleagues in the field of architecture in Indonesia. Apart from that, we see that there is a compatibility between the scope of our article and the scope of IRSPD.

Best regard

(Naidah Naing & Karim Hadi)

EXPLANATION STATEMENT OF REVIEW

Dear, Editor in Chief & Editor of **International Review for Spatial Planning and Sustainable Development (IRSPD)** c.q Zhenjiang SHEN & Puteri Fitriaty

Thank you very much for your attention and dedication about our manuscript, Especially for all reviewer, we thank for their constructive comment to improving our manuscript be better. Personally as a correspondent and responsible author of paper entitled: **The Anatomy of Bugis House in South Sulawesi Indonesia**, With **Paper ID: IRSPD-2019-0006-B.R1**. We learn more essential thing by all comment and review of this manuscript. Below we explain the revised manuscript.

Comments to the Author:

6. #REVIEWER 1

This topic is conceptually interesting and deserving to be thoroughly investigated. The thematic of cosmology applied to the built environment is a constant in a multiplicity of cultures at different latitudes, and a recurrent characteristic of vernacular architecture. In particular, the inquiry about formal aspects of building design, such as standardization of modules and orientation, ritualism and use of spaces, and relationships between construction, dimensions and human body seems interesting and should be systematized more appropriately.

Despite that, in my opinion, the promising potentialities of this research article remain largely unexpressed, and seemingly inappropriate for the journal if published in the current form. Following here, my main comments and observations about parts needing for major and minor revisions:

- Major Revisions –

1. The overall narrative looks scholastically edited, often indulging in repetition of names and concepts previously expressed, and sometimes talking at length about secondary or marginal aspects.

Our Judgment: *thank you very much for your attention and dedication of our manuscript, for this moment, we have to revised more than 80% of our papers, including hard-edit, copy-edit and re-proofreading by native to improve our paper readability.*

2. Some conclusions seem hastily reached, i.e. missing a proper development in between hypothesis and thesis, or giving the theory automatically verified without any further explanation.

Our Judgment: *for this part, we have revised and arrangement by added the theoretical, managerial and social life implication in discussion sub-section part of our manuscript*

3. In Chapter 4.2, some comparisons between horizontal structure of the building and human body seems derived by an old popular wisdom manifested at similar degrees also elsewhere. Maybe, these should be properly referenced, e.g. as evidenced by interviews with village's inhabitants, or with local Sanro Bola etc.

Our Judgment: *for this part, we have revised and arrangement by more relevant references and comparing about our study and prior research on whole world which relevant too. i.e., chinese ancient by feng-shui at Introduction part section*

4. Disaster mitigation's explications are excessively simplified and confused with ordinary structural integrity for any building construction.

Our Judgment: *for this part, we have to revised more than 80% of our papers*

- Minor Revisions –

5. Some words in Indonesian language don't have English translation, and not all of them are reported in the Glossary at the end.

Our Judgment: *we have to revised more than 80% of our papers, including hard-edit, copy-edit and re-proofreading by native to improve our paper readability. We have add more glossary section in the and of our paper.*

6. The use of Italic sometimes is confusing (e.g. Lontaraq Galigo mentioned at page 2 is the name of an author or a ritual?).

Our Judgment: *We have revised at our manuscript by add more explanation at LagaLigo Mean In Introduction Part.*

7. Some figures are redundant (e.g. Figure 3 showing only a rotation of direction) or missing information (e.g. Figure 7 with wrong annotations).

Our Judgment: *We have revised*

8. The very small pictures of Bugis houses in Figure 1 should be magnified, and maybe their position marked on site map of Figure 2, in order to remark their variability in size and height as peculiar linkage between vertical dimensions and owner's height.

9. References of Creswell and Groats are duplicated.

Our Judgment: *We have revised and arrangement*

NOTE: Based on previous comments and observations, and considering the potentiality of this research article, I would suggest the Author to re-submit with a major revision of contents, especially overall English form and grammar followed by a thorough proof reading.

Our Judgment: *thank you very much for your advice, we have to revised more than 80% of our papers, including hard-edit, copy-edit and re-proofreading by native to improve our paper readability.*

7. #REVIEWER 3

Although I believe that the article has a certain contribution to the body of human knowledge in the domain of built environment, I still find the article below the required standards; one is minor and 2 others are major:

1. there is a lot of redundancy regarding the analogy between human body and the components of the Bugys house (the theme is repeated in most of the articles sections
Our Judgment: *We have revised and arrangement*

2. The article is mostly based on a superstitious mind. The total "adaptation" of the housing components to the human organs opens a lot of questioning about its validity and its extents. It thus reduces objectivity and the practical effects of the theory in the mind of the reader who is outside the Bugis culture.

Our Judgment: *for this part, we have revised and arrangement by more relevant references and comparing about our study and prior research on whole world which relevant too. i.e., chinesse ancient by feng-shui at Introduction part section*

3. I don't find a critical analysis to the approach in terms of limits and contradictions with regards to architectural practices. The contribution is mostly anthropological. Besides its cultural values, an outsider reader would question its relevance to the domain of architecture.

Our Judgment: *for this part, we have revised and arrangement suitable for architecture conlucsn and discussion part. Thank you for your advice.*



Vernacular Architecture of Buginese: The Concept of Local-Wisdom in Constructing Buildings Based on Human Anatomy

Journal:	<i>International Review for Spatial Planning and Sustainable Development</i>
Manuscript ID	IRSPSD-2019-0006-B.R2
Manuscript Type:	Session A Planning Strategies and Design concepts
Keywords:	Local Wisdom, Vernacular, Stilt-House
Manuscript Type:	Review Article
Category:	Architecture design, Sociology

8. VERNACULAR ARCHITECTURE OF BUGINESE:

The Concept of Local-Wisdom in Constructing Buildings Based on Human Anatomy

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Key words: Vernacular, Stilt-House, Local Wisdom.

Abstract: Purpose: Several studies have been conducted on the concept of Bugis community house construction to understand its macro- and micro-cosmology. This study was, however, conducted to complement the multi-perception research on the relationship between architecture and local-wisdom by disclosing the formation of residential space plans. This involved the use of Bugis house as the subject and application of the horizontal and vertical philosophies perspectives based on the anatomical dimensions of a lying human body as its traditional architectural uniqueness. **Research Design & Methodology:** The study was conducted qualitatively in Talungeng Village, Bone Regency, Indonesia for a period of one year, 2018 – 2019, using the case study approach, phenomenology, and ethnography model. Data were collected through several eligible informants and analyzed using Discovering Cultural Themes method by associating studies with architecture. **Results & Findings:** This study showed the horizontal spatial organization and relations in the Bugis house plan deviates from the philosophy and function of human body parts in a lying position, which is believed to be a means to provide protection and comfort for residents while the vertical aspect involves the use of the house frame as the central pillar in proportion to the whole structure. The adoption of the human body as the framework is usually to provide mutual support for the building structure and ensure it has enough strength towards mitigating earthquakes, floods, and strong winds.

8.1 1. INTRODUCTION

Bugis stage-type houses, one of which is located in Talungeng Village, Bone Regency, South Sulawesi, Indonesia, have a unique development concept associated with the community and this involves the adoption of both vertical and horizontal anatomical dimension of the human body (Abidah, 2016). Historically, house structures with stage types have been found in almost all parts of the world including places with high rainfall, tropical climate conditions, and high humidity (Michiani & Asano, 2017). Moreover, the construction of stilt houses is part of the long history of several countries in Asia, notably southeast and specifically in Indonesia where the designs are classified based on two main categories including maritime and agricultural concept (Vongvilay et al., 2015; Chen, Ariffin, &

Wang, 2015; Michiani & Asano, 2017). The dominance of these designs at the period was believed to be based on the idea of macro and microcosmology (Kramrisch, 1991; Beilharz, 2004; Smith, 2005).

Several studies have been conducted by both local and foreign researchers on the traditional architecture of the Bugis house in relation to spatial planning, construction according to the understanding of vertical cosmology, structure, and others (Abidah, 2016; Arifuddin, 2016; Ismail, 2012; Adams, 1984; Naidah, Santosa & Soemarsono, 2011; Naidah & Iskandar, 2015). However, only limited research has been conducted on the dimensions of the shape and size of these buildings based on the horizontal anatomy of the human body. For example, Mardanas' (1985) book emphasized by (Imriyanti, Wunas, & Arifin, 2017) and (Gambiro & Yamin, 2018) reported that the vertical formation of houses is influenced by the structure of the cosmos, upper realm, as well as the middle of the lower domain. Moreover, further clarification of the realms by Mardanas showed the high part to be the holy places, middle for humans, and the lower for the interaction with the surrounding environment. In line with this submission, Robinson & Paeni (2005), Ismail (2012), and Pelras (2004) while studying the Bugis tribal stage house reported the belief of the community is that the house is an embodiment of the human being standing vertically. Furthermore, the architectural space in these buildings has been reported to be functioning as a storage area for rice or other agricultural products (Bugis: *rakkeang*) similar to the agrarian products recorded to have been stored in ancient Chinese architectural design (Tan, 2011). However, they are associated with certain sacred values (Vongvilay et al., 2015).

The Bugis philosophy is established on the belief that the house is their eternal abode and every life activity ranging from birth, marriage and death is conducted in the building (Graham, 2004; Tang & Rahim, 2019). Therefore, the house is expected to be a reflection of the occupants. For example, Broadbent (1980), Howell (2013), Akil & Osman (2017), and Reed (2019) have reported the concept of space in a traditional or customary house to be a form of expression of identity and local cultural entities. This means the Bugis house or *bola-Ugi* physically realized vertically on the stage as a form of local culture reflects the natural conditions and culture of the Bugis people (Artiningrum & Sukmajati, 2017; Wasilah & Hildayanti, 2017; Naing, Hadi, & Djamereng, 2018). This concept has been in operation for generations as a value system in addition to its ability to provide comfort, safety, and harmony for the residents with the surrounding nature (Naing et al., 2018). However, cosmology in ancient architecture has been discussed in several pieces of literature and has also been observed to be the foundation for modern architecture. For example, *Feng-shui* which requires each room has a door, sufficient light, and meet other requirements in existence before the concepts of space and time in the field of quantum physics were explained by Einstein (Hwangbo, 2002).

Constructing stilt houses with wooden materials is a tradition that has survived to this day, especially in the Islamic community of South Sulawesi, Indonesia and also observed to be existing in almost all parts of Southeast Asia such as Malaysia, Thailand, Singapore, Bangkok, and Vietnam (Chen et al., 2015; Ju, Kim, & Ariffin, 2015; Michiani & Asano, 2017; Tan, 2011; Vongvilay et al., 2015). Like most of the wooden houses on stilts in the past, the Bugis community stage houses were not constructed using the architectural approach but by employing the services of "*Sanro Bola*" which is a builder from the Bugis Tribe considered to have hidden or tacit knowledge of building houses according to culture even if it is 'intangible' or 3

not maintained like the Chinese's *Feng-shui* (Xu, 1998; Tan, 2011; Lu & Jones, 2000; Hwangbo, 2002). Moreover, European, ancient Chinese, and even Islamic architectural designs and concepts have significantly influenced the world's architectural design up to the present moment (Gao, Cui, Zhu, Shi, & Shen, 2019).

The traditional architectural development of the Bugis house was reported to be based on the cosmology comprising of a vertical space including poles, holes, the body which is the residential space, and the roof (Abidah, 2016; Arifuddin, 2016; Ismail, 2012; Adams, 1984) while the horizontal aspect involves the floor plan which is the main space for inhabitation and a manifestation of physical space. This is in line with a previous comparative study conducted by (Vongvilay et al., 2015) and further emphasized by Tan (2011) through research on ancient Chinese traditional houses which showed the living room/altar acts as an exhibition space to perform certain rituals. However, limited attention has been placed on the horizontal Bugis house plan, from the perspective of size and modules, therefore, this study was conducted to fill this research gap. The urgency of this study emphasized the importance of having adequate knowledge on Bugis tribal houses through the use of horizontal perspective involving the body of the house also known as *Ale-Bola* which is believed to be a sacred space to conduct several traditional ceremonial activities such as marriage ceremonies, birth initiation, and burial rites (Yunus, 2012). This study, therefore, objectively complements previous studies that have combined architecture, ethnography, and local wisdom.

8.2 2. RESEARCH AREA

The study was conducted in Talungeng Village, Barebbo District, Bone Regency, South Sulawesi Province, Indonesia covering an area of 6.80 km² and located on 4°35'12.3 "South 120°20'23.9" East with 276 households, a population of 1164 people and 171/km² denser than the average population density of Bone regency which is the capital of the region. Talungeng Village has a homogeneous population structure dominated by the Bugis tribe and the Bugis traditional houses are still mostly found in this village as shown in Figure. 1 and Appendix 1. Moreover, houses in this village are constructed cooperatively by *Sanro Bola* considered to be experts in building with respect to the procedures, intricacies, and customs that have been prominently used for generations.

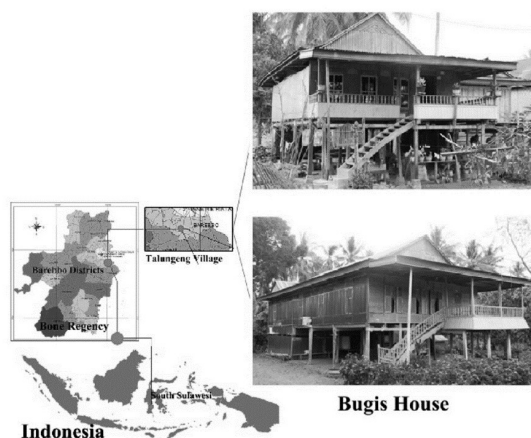


Figure 1. Traditional Bugis House, Talungeng Village

8.3 3. RESEARCH DESIGN AND METHODOLOGY

8.3.1 3.1 Informant Criteria

There were three primary informants in this study which were SanroBola with experience, skills, and expertise in building Bugis house and recommended by the Talungeng village head as well as the community and traditional leaders. It is, however, important to explain that Sanro-Bola is an individual with the mastery of ritual/mystical matters attached to house construction while *Panrita-Bola* masters the technique of building the house. Therefore, the informants include the two categories as well as others in the community such as the leaders, homeowners, and other stakeholders.

8.3.2 3.2 Materials and Measurement

An explorative and descriptive qualitative approach was used for analysis while information was gathered using in-depth interview techniques through the application of local Bugis language to determine the concept involved in the construction of traditional houses in Talungeng Village from a horizontal perspective or based on the anatomical aspect of the human body in lying or sleeping position. The research was conducted between 2018 and mid-2019.

The interview results were recorded, rewritten, and interpreted for further analysis while the research observations, phenomics, and intelligent buildings explained in the introduction sub-section were combined with the interviews for discussions and to draw the appropriate conclusion. Moreover, a diagram showing the anatomical representation of a house was also used for analysis as described in Section 4.

8.4 4. RESULTS AND DISCUSSION

8.4.1 4.1 Horizontal Philosophy of Traditional Bugis Houses in Talungeng Village

The house reflects the beliefs of the Bugis community which relate all of its components with the human body, for example, the human head is the roof/*rakkeang*, the body is the middle part/*ale-bola* while the feet is the under part/*Awa-Bola* to have a complete stilt house. The philosophy of building a house on stilts has become a generational tradition for Bugis but there are more detailed understanding and expression of this concept in Talungeng than in other villages.

“...many people build houses just by looking at the common structure and design such as the roofs, poles, and spaces. The other living conditions such as the cleanliness desired as requirements indicate the condition and habits of the owner. Likewise, while building a home in the Talungeng village community, the inside of the needs to follow the shape of our body as a human with the head, mouth, and stomach. (The informant, Village head and Sanro-bola, 2018).

“Then ... a house cannot just be built any time by anyone, a lot of things are required to be agreed upon and followed because the house would be lived in until the end of life. The persons usually 5

appointed to determine the condition of the house later are SanroBola because of their knowledge. (Head of Talungeng Village, 2019).

Horizontally, the concept of a house in Talungeng is generally the same with the Bugis which involves understanding life universally rather than from the ontological perspective. Moreover, the philosophy of life of the people is *sulapa'-eppa'* which is translated to be self-improvement. This means all aspects of human beings are expected to be perfect if formed from four elements of water, earth, fire, and wind. This is reflected in the purposive interviews conducted on the residents which showed most of the Bugis stilt houses horizontally and vertically reflecting the philosophy of *eppa'*. Each house owner interviewed has an understanding of this concept and it is mostly applied at every stage house through the help of *Sanro-Bola*. *"The most crucial thing in building the house, if we are Bugis people, is sulapa 'eppa, which means that the home must be rectangular. Why rectangular? because it represents the four elements that are the source of life, namely water, fire, and wind"* (Informant, Sanro-Bola, 2018).

"Eee.. not all of them are ball panrita sanro-bola, there is a lot of panrita-bola here (homemakers), but they don't understand the ritual in building a house. Well, those in charge of the rituals involved in building a home is Sanro-Bola. But ... almost all sanro-bola here master the technique of building homes, except the old ones because they are no longer have the physical ability" (Informant Sanro-Bola, 2018).

The architecture of the Bugis Bone House has a broad meaning because they are not built only to be used shelters from rain and scorching heat of the sun but also in relation to the philosophical values and culture of the community. Several meanings and noble values integrated and contained in these houses are interpreted and held as views of experience in daily life and are inseparable from the local wisdom of the Bugis community in Talungeng Village. This local wisdom starts with the choice of orientation, the idea of where to place the main door, spatial planning, and structure towards ensuring the safety and comfort of the inhabitants. Therefore, the arrangement is expected to be in the form of the parts of the human body as well as to ensure the harmonization of other natural elements.

"Almost the same model is used by other Bugis people, especially Bone, to build a house but here (Talungeng Village) is unique, because there is another kind of new ritual in building a house ... Well, as already explained, the inside of the house is expected to resemble the human body" (Informant, Sanro-bola and Head of Talungeng Village, 2019).

8.4.1.1 4.1.1. Concept of Orientation and Placement of the Main Door to the Bugis House in Talungeng Village

The orientation of the house for the Bugis community, in general, is fundamental and sacred with several elements applied as a guide such as a mountain, road, river, sun, sea, and the direction of the wind. However, the layout is generally divided into the *mabbuju-bola* or longitudinal home, which is a house extending to East-West direction and the *mpareq-bola* or transverse house extending towards North-South direction but the Bugis house in Talungeng Village uses wind direction guidelines which are the East, West, and South. The North is excluded because according to an interview with a *Sanro-Bola*, the local wisdom of the Bugis Bon believes that a house oriented north indicates *ko'no'ki diatang dia bokori*

Watangpone lo diattang' and this means "when someone goes down from the house to the North, such person is turning back on Watampone or its origin". The West Direction is considered a divine direction because of the location of the *Qibla* of the Muslims while the East is the direction of the rising sun and symbolizes fertility and enthusiasm for life. In line with the statement from Altman & Chemers (1984), while studying the IndianAmerican community that the cosmology of the Indian Poeblo-community in America involved eastward, the direction of the rising Sun, as a very sacred direction, it is considered a "father" to help grow their plants and guide tribal travelers every day in the hunt for their homes in the west.

"If you pay attention here (talungeng village), it was established following the east, west, and south winds. There is no house here (talungeng village) facing west (bone direction). For us Bugis bone people, we believe that it's not good to turn our backs on watampone. Because Bone is in the West direction, similar to the course of Qibla (the path of Islamic worship which refers to Mecca - Saudi Arabia)" (Informant, Head of Talungeng Village, 2018).

The house orientation for the Bugis community in the Talungeng village, in particular, and the Bugis tribe in South Sulawesi, in general, cannot be separated from the placement of the entrance. This is due to the analogy established between the access to the house and a human mouth before food is put into the body. The entrance is seen as the link between the 'world' outside and the 'world' inside the house and also observed to be very important to the suitability of a building's orientation for the residents. The door is not necessarily required to be installed in the same orientation with the house and the placement is determined by the right direction favored by the local community.

"That is the door of the house, like a human mouth, which means whatever is entering needs to be good. Because if things that come to the original human body are not good (derived from cheating, stealing, or taking the rights of others), then it is not suitable for fortune and will affect people's lives (peace). Moreover, this is a house to be inhabited till death, therefore, the door needs to be placed in an appropriate position. Hmm ... if after installation, a door is observed to be in a wrong position, the would be dismantled and the door reinstalled according to our calculations (Sanro-Bola) to ensure excellent and lasting fortune in the house (homeowner)" (Informant, Sanro bola, 2018).

Therefore, the orientation considered reasonable by the Bugis Bone people in the village of Talungeng is east, west and south, and the entrance is expected to be placed in the same direction such that if the house is oriented towards the East, the door should also be installed facing East (Bugis: dilau') and this means good spirit, comfort, and sound health are expected to be in the house because the sun rising in the east is a source of energy and life.

7

The local wisdom of the Talungeng village community believes *"nakko no'ki in Lau (East) yaro Mata essoE (sun) menre 'malolo, jaji malessi pappineddingnge, makecce' tuwongengnge."* Mean The sun rising at a house oriented to the East helps the occupants not to step on their shadows when there is a shadow of the sun during the day). This is necessary because it is believed that stepping on one's shadow at home during the day

leads to being useless due to the lack of direct sunlight which further causes weakening of feelings, lack of enthusiasm, and quick affliction with diseases. A house with the entrance oriented to the east is shown in Figure 2.

“That is, if you build a house, the principle is to ensure that during the day, the shadow is not trampled upon because stepping on it causes loss of life spirit and frequent sickness” (Informant, SanroBola & House-owner, 2018 – 2019)

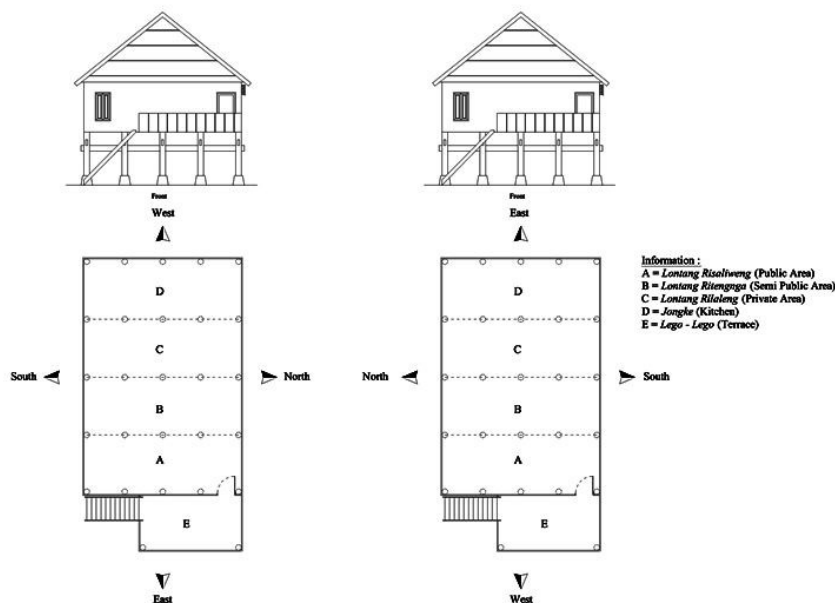


Figure 2. Layout and Position

According to the interviews, the orientation of the Bugis house to the west with the entrance also installed to be facing west (Bugis: *diaja*) is believed to be good because it is oriented towards *Qibla* (Bugis: *dioloi kibla'E*) which is the focal point of Islamic Ummah when praying. Likewise, a house oriented to the South with the entrance facing the same direction (Bugis: *diattang*) was also found to be good because, according to the Bugis Bone perspective, "*no'ki ri atuwongengnge*" it brings a comfortable experience. For houses oriented to the North (Bugis: *diawang*) is believed to be less good for the placement of the main door to the North because it means picking up death (Bugis: *no'ki riamatengengnge*). This deficiency could be corrected by placing an East-oriented door on the left side of the house or a door facing West on the right side of the house. This, therefore, means it is not necessary the main entrance is placed on the front wall of the house but also on the sidewall.

4.1.2. The concept of inhabiting the Bugis House of Talungeng Village

The general concept of a Bugis house requires placing the residential area in the middle (Bugis: *Ale-Bola*) with the respect to the vertical arrangement while the top area is the roof and the space below it (Bugis: *Rakkeang*), and the bottom area is under or the bottom of

the house (*Bugis: Awa-Bola*). However, the horizontal aspect, floor plan or the residential area is divided into different areas or *lontang/Latte'* with each performing different the anatomy of the human body in a standing position requiring sturdy rigid legs (under/house poles) to support the organization (residential space) and head (roof). Moreover, the feet (columns/poles) in the Bugis philosophy play a role in sustaining the functions as shown in Figure 3.

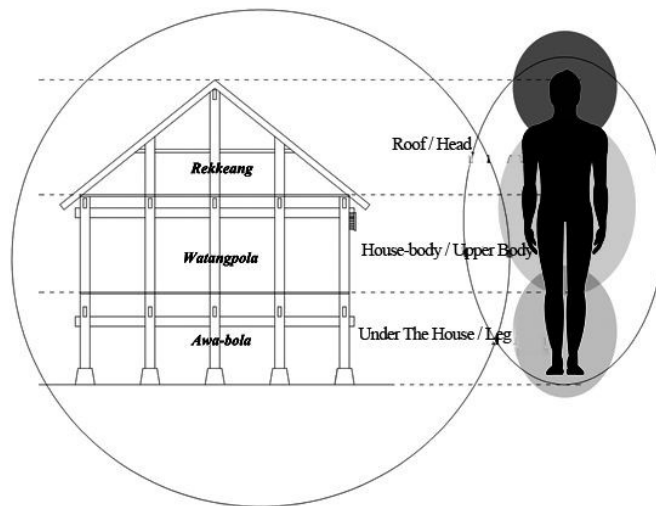


Figure 3. The Philosophy of a Bugis Stage House that Vertically Adopts the Human Body
(Abidah, 2016; Arifuddin, 2016; Ismail, 2012)

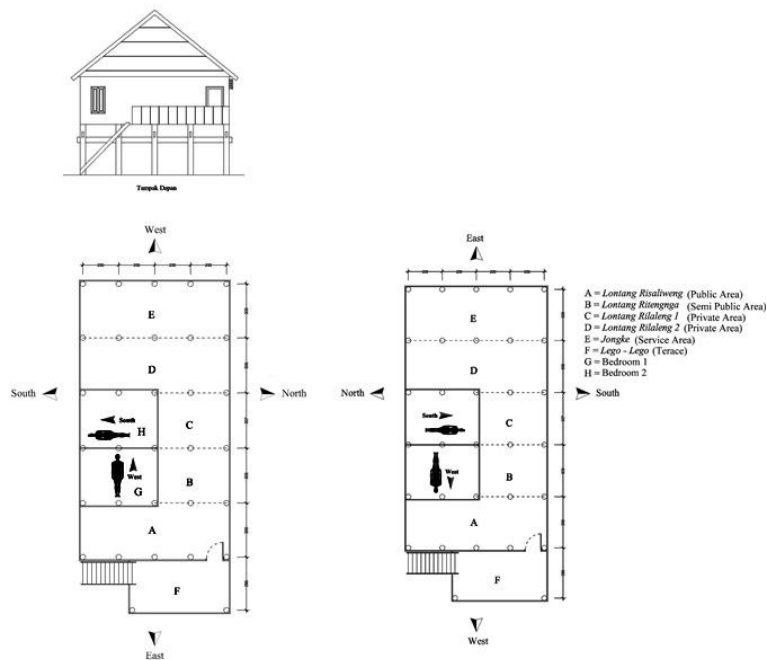
Figure 3 shows the spatial concept in Bone Bugis house is horizontally divided into different areas with the front-most *Watangpola* or terrace known as *Lego-Lego* functioning as a receiving or transition area before entering the living room. Moreover, In the *Lego-Lego* attached to the stairs, there is a front wall to place the entrance and front windows while the size of the room is generally 2.95 meters long and the area is not expected to be longer than this because it symbolizes a child in the Bugis Bone tribe. This means the vertical structure of a Bugis house-shaped stage is sourced from home and the lives of all the occupants (house bodies) with the frame structure illustrating the robustness to protect the residents.

After the *lego-lego*, there is a public area/living room (*lontang risaliweng*) which serves as a place to receive guests, both families and relatives visiting the house, receive proposals for girls, and perform sacred rituals for marriage. In the old Bugis house, there is usually no furniture with only a mat laid in the form of a rug or carpet on the floor. However, with civilization, the area is now equipped with furniture such as chairs and tables to entertain guests. The length of this area is 3.00 meters which is 0.05 meters longer than the *Lego-lego* and considered a symbol of authority and influence of parents over the children's space. It is also made more extensive 9

with the furniture placed to allow free movement of humans, both family and guests while gathering.

The next space in the *Watangpola* is the private central area (*Lontang/latte ri tangnga*) containing the bedroom and a family room. The bedroom is organized based on the belief the best sleeping position is to face the East with the head in the West. Besides, the sleeping

rear or private area (*Lontang ri laleng*) and the fourth plot in the floor plan position. It is considered discrete because the girl's bedroom is always protected but sometimes used for dining and *andah*- a ritual to welcome the birth of a baby in the Islamic tradition. Its size is 3.07 meters and this means it is bigger than the terrace (*lontang ri saliweg*) with 2.95 m, public area with 3.0 m, middle room (*lontang ritengnga*) with 3.05m, and nature space (*lontang rilaleng*) with 3.07 m. However, an additional plot/zone (*lontang*) would change the plot size to the most significant proportion of 3.05 meters as shown in Figure 5



area is believed to be useful when facing North with the leader in the South. These positions are considered the best because they avoid sleeping facing the Qibla and also avoid backing the Watampone as shown in Figure 4.

In everyday life, the nature space (*Lontang/latte ri tangngah*) is a place used in bathing and burying corpses. It is 3.05 meters in length and 0.05 meters longer than the previous room (*lontang risaliweg*) which means the size of the space in the house is directly proportional to its function and diversity in its use. The same was observed with the next area which is the

Figure 4. The layout of Buginese Talungeng Village

The measurements of the spatial layout were repeated to maintain a balance between the front and the back in order to ensure structural stability.

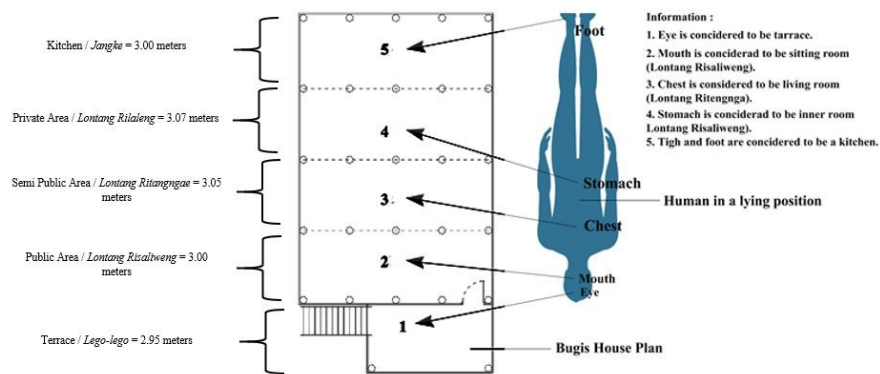


Figure 5. Anatomy of the Human Body in Lying Position and Comparison of Building Area Space

The last area in the structure is called the kitchen (*jongke*) which serves as a place to cook, clean kitchen equipment and compare the first stage corpse before being moved to *Lontang/latte ri tangngah*. It is 3.0m and found to be lesser than the previous plot size which means the fortune obtained by the residents is not reduced or exhausted. Moreover, the roof is mostly constructed with palm leaves (*pari*) as shown in Figure 6 and the length is expected to exceed the length of the housing body through the process known as *bulena* or in architectural terms as *over-stek*. The *Bulena* serves as a protector from rainwater and provides shade away from the sun shining brightly at a 45-degree angle or in a perpendicular position to the top of the house. Therefore, it can be concluded that it protects the house from high humidity during the raining period and high heat in the afternoon.



Figure 6. Model of the Bugis House in Talungeng Village

8.4.2 4.2 The Structural Concept of a Bugis House is a Reflection of Human Body Anatomy and used for Disaster Mitigation

Indonesia's geographical condition is prone to natural disasters including earthquakes, flooding, and strong winds. Based on the experience of the Bugis people, the traditional stage house has been confirmed to have the ability to provide excellent protection against some of these disasters. For example, the structures are not affected by the earthquake and it was also 11

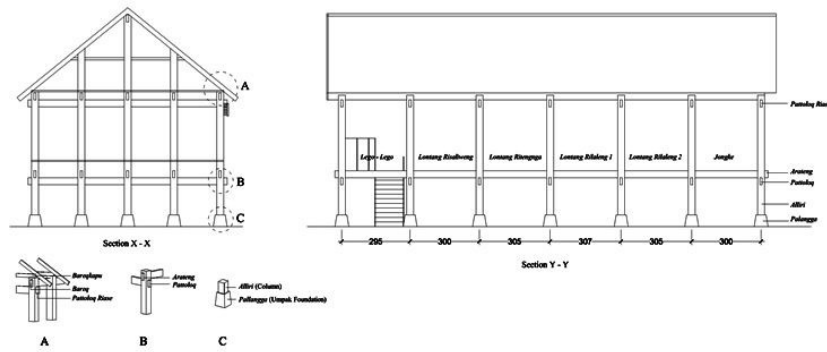
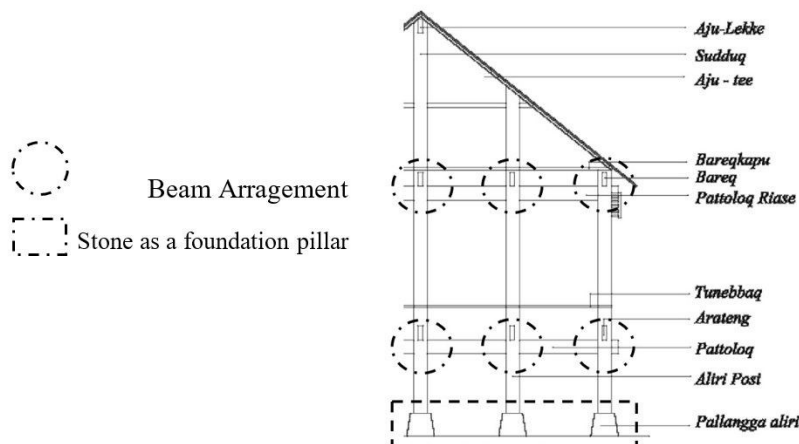


Figure 7. Shaft Arrangement

The pillars are free-standing without any connection to the stone foundation commonly called pedestals *pallangga* as shown in Fig. 7 point C and Fig. 8. The *pallangga* is the only component of the building to be moved in the event of a violent shock during an earthquake to ensure the house poles and their structures are stable. Moreover, during a period of a long drought, there is usually a decrease in the soil *pallangga* prevents the body or structure of the building to decrease due to the land subsidence.



discovered that floods as high as 2 meters do not disturb the community because the height of the lower pole of the house is higher than 2 meters. Moreover, the house cannot be lifted or toppled by tornadoes.

The house legs or poles constructed to be continuously firm without any connection from the ground to the edge of the roof aids the strength and survival of the house against strong winds as illustrated in Figure 7's points A and B. The existence of *arateng* and *pattolo'* beams – the main connecting shafts supporting the house – play a vital role in strengthening the position of the pole to ensure the structure is not lifted or rolled. *Arateng* is a long flat beam with length equal to the length of the house and serves as a barrier to the pillars while *Pattolo'* is a flat beam with length equal to the width of the house whose function is to hold the poles connected by *Arateng*.

Figure 8. The Composition Shaft Arrangement and Structure

The house poles made of ironwood, Merbau, Spinach (English & Latin: *Malacca Teak*, *Ironwood*, *Macrolobium Bijugum*, *Intsia Amboinensis*, and

Intsia Retusa) are connected with the supporting shaft at an height of 2.5m above the ground surface to provide aerodynamic space in the house, protect the occupants in case of flooding, and ensure the house does not collapse easily in case of earthquake compared to a house with foundations laid directly on the ground. Meanwhile, the pillar standing on a rock buffer (*Pallangga-aliri*) helps to reduce the vibration of the earth/land during an earthquake. Moreover, the materials used such as ironwood, Merbau, and bayam wood are flexible, durable, natural insulators against electricity, and have the ability to maintain air humidity at seasonal temperatures and are non-flammable.

8.4.3 Implication

4.3 Theoretical, Managerial & Social Life

Based on architectural science, structures bound together have been constructed in the Talungeng village community long before the rapid modern development of architecture. Implicitly, the adoption of human anatomical structures in buildings provides cultural values and has been used for many years to minimize the effects of natural disasters such as earthquakes and strong winds as previously stated. For example, the composition of the clusters of beam-supporting structures, beam arrangement, materials on stilts, and the availability of aerodynamic space provides added value to ensure strength and reduce the effects of climate change on the residents.

8.5 5. RESULTS AND DISCUSSION

This study showed the adoption of human body size in horizontal Bugis house construction was to realize a house plan with space organization, relationship, and function similar to the human body in a reclining position. From the vertical perspective, the aim was to realize a stage-shaped home with a frame that stands firmly like that of a human body consisting of supporting poles, body, and the roof which is an inseparable unitary structure. Moreover, the skeletal structure is intact to form a dwelling with the strength and security to protect the occupants from all forms of natural conditions and disasters.

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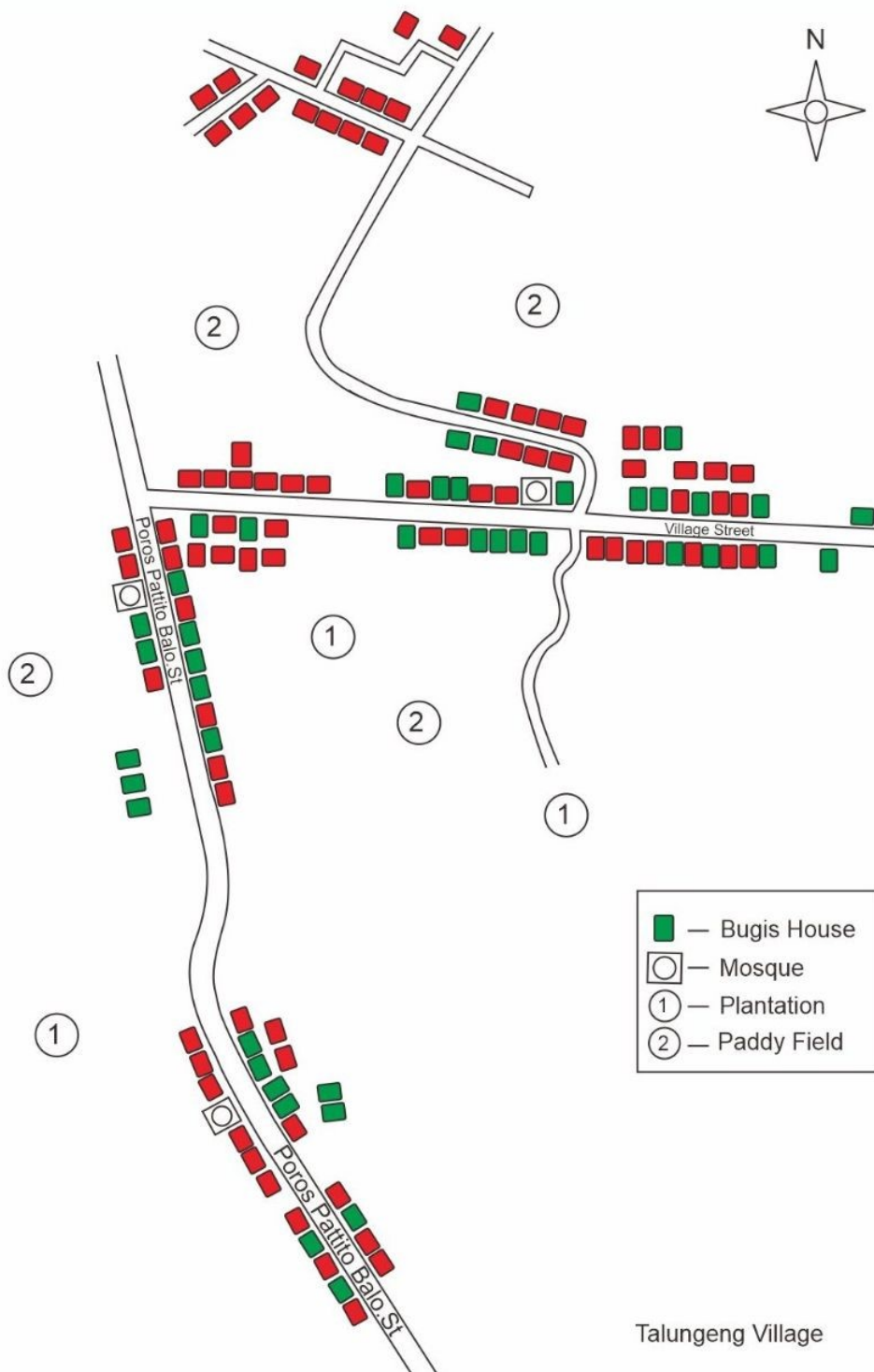


Figure 2. Layout Talugeng Village

GLOSSARY

Ale-Bola	: The houses primary
Arateng	: Long flat beam
Awa-Bola	: Under the house (stilt-house)
Bola-Ugi	: Bugis House
Bulena	: Overstek
Diattang	: South direction

Diawang	: North direction	
Dioloi	: Toward to qibla	
Eppa'	: four	
Feng-shui	: Ancient Chinese Tradition	
Lego-Lego	: Front terrace	
Lontang Rilaleng	: Inner Room	
Lontang Risaliweng	: Front Room	
Lontang Ritengngah	: Central Room	
Lontang	: Space	
Mabbuju-bola	: The size refers to the length towards the back of the house	
Mpareq-bola	: Wide of house	
Pallangga	: pedestals	
Pallangga-aliri Panrita-	: pole support	
	: Someone who has tacit knowledge in terms of building traditional Bugis houses but theirs have more technic and knowledge about house structure	
Pari pattolo' Qibla	: Size of roof made by palm leaves	
	: Longitudinal Beam	
Rakkeang	: Moslem Direction (saudi direction). For Moslem pray dirrection	
Sanro Bola	: The space between the ceiling and the roof	
Sulapa'-eppa'	: Someone who has tacit knowledge in terms of building traditional Bugis houses	
Watangpola	: Terrace	
	: square (size / type)	

Bola

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It is a pleasure to accept your manuscript entitled "Vernacular Architecture of Buginese: The Concept of Local-Wisdom in Constructing Buildings Based on Human Anatomy" in its current form for publication in the International Review for Spatial Planning and Sustainable Development. The comments of the reviewer(s) who reviewed your manuscript are included at the foot of this letter.

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[Reviewer(s)' Comments]

Reviewer: 1

Comments to the Author
(There are no comments.)

Reviewer: 4

Comments to the Author

Following the previous suggestions given by this reviewer during R1, it is assessed that the research article has been thoroughly reviewed and efficiently integrated into the current form, which is definitely clearly structured and appropriate for the journal other than pleasantly readable. Verbatim reports of interviews with community's Sanro-bola explicate clearly the cultural, philosophical and ritual process in shaping the vernacular Buginese house, moreover architectural and technological aspects have been also better explained and described. Furthermore, any redundancy and concept's repetitions have been fixed, and the overall English form and grammar are correct and fluent. In conclusion, as per the opinion of this reviewer, the research article is fully deserving to be published in the journal and is therefore accepted.

Published

VERNACULAR ARCHITECTURE OF BUGINESE:

The Concept of Local-Wisdom in Constructing Buildings Based on Human Anatomy

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Key words: Vernacular, Stilt-house, Local wisdom

Abstract: **Purpose:** Several studies have been conducted on the concept of Bugis community house construction to understand its macro- and micro-cosmology. This study was, however, conducted to complement the multi-perception research on the relationship between architecture and local wisdom by disclosing the formation of residential space plans. This involved the use of the Bugis house as the subject and the application of the horizontal and vertical philosophies' perspectives based on the anatomical dimensions of a lying human body as its traditional architectural uniqueness. **Research Design & Methodology:** The study was conducted qualitatively in Talungeng Village, Bone Regency, Indonesia, for a period of one year, 2018–2019, using the case study approach, phenomenology, and ethnography model. Data were collected through several eligible informants and analyzed using the Discovering Cultural Themes method by associating studies with architecture. **Results & Findings:** This study showed the horizontal spatial organization and relations in the Bugis house plan derive from the philosophy and function of human body parts in a lying position, which is believed to be a means to provide protection and comfort for residents, while the vertical aspect involves the use of the house frame as the central pillar in proportion to the whole structure. The adoption of the human body as the framework is usually to provide mutual support for the building structure and to ensure it has enough strength to mitigate against earthquakes, floods, and strong winds.

8.7 1. INTRODUCTION

Bugis stage-type houses, one of which is located in Talungeng Village, Bone Regency, South Sulawesi, Indonesia, have a unique development concept associated with the community,

involving the adoption of both vertical and horizontal anatomical dimensions of the human body ([Abidah, 2016](#)). Historically, house structures of the stage type have been found in almost all parts of the world, including places with high rainfall, tropical climate conditions, and high humidity ([Michiani & Asano, 2017](#)). Moreover, the construction of stilt houses is part of the long history of several countries in Asia, notably in Southeast Asia and specifically in Indonesia, where the designs are classified based on two main categories: maritime and agricultural ([Chen, Ariffin, & Wang, 2015](#); [Michiani & Asano, 2017](#); [Vongvilay et al., 2015](#)). The dominance of these designs of the period was believed to be based

1

on the idea of macro- and micro-cosmology ([Smith, 2005](#); [Kramrisch, 1991](#); [Beilharz, 2004](#)). Several studies have been conducted by both local and foreign researchers on the traditional architecture of the Bugis house in relation to spatial planning, specifically, construction according to the understanding of vertical cosmology, structure, and other aspects ([Abidah, 2016](#); [Adams, 1984](#); [Arifuddin, 2016](#); [Ismail, 2012](#); [Naing & Iskandar, 2015](#); [Naing, Santosa, & Soemarno, 2011](#)). However, only limited research has been conducted on the dimensions of the shape and size of these buildings based on the horizontal anatomy of the human body. For example, Mardanas' (1985) book, discussed by [Imriyanti, Wunas, and Arifin \(2017\)](#) and [Gambiro and Yamin \(2018\)](#), reported that the vertical formation of a house is influenced by the structure of the cosmos and upper realm, as well as the middle of the lower domain. Moreover, further clarification by Mardanas of the realms showed the high part to consist of the holy places, the middle to be inhabited by humans, and the lower to host interaction with the surrounding environment. In line with this submission, [Robinson and Paeni \(2005\)](#), [Ismail \(2012\)](#), and [Pelras \(2003\)](#), while studying the Bugis tribal stage house, reported the belief of the community that the house is an embodiment of the human being standing vertically. Furthermore, the architectural space in these buildings has been reported to function as a storage area for rice or other agricultural products (Bugis: *rakkeang*) similar to the agrarian products recorded to have been stored in buildings of ancient Chinese architectural design ([Tan, 2011](#)). In the Bugis houses, however, they are associated with certain sacred values ([Vongvilay et al., 2015](#)).

The Bugis philosophy is established on the belief that the house is their eternal abode and every life activity, ranging from birth and marriage to death, is conducted in the building ([Tang & Rahim, 2019](#); [Graham, 2004](#)). Therefore, the house is expected to be a reflection of the occupants. For example, [Broadbent \(1980\)](#), [Howell \(2013\)](#), [Akil and Osman \(2017\)](#), and [Reed \(2019\)](#) have reported the concept of space in a traditional or customary house to be a form of expression of identity and local cultural entities. This means the Bugis house, or *Bola-Ugi*, physically realized vertically on the stage as a form of local culture, reflects the natural conditions and culture of the Bugis people ([Wasilah & Hildayanti, 2017](#); [Naing, Hadi, & Djamereng, 2018](#); [Artiningrum & Sukmajati, 2017](#)). This concept has been in operation for generations as a value system in addition to its ability to provide comfort, safety, and harmony for the residents within the surrounding natural world ([Naing, Hadi, & Djamereng, 2018](#)). However, cosmology in ancient architecture has been discussed in several pieces of literature and has also been observed to be the foundation for modern architecture, as can be seen in *Feng-shui*, which requires each room to have a door, sufficient light, and meet other requirements that existed before the concepts of space and time in the field of quantum physics were explained by Einstein ([Hwangbo, 2002](#)).

Constructing stilt houses with wooden materials is a tradition that has survived to this day, especially in the Islamic community of South Sulawesi, Indonesia, and also in almost all parts

of Southeast Asia such as Malaysia, Thailand, Singapore, Bangkok, and Vietnam ([Chen, Ariffin, & Wang, 2015](#); [Ju, Kim, & Ariffin, 2015](#); [Michiani & Asano, 2017](#); [Tan, 2011](#); [Vongvilay et al., 2015](#)). Like most of the wooden houses on stilts in the past, the Bugis community stage houses were not constructed using the architectural approach but by employing the services of *Sanro-Bola*, a builder from the Bugis Tribe considered to have hidden or tacit knowledge of building houses according to the culture even if it is “intangible” or not recorded like the Chinese’s *Fengshui* ([Tan, 2011](#); [Xu, 1998](#); [Lu & Jones, 2000](#); [Hwangbo, 2002](#)). Moreover, European, ancient Chinese, and even Islamic architectural designs and concepts have significantly influenced the world’s architectural design up to the present moment ([Gao et al., 2019](#)).

The traditional architectural development of the Bugis house was reported to be based on the cosmology comprising of a vertical space including poles, holes, the body which is the residential space, and the roof ([Abidah, 2016](#); [Adams, 1984](#); [Arifuddin, 2016](#); [Ismail, 2012](#)), while the horizontal aspect involves the floor plan which is the main space for inhabitation and a manifestation of physical space. This is in line with a previous comparative study conducted by [Vongvilay et al. \(2015\)](#) and further emphasized by [Tan \(2011\)](#) through research on ancient Chinese traditional houses which showed the living room/altar acts as an exhibition space to perform certain rituals. However, limited attention has been placed on the horizontal Bugis house plan, from the perspective of size and modules. Therefore, this study was conducted to fill this research gap. The urgency of this study emphasized the importance of having adequate knowledge of Bugis tribal houses regarding the use of the horizontal perspective involving the body of the house, *ale-bola*, which is believed to be a sacred space to conduct several traditional ceremonial activities such as marriage ceremonies, birth initiations, and burial rites (Yunus, 2012). This study, therefore, objectively complements previous studies that have combined architecture, ethnography, and local wisdom.

8.8 2. RESEARCH AREA

The study was conducted in Talungeng Village, Barebbo District, Bone Regency, South Sulawesi Province, Indonesia, covering an area of 6.80 km² and located on 4°35'12.3" South, 120°20'23.9" East with 276 households, a population of 1,164 people, and 171/km² denser than the average population density of Bone regency, which is the capital of the region. Talungeng Village has a homogeneous population structure dominated by the Bugis tribe; Bugis traditional houses are still mostly found in this village, as shown in *Figure 1* and *Appendix (Figure 9)*. Moreover, houses in this village are constructed cooperatively by *Sanro-Bola* considered to be experts in building with respect to the procedures, intricacies, and customs that have been prominently used for generations.

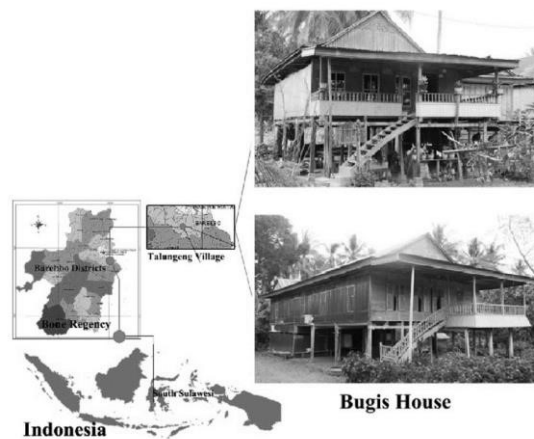


Figure 1. Traditional Bugis House, Talungeng Village

8.9 3. RESEARCH DESIGN AND METHODOLOGY

8.9.1 3.1 Informant Criteria

The three primary informants in this study were *Sanro-Bola* with experience, skills, and expertise in building Bugis houses and recommended by the Talungeng Village head as well as the community and traditional leaders. It is, however, important to explain that a *Sanro-Bola* is an individual with the mastery of ritual/mystical matters attached to house construction, while the *Panrita-Bola* masters the technique of building the house. Therefore, the informants fall into these two categories as well as one for others in the community, such as the leaders, homeowners, and other stakeholders.

8.9.2 3.2 Materials and Measurement

An explorative and descriptive qualitative approach was used for analysis, while information was gathered using in-depth interview techniques through the application of the local Bugis language to determine the concept involved in the construction of traditional houses in Talungeng Village from a horizontal perspective or based on the anatomical aspect of the human body in the lying or sleeping position. The research was conducted between 2018 and mid-2019.

The interview results were recorded, rewritten, and interpreted for further analysis while the research observations, phenomics, and intelligent buildings explained in the introduction sub-section were combined with the interviews for discussions and to draw an appropriate conclusion. Moreover, a diagram showing the anatomical representation of a house was also used for analysis, as described in Section 4.

8.10 4. RESULTS AND DISCUSSION

8.10.1 4.1 Horizontal Philosophy of Traditional Bugis Houses in Talungeng Village

The house reflects the beliefs of the Bugis community, relating all its components with the human body; for example, the human head is the roof/*rakkeang*, the body is the middle part/*ale-bola*, while the feet are the under part/*awa-bola*, thus composing a complete stilt-house. The philosophy of building a house on stilts has become a generational tradition for

the Bugis; a more detailed understanding and expression of this concept exists in Talungeng compared to other villages.

"...many people build houses just by looking at the common structure and design such as the roofs, poles, and spaces. The other living conditions such as the cleanliness desired as requirements indicate the condition and habits of the owner. Likewise, while building a home in the Talungeng Village community, the inside needs to follow the shape of our body as a human with the head, mouth, and stomach." (The informant, Village head and Sanro-Bola, 2018).

"Then ... a house cannot just be built any time by anyone, a lot of things are required to be agreed upon and followed because the house would be lived in until the end of life. The persons usually appointed to determine the condition of the house later are Sanro-Bola because of their knowledge." (Head of Talungeng Village, 2019).

Horizontally, the concept of a house in Talungeng is generally the same as that of the Bugis, which involves understanding life universally rather than from the ontological perspective. Moreover, the philosophy of life of the people is *sulapa 'eppa'*, which is translated as "self-improvement." This means all aspects of human beings are expected to be perfect if formed from the four elements of water, earth, fire, and wind. This is reflected in the purposive interviews conducted with the residents which showed most of the Bugis stilt houses horizontally and vertically reflecting the philosophy of *eppa'*. Each house owner interviewed has an understanding of this concept and it is mostly applied at every stage house through the help of the *SanroBola*.

"The most crucial thing in building the house, if we are Bugis people, is sulapa 'eppa, which means that the home must be rectangular. Why rectangular? Because it represents the four elements that are the source of life, namely water, fire, and wind." (Informant, Sanro-Bola, 2018)

"Eee.. not all of them are ball panrita sanro-bola, there is a lot of Panrita-Bola here (home architects), but they don't understand the ritual in building a house. Well, those in charge of the rituals involved in building a home are Sanro-Bola. But ... almost all Sanro-Bola here master the technique of building homes, except the old ones because they no longer have the physical ability." (Informant, Sanro-Bola, 2018)

The architecture of the Bugis Bone House has a broad meaning because they are not built only to be used as shelters from rain and the scorching heat of the sun but also in relation to the philosophical values and culture of the community. Several meanings and noble values integrated and contained in these houses are interpreted and held as views of experience in daily life and are inseparable from the local wisdom of the Bugis community in Talungeng Village. This local wisdom starts with the choice of orientation, the idea of where to place the main door, spatial planning, and structure to ensure the safety and comfort of the inhabitants. Therefore, the arrangement is expected to be in the form of the parts of the human body as well as to ensure the harmonization of other natural elements.

Almost the same model is used by other Bugis people, especially Bone, to build a house, but here (Talungeng Village) is unique, because there is another kind of new ritual in building a house ... Well, as already explained, the inside of the house is expected to resemble the human body. (Informant, Sanro-Bola and Head of Talungeng Village, 2019)

8.10.1.1 4.1.1 Concept of Orientation and Placement of the Main Door of the Bugis House in Talungeng Village

The orientation of the house for the Bugis community, in general, is fundamental and sacred, with several elements applied as a guide, such as a mountain, road, river, the sun, sea, and the direction of the wind. However, the layout is generally divided into the *mabbuju-bola* or longitudinal home, which is a house extending in the east-west orientation and the *mpareq-bola* or transverse house extending along a north-south orientation, but the Bugis house in Talungeng Village uses wind direction guidelines, which are the east, west, and south. The north is excluded because, according to an interview with a *Sanro-Bola*, the local wisdom of the *Bugis Bon* believes that a house oriented north indicates *ko 'no'ki diattang dia bokori Watampone lo diattang'*, meaning, "when someone goes down from the house to the north, such person is turning back on *Watampone* or its origin." The west is considered a divine direction because of the location of the *Qibla* of the Muslims, while the east is the direction of the rising sun and symbolizes fertility and enthusiasm for life. In line with the statement from [Altman and Chemers \(1984\)](#), while studying the Indian-American community, that the cosmology of the Indian Pueblo community in America involved east, the direction of the rising sun, as a very sacred direction, considered a "father" who helped grow their plants and guide tribal travelers in the daily hunt for their homes in the west.

"If you pay attention here (Talungeng Village), it was established following the east, west, and south winds. There is no house here (Talungeng Village) facing west (Bone direction). For us Bugis Bone people, we believe that it's not good to turn our backs on Watampone. Because Bone is in the west direction, similar to the course of Qibla (the path of Islamic worship which refers to Mecca - Saudi Arabia)." (Informant, Head of Talungeng Village, 2018)

The house orientation for the Bugis community in the Talungeng Village, in particular, and the Bugis tribe in South Sulawesi, in general, cannot be separated from the placement of the entrance. This is due to the analogy established between the access to the house and a human mouth before food is put into the body. The entrance is seen as the link between the "world" outside and the "world" inside the house and also observed to be very important to the suitability of a building's orientation for the residents. The door is not necessarily required to be installed along the same orientation as the house, and the placement is determined by the direction favored by the local community.

That is the door of the house, like a human mouth, which means whatever is entering needs to be good. Because if things that come to the original human body are not good (derived from cheating, stealing, or taking the rights of others), then it is not suitable for fortune and will affect people's lives (peace). Moreover, this is a house to be inhabited till death, therefore, the door needs to be placed in an appropriate position. Hmm ... if after installation, a door is observed to be in a wrong position, that would be dismantled and the door reinstalled according to our calculations (Sanro-Bola) to ensure excellent and lasting fortune in the house (homeowner). (Informant, Sanro bola, 2018)

Therefore, the orientations considered reasonable by the Bugis Bone people in the village of Talungeng are east, west and south, and the entrance is expected to be placed in the same direction, so that if the house is oriented toward the east, the door should also be installed facing east (Bugis: *dilau*). This ensures good spirit, comfort, and sound health can be expected in the house, because the sun rising in the east is a source of energy and life. The local wisdom of the Talungeng Village community believes “*nakko no'ki in Lau (east) yaro Mata esoe (sun) menre 'malolo, jaji malessi pappineddingnge, makecce' tuwongengnge,*” meaning, “The sun rising at a house oriented to the east helps the occupants not to step on their shadows when there is a shadow of the sun during the day.” This is necessary because it is believed that stepping on one’s shadow at home during the day leads to being useless due to the lack of direct sunlight which further causes a weakening of feelings, lack of enthusiasm, and quick affliction with diseases. A house with the entrance oriented to the east is shown in *Figure 2*.

That is, if you build a house, the principle is to ensure that during the day, the shadow is not trampled upon because stepping on it causes loss of life spirit and frequent sickness. (Informant, Sanro-Bola & House-owner, 2018–2019)

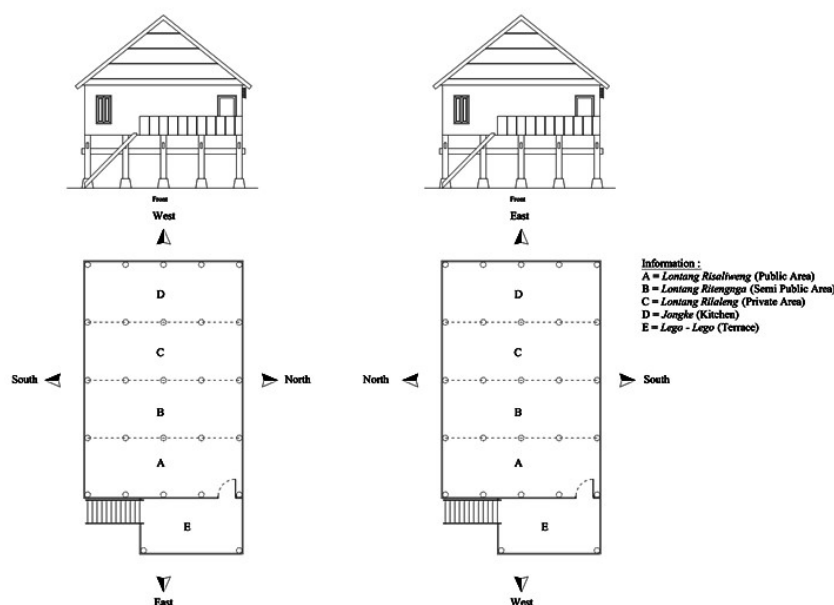


Figure 2. Layout and Position

According to the interviews, the orientation of the Bugis house to the west with the entrance also installed to face west (Bugis: *diaja*) is believed to be good because it is oriented toward *Qibla* (Bugis: *dioloi kibla'E*), which is the focal point of Islamic Ummah when praying. Likewise, a house oriented to the south with the entrance facing the same direction (Bugis: *diattang*) was also found to be good because, according to the Bugis Bone perspective, “*no'ki ri atuwongengnge,*” it brings a comfortable experience. Houses oriented to the north (Bugis: *diawang*) are believed to be less good, because the placement of the main door to the north means picking up death (Bugis: *no'ki riamatengengnge*). This deficiency can be corrected by placing an east-oriented door on the left side of the house or a door facing west on the right side of the house. This, therefore, means it is not necessary for the main entrance to be placed on the front wall of the house; it also can be on the sidewall.

8.10.1.2 4.1.2 The Concept of Inhabiting the Bugis House of Talungeng Village

The general concept of a Bugis house requires placing the residential area in the middle (Bugis: *ale-bola*) with respect to the vertical arrangement, while the top area is the roof and the space below it (Bugis: *rakkeang*), and the bottom area is under or the lowest portion of the house (Bugis: *awa-bola*). However, the horizontal aspect, the floor plan or the residential area, is divided into different areas or *lontang/latte'* with each performing different functions, as shown in Figure 3.

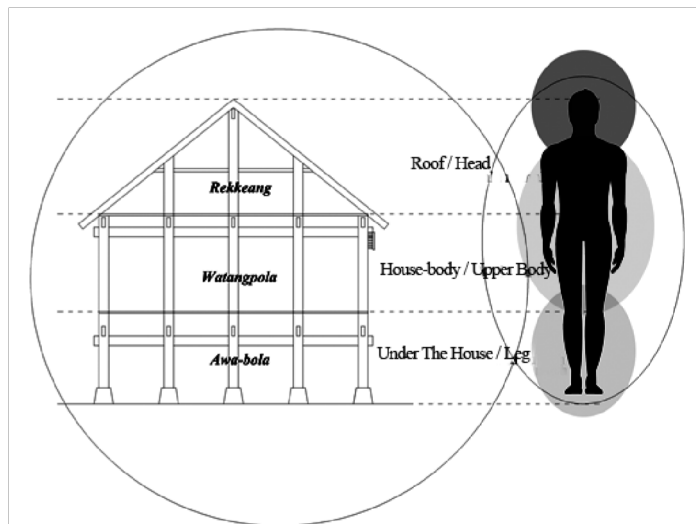


Figure 3. The Philosophy of a Bugis Stage House that Vertically Adopts the Human Body
(Abidah, 2016; Arifuddin, 2016; Ismail, 2012)

Figure 3 shows the spatial concept in a Bone Bugis house is horizontally divided into different areas, with the front-most *watangpola* or terrace, known as *lego-lego*, functioning as a receiving or transition area before entering the living room. Moreover, in the *lego-lego* attached to the stairs, there is a front wall to place the entrance and front windows; the size of the room is generally 2.95 meters long and the area is not expected to be longer than this because it symbolizes a child in the Bugis Bone tribe. This means the vertical structure of a Bugis house-shaped stage is sourced from the anatomy of the human body in a standing position requiring sturdy rigid legs (under/house poles) to support the organization (residential space) and head (roof). Moreover, the feet (columns/poles) in the Bugis philosophy play a role in sustaining the home and the lives of all the occupants (house bodies) with the frame structure, illustrating the robustness to protect the residents. After the *lego-lego*, there is a public area/living room (*lontang risaliweng*) which serves as a place to receive guests, both families and relatives visiting the house, for girls to receive proposals, and to perform sacred rituals for marriage. In the old-style Bugis house, there is usually no furniture, with only a mat laid in the form of a rug or carpet on the floor. However, through the influence of other cultures, the area is now equipped with furniture such as chairs and tables to entertain guests. The length of this area is 3.00 meters, which is 0.05 meters longer than the *lego-lego* and considered a symbol of authority and the influence of parents over the children's space. It is also made more extensive, with the furniture placed to allow free movement of people, both family and guests, while gathering. The next space in the *watangpola* is the private central area (*lontang/latte ri tangnga*) containing the bedroom and a family room. The bedroom is organized based on the belief the best sleeping position is to face the east with the head to the west, and the sleeping

area is believed to be useful when facing north with the leader in the south. These positions are considered best because they avoid sleeping facing the *Qibla* and also avoid turning their backs to *watampone*, as shown in Figure 4.

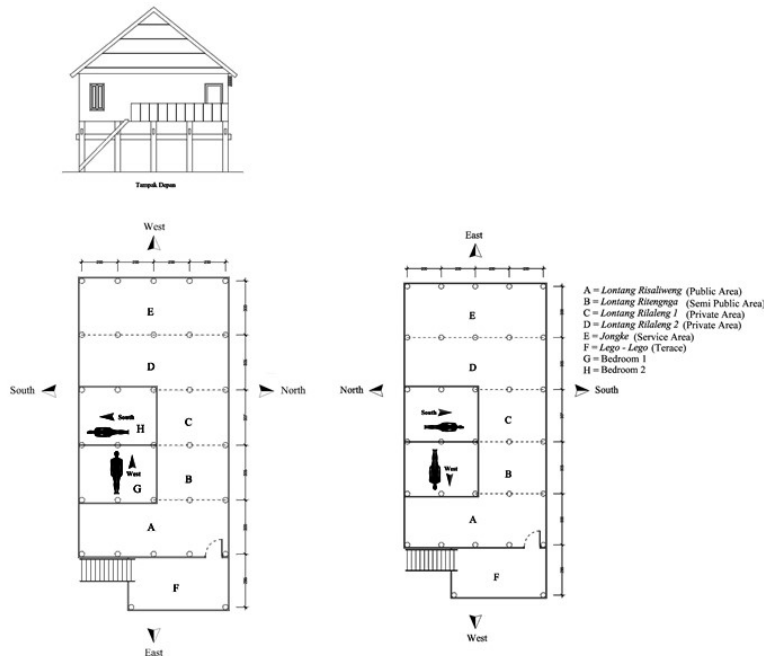


Figure 4. The layout in Buginese Talungeng Village

The measurements of the spatial layout were repeated to maintain a balance between the front and the back to ensure structural stability.

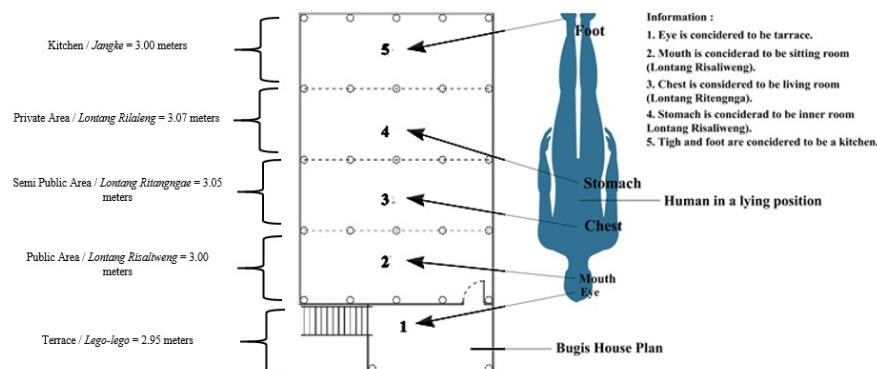


Figure 5. Anatomy of the Human Body in Lying Position and Comparison of Building Area Space

In everyday life, the nature space (*lontang/latte ri tangngah*) is a place used for bathing and burying corpses. It is 3.05 meters in length and 0.05 meters longer than the previous room (*lontang risaliweng*), which means the size of the space in the house is directly proportional to its function and diversity in its use. The same was observed with the next area, which is the rear or private area (*lontang ri laleng*), the fourth plot in the floor plan. It is considered discrete because the girls' bedroom is always protected but is sometimes used for dining and *aqiqah*, a ritual to welcome the birth of a baby in the Islamic tradition. Its size is 3.07 meters, meaning it is larger than the terrace (*lontang ri saliweng*) of 2.95 meters, the public area of 3.0 meters, the middle room (*lontang ritengngah*) of 3.05 meters, and the nature

space (*lontang rilaleng*) of 3.07 meters. However, an additional plot/zone (*lontang*) would change the plot size to the most significant proportion of 3.05 meters, as shown in *Figure 5*. The last area in the structure is the kitchen (*jongke*), which serves as a place to cook, clean kitchen equipment, and prepare a first-stage corpse before it is moved to the *lontang/latte ri tangngah*. It is 3.0 meters long and found to be lesser than the previous plot size, which means the fortune obtained by the residents is not reduced or exhausted. Moreover, the roof is mostly constructed with palm leaves (*pari*) as shown in *Figure 6*, and the length is expected to exceed the length of the housing body through the process known as *bulena* or in architectural terms, overhang. The *bulena* serves as a protector from rainwater and provides shade away from the sun shining brightly at a 45degree angle or in a perpendicular position at the top of the house. Therefore, it can be concluded that it protects the house from high humidity during periods of rain and high heat in the afternoon.



Figure 6. Model of the Bugis House in Talungeng Village

8.10.2 4.2 The Structural Concept of a Bugis House is a Reflection of Human Body Anatomy and is used for Disaster Mitigation

Indonesia's geographical condition is prone to natural disasters including earthquakes, flooding, and strong winds. Based on the experience of the Bugis people, the traditional stage house has been confirmed to have the ability to provide excellent protection against some of these disasters. For example, the structures are not affected by earthquakes and it was also discovered that floods as high as 2 meters do not disturb the community, because the height of the lower pole of the house is higher than 2 meters. Moreover, the house cannot be lifted or toppled by tornadoes.

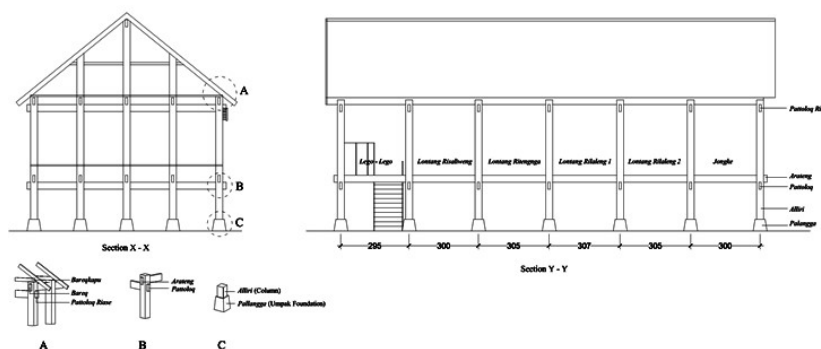


Figure 7. Shaft Arrangement

The house legs or poles are constructed to be continuously firm without any connection from the ground to the edge of the roof aids the strength and survival of the house against

strong winds as illustrated in *Figure 7*, points A and B. The existence of *arateng* and *pattolo'* beams, the main connecting shafts supporting the house, play a vital role in strengthening the position of the pole to ensure the structure is not lifted or rolled. *Arateng* is a long flat beam with length equal to the length of the house and serves as a barrier to the pillars, while *pattolo'* is a flat beam with length equal to the width of the house, the function of which is to hold the poles connected by *rateng*.

The pillars are free-standing without any connection to the stone foundation, commonly called pedestals or *pallangga*, as shown in *Figure 7* (point C) and *Figure 8*. The *pallangga* is the only component of the building to be moved in the event of a violent shock during an earthquake to ensure the house poles and their structures are stable. Moreover, during a period of a long drought, there is usually a decrease in the soil; the *pallangga* prevents the body or structure of the building to lower due to the land subsidence.

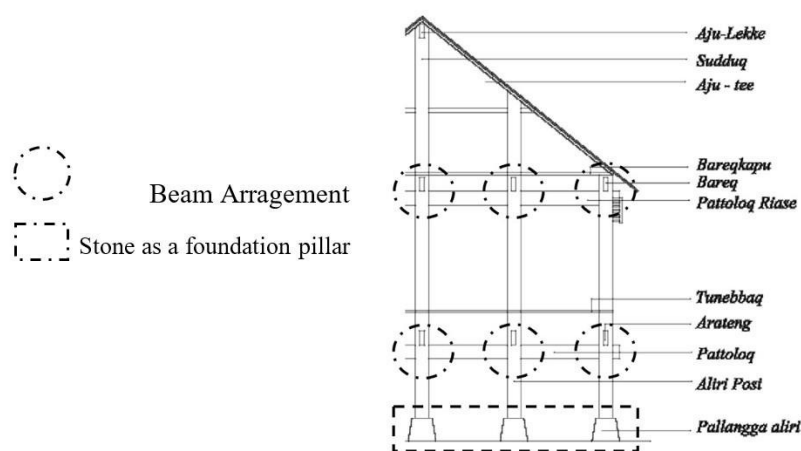


Figure 8. The Composition Shaft Arrangement and Structure

The house poles made of ironwood, Merbau, and bayam wood (English and Latin: Malacca Teak, Ironwood, *Macrolobium bijugum*, *Intsia amboinensis*, and *Intsia retusa*) are connected with the supporting shaft at a height of 2.5 meters above the ground surface to provide aerodynamic space in the house, protect the occupants in case of flooding, and ensure the house does not collapse easily in case of an earthquake compared to a house with foundations laid directly on the ground. Meanwhile, the pillar standing on a rock buffer (*Pallangga-aliri*) helps to reduce the vibration of the earth/land during an earthquake. Moreover, the materials used, such as ironwood, Merbau, and bayam wood, are flexible, durable, natural insulators against electricity, have the ability to maintain air humidity at seasonal temperatures, and are non-flammable.

8.10.34.3 Theoretical, Managerial and Social Life Implications

Based on architectural science, structures that are bound together have been constructed in the Talungeng Village community since long before the rapid modern development of architecture. Implicitly, the adoption of human anatomical structures in buildings provides cultural values and has been used for many years to minimize the effects of natural disasters such as earthquakes and strong winds, as previously stated. For example, the composition of the clusters of beam-supporting structures, beam arrangement, materials on stilts, and the availability of aerodynamic space provides added value to ensure strength and reduce the effects of climate change on the residents.

8.11 5. CONCLUSION

This study showed that the adoption of human body size in horizontal Bugis house construction serves to realize a house plan with spatial organization, relationships, and functions similar to the human body in a reclining position. From the vertical perspective, the aim is to realize a stageshaped home with a frame that stands firmly like that of a human body, consisting of supporting poles, body, and the roof, as an inseparable unitary structure. Moreover, this intact skeletal structure forms a dwelling with the strength and security to protect the occupants from all forms of natural conditions and disasters.

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8.13 APPENDIX

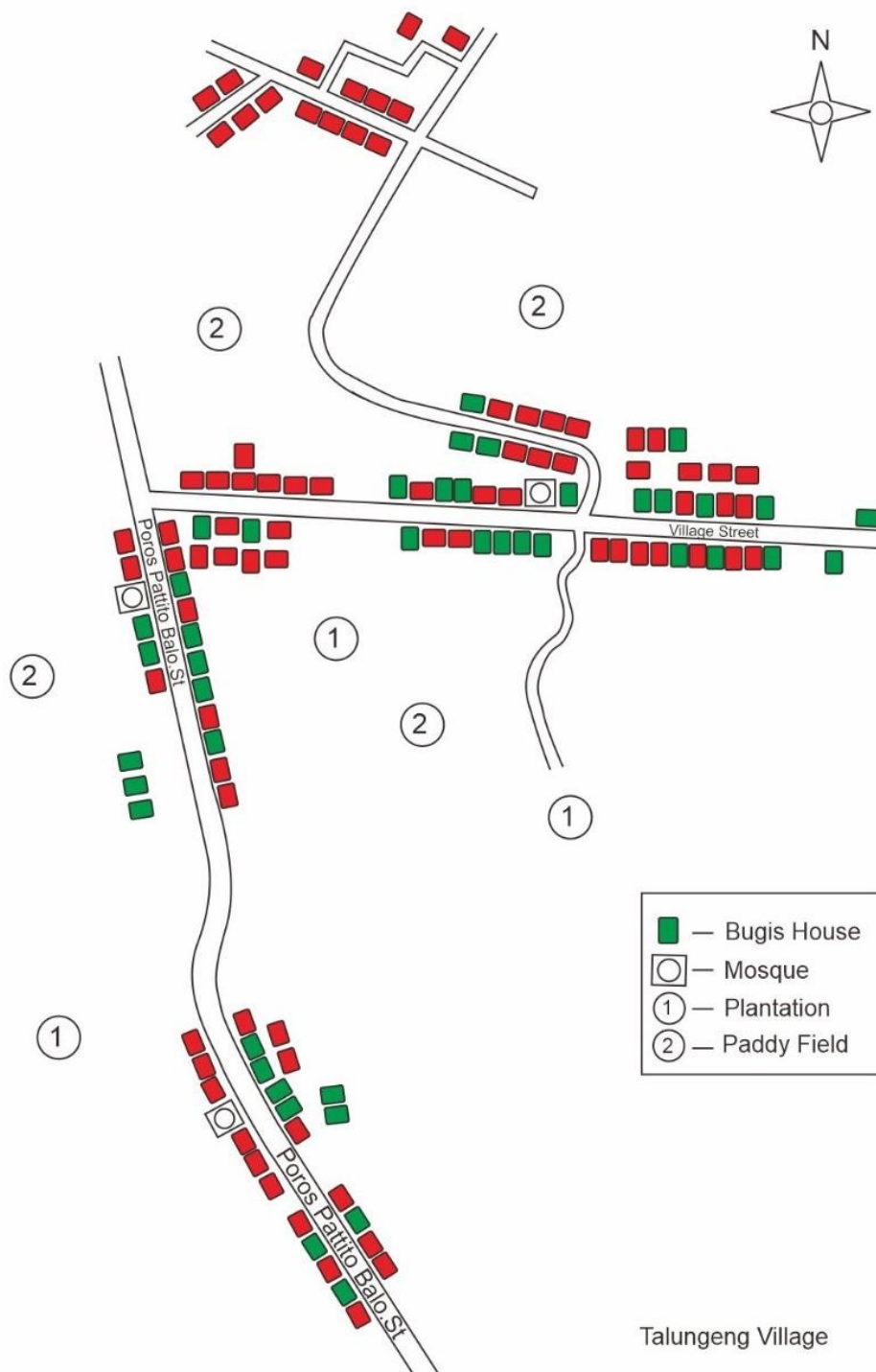


Figure 9. Layout of Talungeng Village

8.14 GLOSSARY

Ale-Bola:	The house's primary space
Arateng:	Long flat beam

Awa-Bola:	Under the house (stilt-house)
Bola-Ugi:	Bugis House
Bulena:	Overhang
Diattang:	South direction
Diawang:	North direction
Dioloi:	Toward <i>Qibla</i>
Eppa':	Four
Feng-shui:	Ancient Chinese Tradition
Lego-Lego:	Front terrace
Lontang Rilaleng:	Inner room
Lontang Risaliweng:	Front room
Lontang Ritengngah:	Central room
Lontang:	Space
Mabbuju-bola:	The size refers to the length toward the back of the house
Mpareq-bola:	Width of the house
Pallangga:	Pedestals
Pallangga-aliri:	Pole support
Panrita-Bola:	Someone who has tacit knowledge in terms of building traditional Bugis houses, regarding the practice and knowledge of house structure.
Pari:	Size of roof made by palm leaves
Pattolo':	Longitudinal Beam
Qibla:	Muslim direction (toward Saudi Arabia). For Muslims, this is the direction in which to pray.
Rakkeang:	The space between the ceiling and the roof
Sanro-Bola:	Someone who has tacit knowledge in terms of building traditional Bugis houses
Sulapa'-eppa':	Square (size / type)
Watangpola:	Terrace