

The Transformation of Value and Meaning of Sentani Residential Tribe in Papua Indonesia

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-----ABSTRACT-----

The traditional residences which have uniqueness in various forms extend in the archipelago of Indonesia. They are identified as neighborhood treasure of Indonesian culture with different forms and appearances. The traditional architecture is a work which always attempts to adapt with the environment and the people tradition based on trust. The residential is established environment which defines a form of communication and expression of personality and cultural background. Therefore, Rapoport (1969) said that the traditional architecture was a society expression on culture, religion, social structure and relations among the people. The various traditional houses in the Archipelago and the Southeast Asia are the shades of sophisticated art which have similarities in philosophy. According to Waterson (1989), they are rich in architectural formations which are different from the other traditional houses. Antoniadis (1990: 65) defined that transformation is a change process of the forms which reached a final level by giving a reaction to the similar alteration of the outside and inside. Furthermore, Thompson in the Poetics of Architecture (1990) also wrote that the transformation was a process and a phenomenon of form changes within the state of altering.

This research aims at searching and obtaining the transformation of values and meaning of the residence in coastal area of Sentani Lake that based on transformation of the way to build, construction system and the forms of the building in 1907, 1925-1990 until nowadays. This study used interpretive-historical research methods and the description of qualitative and quantitative mixed-method. The result of this study shows three factors that influence the transformation in meaning and tradition value within the society of traditional residential. They are the transformation of Sentani People's traditional house, the construction system of the house, and the use of building materials. However, the changing is not entirely applied because there are still maintained value system and the tradition meaning. Transformation is influenced by changes factor in the system of public belief and the changes in activity system. They changed from close to open system. The open system activity directly drives the social system from living individual to harmony of living together. The disclosure of community tradition drives the people to accept the intervention from immigrants and guests who deliver changes. However, it would be protected and remained by the existence of local customs.

Keywords - Indigenous transformation, traditional house, Value and Meaning

Date of Submission: 14 November 2015



Date of Accepted: 16 December 2015

I. INTRODUCTION

Recently, several researchers are gradually more interested in the study of residential transformation as public facility, especially in developing countries (Tipple, 1991, 1999, 2000; Salama, 1995; Shiferaw, 1998; Salim, 1998; Tipple and Salim, 1999; Tipple et al 2000; Sueca, 2003; Sheuya 2009; Diang'a and Hayangah, 2011). The study is generally focused on the government's policy to provide houses in the informal residential areas which are planned to obtain simple implemented-modifications and transformations from time to time.

The sample of transformation is documented and obtained through data collection method such as: "observations, measurements and a sketch plan of the houses' layout that shows the situation before and after the transformation, image, in-depth interviews and focused-group discussions" (Sheuya 2009, p.86). The transformation indicates dysfunction or dissatisfaction of the occupants in the change of the house. It is applied by the community in documenting and predicting the trends of which is needed by the occupants in the research area. Hadi (2000: 102) had obtained an architectural research which was about changes in residential space. It was closely related to the element of values and traditions which expressed the development of houses in the

village of Ara Ara District Bukumba. Those houses were influenced by several factors, such as: culture, socio-economic, weather and natural conditions. Meanwhile, according to Iswati (2001: 192), the change of residential house blueprint in the village of Kota Gede Dalem was influenced by social level. Then, Valenty (2005 : 130-132) examined changes in the function and form of Toraja house which were influenced by beliefs, social culture, science and technology as well as the increasing income of the occupants.

Furthermore, Muchamad BN (2013) obtained the research on traditional house of the Dayak's hill community residential, which was not only conquered by the romance of the ancient cultural, but also examined simply visual form, spatial patterns, traditional construction technology and cultural symbolism ("Dari Pondok Menjadi Kampung"). He concerned the interpretation to find the forms change of the occupants ("Dari Pondok Menjadi Kampung"). The same studies were also obtained by several researchers, such as: Wasilah (2011) in the Comparative Study of Traditional Architecture Toraja and Mamasa; Funo (2005) in Consideration on Typology of Kampung House and Betawi House of Kampung Batang Affairs (Jakarta); Setiada (2003) in terms of Legian Village People Village Pattern tadisional Bali; Mentayani (2008) in Traces Banjar Public Relations and Community Traditional Bakumpai; and Chen (2008) in The typological Rule System of Malay House in Peninsula Malaysia. Then, in the present conditions, the inhabited-traditional houses have attained physical changes. The research that examined changes in traditional houses was still rare to obtain, such as: Rukwaro (2001) in Architecture of Societies in Transition - the case of the Maasai of Kenya; Gruber (2006) in Settlements and Housing on Nias Island Adaptation and Development; Patandianan (2005) regarding changes Function and Form Traditional House of Toraja (Tongkonan).

Research transformation of residential, including housing which mostly discussed about: the transformation of the space, region, houses, traditional, order settlement, and rural, based on physical assessment, was conducted by Ni Made (2015), Bambang (2012), Purnomo (2010), Sumanto (2013), Noor Banu M (2013), Ngakan Putu Sueca (2005), Himasari (2012), Danarti Karsono (2008), and Ellya Santa Hill (2012). Based on the results of the previous studies and theories by Rapoport (1969), Handler (1970), Habraken (1976), Tittle (1999.2000), the transformation or change of residential space is influenced by changes in the functions, requirements, economical increase, social, life style and gender factors. Thus, the study on those researches which was defined as "Changes in the values of traditional houses of Sentani people" was conducted in the traditional residential in Sentani Lake.

Papua is a province located in the eastern part of Indonesia which its island also included Papua New Guinea in the half part of the eastern region. Most of the population is the Melanesian people. It is ecologically divided into three main geographic areas or the majority of the society. They are mountain range, coastal plains region, and the lower remote mainland. One of the communities which drove from mountain range to live on lower land of beach area was community of Sentani. The majority of communities that lived on the mainland and coastal area of Sentani Lake is native community with a different family name or clan in each village. They are led by the chief of each community whom they called Ondofolo. On the other hand, on the downhill of the Cyclop Mountain, there is native community from mountains range called Dani people. Then, on the mainland of Sentani, there are newcomers or non-native community (non-native of Sentani, Java, Makassar, Batak etc.).

Lake Sentani is divided into three major parts: East Sentani, Central Sentani and West Sentani. Sentani community has lived in the house on stilts on the uphill and lake coastal area. They believed that their ancestor has rested on those areas and it has been a tradition which was entrusted from generation to generation. In the central of Sentani Lake, there are several islands, such as: Asei, Ifar Large, Hobong, Yobe, Putali, Atamali, Bhuki Masalo, Kensio and Kwadeware. However, the field of the research study is Hobong village. Hobong village has unique evidence as an island. Hobong island is the only island which is in the middle of the Sentani Lake. It is connected by certain boat transportation called Kole-kole. Hobong village community is one of big communities of Sentani which is located in the Central Sentani district area.

The maintained-development of small islands, which was based on the trend topics in the Agenda 21 chapter 17, and paragraph 124, said about their geographical isolation. It has determined them sufficiently in many unique species of flora and fauna as their venture of the global bio-diversity resource. They also have rich and various cultures with special adaptations upon the environments of the island and the knowledge of the island's resource management. In fact, this research topic provides that the existence of the islands is both developing and maintaining its traditional residential of the people in Sentani Lake area, Papua. The traditional residence of Sentani has unique and distinctive culture, as well as a variety of special adaptations toward their environment. People of Sentani are able to manage the existing resources in their residential range as strength of their sustainability life.

II. PURPOSE OF THE STUDY

This study aims to search and obtain the transformation of traditional residence's values and meanings of the people who live in Sentani Lake coastal area. The transformation is focused on building, system construction and forms of the building period in 1907, 1925-1990- 2015..

III. RESEARCH METHODS

This research implemented the study by using: Research interpretive-historical, Merging Qualitative and Quantitative Research. Moreover, this study attempted to define them in descriptive method. Groat and Wang (2002) said that interpretive-historical research was based on investigation system of interpretation, using data or empirical evidence from the old archives, personal documents, evidence from the field, and interviews with the witnesses of history. Next, Qualitative Research cultivated the interpretation and the meaning of current or ongoing situation, and more emphasized on the role of research. Meanwhile, the role of the research itself was a major part that closely related to "objective eye" of the research tools, as well as the data from observation. Then, this study also used a list of open-ended-questions, and interview about the real background (natural setting), to focus on the way of the respondents' thinking. According to Winarno (1993), the descriptive research method was used for data analysis, classification, and investigation with survey techniques, interview techniques, questionnaire, observation or test engineering. This method was not only limited to data collection and compilation, but also to data analysis and its interpretation.

IV. THEORITICAL PRESPECTIVE

Roxana Waterson (1993) said that the architecture was not only about the existence of shelter against the weather, but also the involvement of social and symbolic spaces which reflected the values of its creator and occupants. She also acquired that the house was a microcosm that reflected in the layout and the structure. Both were described the concept of natural ideal and social order. Thus, the housing and settlement was always loaded with their significance (p-17). Several architecture analyses have tried to explain the whole vernacular within the limits of practical considerations, such as: local climate adaptation, geography and the environment or in the ownership restrictions and limitations of using material and construction (p-73). The orientation of placed - inside women and placed-outside man reflected on the contrast between interior and exterior, dark and light, high and low, back and front, night and day, and natural and artificial within the house (p-167).

According to Amos Rapoport (1969), the tradition itself was defended by law and has to be respected by everyone purposely. Likewise, "traditional house" means a house that build in the same way by several generations. Another term for a traditional house is a customary house or the house of the people. Moreover, Rapoport also said that the house and the neighborhood were a public expression of the culture, including religion, family, social structures and social relations among individuals.

Then, Djauhari (1978) attained that another principle to determine the authenticity of the traditional houses was about driven habits to "unwritten rule". For example, when the house was built or started to build, there were certain rituals or ceremonial for the foundation, and festivity for the accurate time regulation. In addition, there were many procedures and rules that were used, such as: the appropriate direction of the house's facet, shape, color, decoration pattern, building materials, the offerings for the festivity, and sometimes charmed ritual that was directed and related to the traditional houses. Next, Amos Rapoport (1969) stated that man's work exceedingly depended on the social and cultural background or social condition of the man himself. As a result, building a house was a cultural phenomenon that reflected the forms and organization. They were mostly influenced by the culture from each territory. Furthermore, he also added that the form of the traditional house were not only influenced by physical forms or by factors that stand alone, but also cultivated by the overall socio-cultural factors in its general pattern. In fact, the developing environment reflected the supremacy of socio-cultural, including trust, kinship, social organization, ways of life, and social relations among individuals.

In "Housing Beyond Home", Johan Silas (1993) said that the approach to scrutinize housing procurement process and mobilizing pattern of human resources was grouped sufficiently into three basic forms, such as: traditional, modern, and by the society. House procurement patterns traditionally occurred sustainable in harmony. Thus, the decision which related to the house procurement was always influenced by the norm of the society. Then, when the decision for the new resource was decided, the accomplishment was obtained and expected to give the results. Those results were cumulative and continually shaping the norm. This pattern was close-ended and only few influences from outside. The patterns in house construction village (community development) was a combination of traditional and modern patterns. As a result, the decision to build which responded to the chance and opportunity existed to connect with the mobilization of resources. For example, the decision to build was started from the compilation of resources in the form of substance and material. Then, the compilation of substance and material drove out the act of building which was influenced by the norm. This certain action or performance to build obtained the results which influenced the next level decision of development. This evidence indicated that the community development process was usually sustainable and continual.

The understanding of "Transformation" itself, according to Indonesian dictionary etymologically, is transfiguration (the shape, the characteristic, the functions, etc.). The definition of "Transformation", in The New Grolier Webster International Dictionary of English Language, is alteration from one to another different form but it has the same values. The change from one form or term into another has the same meaning and term connected with the surface structure and the function. Based on the Longman Dictionary of Contemporary English (2007), the transformation means a completeness or partial change which usually becomes something better or even malfunctioning in performance or function. This transformation is similar with the words, such as: change, adjustments, modifications and improvements to be better.

Tipple (1992) said "*Transformation is a form of change, which is commonly termed 'incremental', 'development', subtraction 'or attrition' (reduction in size) and 'total alteration' or 'rebuilding'*". In local context, the word change or, to change, is the act of altering the house either internally or externally, and may include additions, attrition or rebuilding. This definition represents the overall alternatives of change from existing. From Tipple's explanation in this local context, the word "change" or "changing" is action to change the house internally or externally. The changing is able to obtain in several ways, such as: adding, development, reduction or damaged (reduction in size) and a whole repairing or reconstruction.

Rapoport (1969) in "House Form and Culture" said "The house, the village, and town express the fact Generally Accepted Certain societies share life goals and values. The environment Sought Reflects many socio-cultural forces, Including religious beliefs, family and clan structure, social organization, the way of gaining livelihood, and social relations between individuals ". Moreover, Rapoport (2005) also stated that using the culture concept was obtained in two ways. Firstly, it was assumed that the culture and the built-environment were equivalent units. However, the culture was still too abstract, so the appropriate approach was socio-cultural. In the connection between culture and the built-environment, Rapoport determined the specific components of cultural expression which was easily understood. These components consisted of a view of the world (world views), values, norms, lifestyle and system activity (Rapoport, 2005; 94-96).

The built-environment is translated into four-forming components, such as: *the organization of space, system settings and made up of fixed, semi-fixed and non-fixed features*. The component of "made up of fixed" element is used as a context for Java's text-meaning of cultural manor house. "Fixed" element is defined as the element that has been structured and become unified to form space, such as: floors, walls, and roof. This element changes relatively in long period of time which is different with "semi fixed elements", such as: furniture which changed in short period. Those elements are the expressions which are able to be interpreted as meaning.

The disclosure of meaning is closely related to the concept of space, public trust, functions, activities, worldview of life, commercial purposes, etc. This study is focused on world views to perceive the relation to the built-environment. Worldviews is defined as Javanese's worldview which developed in the form of philosophy. The philosophy mindset of Javanese people is not only limited to mindset, but also applied to the life worldview as the attitude guidance in society within the built-environmental. Those facts were based on the Rapoport theory. His study tried to reveal every connection within the Javanese traditional house, especially: *pendopo, pringgitan and dalem ageng* with Javanese's life philosophy.

Norberg-Schullz (1980) in his book *Meaning in Western Architecture* stated the connection among meaning, architecture and history. The meaning was the essence which was born from the minds of several elements of human's attention to fact and its possibility in the world. It was also as the facts which were easily forgotten and understood inadequately. On the other hand, according to Rapoport (1982), the environment meaning would occur if people responded to the environment by giving its meaning. Moreover, Rapoport (1994) also stated that there were three levels of meaning:

- (1) The meaning of "high level", related to cosmology, cultural schemata, outlook on life, a sacred philosophical system, etc.
- (2) The meaning of "middle level", identity of communication, status, and strength, etc. They were hidden in spite of the aspect instrument of activity, behavior and setting
- (3) The meaning of instrumental and daily of "low level": mnemonic evidence to identify the purpose of the user's setting in the social situations, the behavior that is expected, such as: privacy, accessibility, gradient penetration: seating arrangements, hoist and the way to discover and other information that allows the user to behave and act appropriately and anticipatory in making decision.

V. RESULTS AND DISCUSSION

The changes of the Sentani people's traditional house occurred based on what Rapoport has said (1969). He said that the form changes were not the result of physical strength but they were factors from cultural consequent that influenced within. The house changes did not occur simultaneously either entirely or thoroughly. However, they remained elements of change constantly. The changes started from the way to build and use the

materials as a given-symbol that formed them. The changes on the traditional symbol were micro-cosmos factors which were also as the implied-values against the spirits of ancestors. They have been abandoned and maintained, especially the chief's residence. The transformation of traditional forms of Sentani's residence was influenced by the changing times and technological factors, the use of traditional raw materials and the effect of life in relation to the health of residents and the community. The changes in forms of the residential showed community effort to defend them, and their life activity increased in order to maintain their sustainable life.

In the viewpoint of Sentani traditional people's perception and behavior, the places where they live in is related to culture. Eventhough there are changes, essentially, they want to remain the previous tradition. Generally, they know that the changes become stronger eventually. However, there are elements that do not change or remain continually. It is determined by the form of a traditional house which was not only affected by cluster settlement patterns, but also the remained-bound of family life. The changes of the house, which were based on Tipple's opinion, were occurred in the house of Sentani people internally or externally. In obtaining the form of changes, they were recognized as: development, reduction and renovation the whole house (redevelopment).

In planning to build Sentani traditional house, the people always preceded first for consultation. It took the initiative deliberately by the owners. The consultation was obtained in Obe (the house of the chief of the tribe) and led by the owner or the brother of the owner. Then, the consultation in the house Ondofolo was led by ash akho (messenger) or someone who obtained a mandate from Ondofolo. In consultation, they discussed a plan to create or open gardens and the location of where to build the house as well as timing of construction of houses. Location of establishing the new house was usually built near the old house. The land belonged to the clan who has lived for generations. A new house could not be moved or built it on the other clan's land. Ondofolo said the decision upon the land to build a house was acquired by the guidance of traditional values (Imae Nali) and the offering to the ash-akho (messenger). Moreover, the most unique and interesting of people's tradition Ayapo (Sentani) were that the materials or pillars of the old house were never removed. The old house was left out as its original and if one day their house was damaged, they could return to the old house. The rest of those pillars became the evidence where the new homes was going to build and give the meaning that the pillar or the beam was a symbol of the tradition value of where the new house was built. The changes of ways or techniques to build Sentani's traditional houses were shown in the following Table 01:

Tabel 01

The Process of Transformation on the Value to build, Structure and Materials

Source : The Observation from the field

| No | Building the Traditional House (1907-1925) | Building the Traditional House (Recent Time/Existing- 2015) |
|----|--|--|
| 1 | <p>A. The Proses to Build the House</p> <ol style="list-style-type: none"> 1. Preparation <ul style="list-style-type: none"> ▪ Discussion (<i>Riya Khobou</i>) ▪ Place (Chosen-Location) ▪ Opening the Land (<i>Hekhe</i>) ▪ Building Materials Procurement. 2. Steps to Build the House <ul style="list-style-type: none"> ▪ Step I (<i>Iymea Mokho Mabondere</i>): The step of preparation by gathering the materials ▪ Step II (<i>Ofale-Wafale</i>) Constructing the lower part or foundation. ▪ Step III (<i>Iymea Yali</i>) Rokhabia council starts to set the beam or the framework for the roof (sawhorse) ▪ Step IV (<i>Yam</i>) Put the roof ▪ Step V (the fifth) : Haru/wa step is the work for the floor of the house ▪ Step VI (the sixth). Set the door of the house or <i>hambali</i> and the window (<i>maukwa</i>), | <p>A. The Proses to Build the House</p> <ol style="list-style-type: none"> 1. Preparation (Custom Consultation/Discussion) <ul style="list-style-type: none"> ▪ Discussion (<i>Riya Khobou</i>) ▪ Place (Chosen-Location) ▪ Building Materials Procurement ▪ Building Materials Procurement is prepared by the owner. The owner buys in Sentani (construction store) while the sago palm and betel palm wood kayu sagu dan pinang are obtained by the relatives of the tradition society. 2. Steps to build the house. <ul style="list-style-type: none"> ▪ Setting the king's pillar is arranged by the chief's assistant ▪ Done together by the local community and the other family from another region, and also the carpenters who know to build the house ▪ The house's owner is prepared the meal, such as: pork, roots and papeda as the main food at work <p>While building the house, <i>rokhobia</i> council do not work by singing and dancing to encourage the work. Each has concentrated to the each task in building the house</p> |

While building the house, *rokhabia* council work by singing and dancing to encourage the work. The dancing and singing are called *akhokoi-ahoboi*. The process to build ondofolo house took 1-2 months and the residence for the people took 3-4 months in general.

b. Building Materials

- The woods for the pillar (hukulu, finyau dan khotehu)- swan wood, iron
- The woods for the prop of the floor (Hu/hukulu, huhi, ransi), prop for roof of the house (Hu nare & peak lali)- kayu swan wood, iron.
- Ropes made from rattan and the forest (the held)
- Gaba-gaba (walls and windows) Sago leaves (for roofing)

If they build the house for ordinary people, it will take time and dependon the procurement of the materials.

b. Building Materials

- **The woods for the pillar - Iron wood and soang wood**
- **The woods for the prop of the floor (Hu/hukulu, huhi, ransi), prop for roof of the house (Hu nare & peak lali)- Iron wood and matoa wood**
- **Nails and bamboo as the held**
- **Glasses for Louvre window**
- **Metal sheeting used for roofing**

Source : Field Observation (2015)

The table shows that the change in the process of building the house is in the values of tradition in the community. The changes in the values have impact on the meaning of residential development. Firstly, the traditional house brings about the sacred value of building the residence to the meaning of the value system and the sacred relationship with the ancestors to protect the building process. It is characterized by the presence songs and dance which called *akhokoi-ahoboi*. They attach to the spirit and the meaning of togetherness (working together) and the request for the ancestor protection. On the other hand, in the present time, the building process is obtained in shorter time without dancing and singing songs. It indicates that the meaning of togetherness (working together) has decreased. The residential houses are built only with the involvement of the owner's family with the approval of local custom. Moreover, the transformation of the building process is in the use of materials which brings the house improvement and situation into modern way. Such changes give different meaning to the original home of the people. The traditional value is usually reflected by the use of protection symbol on the wood carved. It indicates the ancestor protection. However, the people do not consider it as an absolute requirement for the people anymore. The following transformation of the Sentani people does not make the people remained behind. Although they follow the changing times and technology, they do not leave their culture.

According Mintarja (1991), Indonesia's traditional architecture reflects the cosmological phase with several characteristics, such as:: 1) Giving the priority upon the spiritual values; 2) The belief in supernatural power; 3) Less appreciation to the personal need; 4) the bond off kinship systems and social orientation; 5) Affected agrarian way of life; 6) Adaptive to challenge / natural conditions; 7) very prominent wood technology; 8) The orientation of the building is very important. Therefore, Mintarja's explanation has supported the fact about the traditional residence of Sentani tribe. The residences still have reflection of the cosmological phase that occurs in particular ways, such as: (i) attached to the system family kinship and social orientation, (ii). Adaptive to: the challenge of natural conditions, (iii). The technology is dominantly in the use of wood; (iv). The orientation of traditional house in particular is still very important to build with in traditional way.

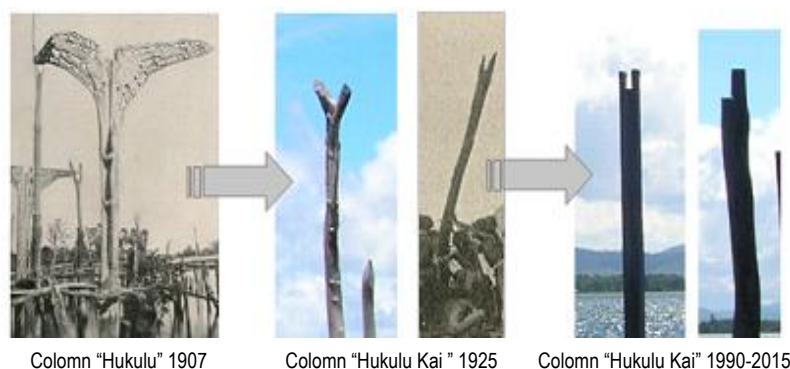


Figure 01. Column of Imaekholu House 1907,1925,1990
And Changing at this time.

Source : Sande (1907) and Field Observation (2015).

The changes of the traditional value system on residential structures have shown on the transformation of the main pillars (columns) of Sentani's traditional houses. The first column of the transformation process refers to "hukulu" (circa 1907) which the swan tree roots located behind. Then, behind the former position that was above the tree roots and tree trunks carried out the bottom and the engraving as a custom symbol. The custom symbol illustrated the existence of ancestor spirits and the presence of natural objects (crocodiles, fish, and snakes).

The changed-process was shown in Figure 01. The pillar of the house "hukulu" (tahap1: 1907) became a pillar called "Hukulu kai" (in 1925-1980) with a round tree trunk-shaped "Y" to place the beam with a binder using the shoulder strap or the cane forest wood ropes. The third change was "Hukulu Kai" in 1990, until now it changed the log column "hukulu kai" and formed into square shaped or "U" and "L".

The changes in the form of residential structures on the column system have been followed in the use of building materials for column. The column called "hukulu" was using wood materials, from wood Soang and an inverted tree roots as a place to carry the beam. Inside the column, it contained of the protection and strength values of the house. It meant that the ancestor spirits' protection was not against the built-houses. The symbol contained in the column represented something in nature about animals and humans. Then, in 1925, it developed and turned into a column called "hukulu kai" which still used the material from round tree trunk of Soang wood. However, the different part was in the column "Hukulu Kai" which was using a tree trunk-shaped "Y" as a place to carry the beam house and tied with a rope using the rattan rope or bark. It did not contain the customary symbol value but implied the strength to carry the house to be sturdy and strong against the lake water wave and wind.

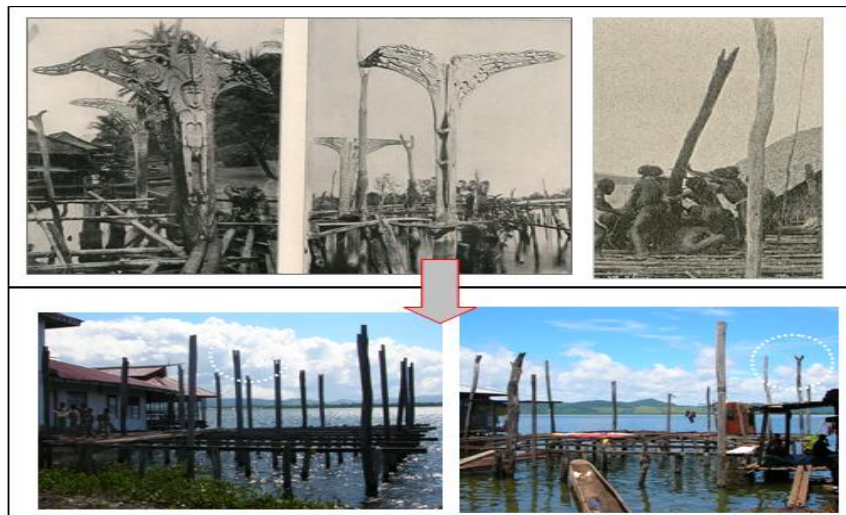


Figure 02 . Column of Imaekholu House – Construction system of traditional house and Changing at this time.
Source: Sande (1907) and Field Observation (2015).



Figure 03. Symbols of Traditional House "Imaekholu"
House of Tribe Head "Naftali Nukuboy" In Sentani Lake
Source : Field Observation (2015).

The changes in 1990 used modern construction model with the model of "U" and "L" of ironwood or ironwood with a binder using nails. Such changes did not contain the value and the meaning inside. This model construction was influenced by the development of technology for the construction of houses and educational insight within the communities which has taken place in mainland Sentani. The changes were independent as in the lifestyle of the people which was affected by the system activity in the community. Rapoport (2005) stated that the activity room space was formed from the diversity of activity. Sometimes, it addressed the overlapping between the activities and the space. The people formed the space based on the activity of the society. Thus, it was concluded that the public social space was a space which could be limited by one or all three elements including the money. The existence of customary fixed elements which was the closed existence of the clan was against the immigrants and non-permanent people. As a result, in the construction and materials they tended to use the new buildings.

The changes in the structure of the building which were the column of the residential buildings were not entirely the case, according to Rapoport (1969). The value of the retained symbol found on buildings, especially house for chief of the tribe or "Ondoafi". The visible building was in the old custom house of Doyo Sentani community reflected on the image-symbol. The symbol of traditional house in Figure 03. The symbols on the pillar meant "Ornament Statue of man gives the meaning to the man village, as a symbol of Doyo old hometown". It was called the man village because people who built up and formed Doyo old village were from 4 Ondoafi descendants. Their chief inhabited the old Doyo village (village for the male). The four Ondoafi descendants were: 1. Naftali Nukuboy Kendi, 2. Musei Mereu (Swaydewawar), 3. Qinyari (Pongkonowari), 4. quide Marwery (Norokobau). The bird ornaments gave the new meaning that the new brother has been joining Ondoafi of Sosiri Village. These symbols had the meaning of noble values and the existence of the ancestors. The bonding value of noble brother was received by another family from different clans with the previous values. They embedded the traditional values of Sentani people. For example, the crossing terminal in the Hobpong village has given symbol "Yumache Walaghau" as a basic form which symbolized a restful crocodile's guard. Then, on the roof of the building the symbols meant the protection of ancestors' spirits and the forces of nature in Sentani Lake.

According to Rapoport (1982), Elements of the space on Sentani people' residential structures consisted of fix elements (fixed feature element) which have static or permanent nature and cannot be removed. They were described in symbols that symbolized people custom and nature. They were visible in the architecture column. "Hukulu" was a reversed tree roots upwards and human symbol and birds that contained the deepest value and meaning in the existence of the village. Semi-fixed element (semi-fixed feature) was element which has free nature and visible in the materials of architecture. It was used for the columns and beams of "Hukulu Kai" which wss the Soang wood and the iron wood. Non-fixed element (non-fixed feature) was the element which has free nature from the result of changes. It was very attached to humans as inhabitants and the relationship of its replacement space (proxemics), the body position and posture (kinesics) which were explained to the community not to bond with the symbols-used in the built-environment. The elements that were kinds of expression could be interpreted as meaning. The basic activity of Sentani people was influenced by several aspects such as the customary, social and religious aspects. Basic activities in the residence were able to form frequently. As a result, they drove to create different spaces architecture in residences which become the social values in the environment. Basic system activities of Sentani people have been changed from closed to open systems activity. Those changes affected the following activity systems: fix elements, semi-fixed and non-fixed.

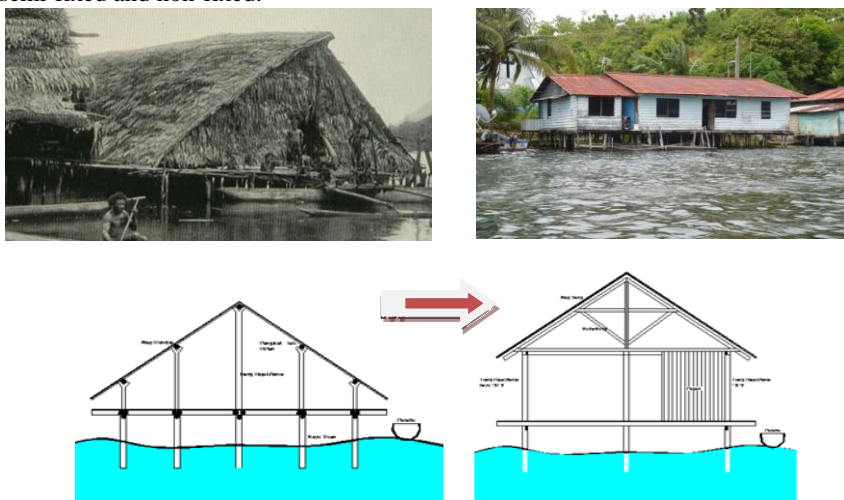


Figure 05. "Imaekholu" House – Construction System Housing in 1907 and Changing at this time.

Source: GAJ.Van Der Sande (1907) and Field Observation (2015).

Picture 05 shows that the forming-roof structure of the residence consists of sawhorses, girder, rafter and roof coverings. The materials that are used to cover the roof are woven sago leaves into a single unit held together with rattan and wood ropes.

The house construction changes are shown in a fixed element (fixed feature element) maintain in the house structure system of the house "*Imaekholu*". They are remained in traditional way by using wood column "*hukulu kai*" in the chief's house "*imaekholu*". The use of wood materials, such as: swan wood and black iron woods are still remained; the building is still above the water, on the surface of the lake with stilt model of the house. Semi-Fix element (semi-fixed feature) is an element that has free characteristics on changes as shown on the wall materials. They changes from sago leaves material to sago tree trunks (*gaba-gaba*); the use of wood materials are changed from swan wood to ironwood (*Ulin*). Furthermore, the fix elements (fixed feature element) of "*Imaekholu*" house still has saddle-shaped. Semi-Fix element (semi-fixed features) which has the free characteristic on space changes result. It is shown in the use of wall materials which change from sago leaves material to sago tree trunks (*gaba-gaba*); the use of the cover roof materials changed from sago palm leaves to a tin roof and a multi roof (modern roof covering); the use of louvre windows and permanent glass windows, and the form of the house becomes mixed in saddle-shaped and shield roof that gives meaning into more modern buildings.

The changes in the activity system have affected the structure and form of the people's house. Such changes affect the form and the building materials that are used in the residential communities. Several changes in activity of the community, at first, become more heterogeneous in accepting other neighbors around the village. As a result, it affects the environment inside. At the closed-system of activity and individual in the residential neighborhood reflects the strength of socio-cultural to the belief about the ancestors and mysticism are still dominant. The family kinship community is still limited within the group on how to defend their residential. The relation to the way of life, and social relations among individuals are still closed only for their own groups. This is a major concern for keeping the area against the intervention of the newcomers or intruders and the function of the building is a place for the refugee.

At this time the closed system activity has been changed into an open system activity. It is characterized by traditional system of residential that receives to newcomers and visitors. Those changes influence the strength of social cultural values which are formed by the belief in God (religion), characterized by burned-building or custom symbol that implies nature or ancestor spirit. The people can be observed from the way of life and the relationship within the social public. They are the community and the fellowship who work together in managing the built-environment,

The changes in the form and construction materials of the house that were described also happen to the occupants systems inside the residence of Sentani people. The changes of the living system of the residential drove from closed-house (closed system activity) into an open house (open system activity). However, the house remained closed system upon the ancestor value system activities. At this time, the changing of closed-system of the house appeared and reflected on its architecture, such as: the window and the door are more than one, then, a large terrace in front of the house to welcome the guest and family (visible in the image above). Residential construction system which was used influenced its development of knowledge and information and the technology. The procurement process for Sentani residential which was from Sentani community near Sentani Lake has viewed by Silas' theory (1993). His theory which was about the house procurement process and the raising resource pattern was actually traditional and society patterns. Traditional patterns and community participation from the people were always needed to build houses in the neighborhood.

The changes of people's residence which become an open system are influenced by several factors, including climate. The climate is accepted as a decisive factor in the changes of the house. They affect the closed-activity system becomes open. It appears because of the need for air circulation in tropical climates which requires the opening of society residences. However, on the other cases, the cultural factors have an important role in transformation. The residence is not only about the created-structure for complex different purposes but also the evidence of complex cultural phenomenon, shapes and settings. Its arrangement greatly influenced by the culture of the Sentani environment. The forms of Sentani residence were not the result of the physical strength factors. It is a consequence of the cultural factors which affect the belief factor in God (the coming of Christianity) and the inclusion of other culture of the other tribes who live in the coastal area of Sentani Lake. The power of Socio-cultural power within the cultures, religions, material, and social aspects affect the form of the residence. The form of the house and the residential were their symbolic nature. The characteristics or the position of women in the house Sentani tradition do not influence the form of the house. They are more dominantly influenced by the position of men in the community tradition and the households which was as the head of the family.

The results of this quantitative research which searched the transformation of Sentani's residence were obtained from the changed variables in Sentani's residence. The study was conducted in Hobong Village as the deepest and widest remote island. The variable was obtained by examining the improvement years, the improvement parts of the house, the pattern of the house improvement and the renovation parts of the house.

In analysis Hobong population growth, the people who make house improvements both changing and enlarging were found the largest number of house improvement in 1991-2015 with the number of 59 respondents (56%). In 1981 to 1990, there were 27 respondents (25%). Then, after 2015, there were 15 respondents (14%). Finally, in 1971 to 1980, there were 5 respondents (5%). Those data indicated that in 1991-2015 the traditional residence improvement was obtained by using better construction and materials. The improvements were done first on the column, floor, walls and roof. In the part of traditional house that was changed, most of the people achieved the improvements totally (the whole building). There were 94 respondents (89%) obtained the overall improvement of the building, while the back and front improvements of the building were obtained by 5 respondents (5%). The respondents who repaired only the side part and lower part of the building were only one respondent (1%). They were shown in the graphic. The presentation showed that in 1991-2015 the improvements of traditional house was the overall building.

Moreover, the traditional house improvement tended to obtain several fixing process: the constructions were 82 respondents (77%), the facets of the house were 12 respondents (11%), the spatial arrangement were 3 respondents (3%), and all of them were 9 respondents (8%). They are shown in the graphic. The analysis results of house improvement propensity in 1991-2015 indicated the change of construction system of traditional residence to a better system. However, 23% of the people improved the construction materials to the facet of the building. Based on the pattern of house improvement in Hobong Village, the people attained the whole renovation were 85 respondents (80%), partially of the house were 16 respondents (15%), enlarging and subtracting the old house were 3 and 2 respondents (3% and 2%) from 106 respondents. They were shown in the chart of house improvement. The result analysis showed that in 1991-2015 there were 80% of the people repaired the whole construction building of the house, the floor, the walls and roof. Furthermore, there were 20% of respondents repaired the house on the floor, walls and roof while the house's foundation and columns remained using column Hukulu Kai.

Based on the results of quantitative analysis from the former graphic, the pattern of public procurement of the Sentani house around the Sentani Lake can be concluded by Silas' theory (1993). The theory said that the process of procurement and the pattern of gathering the resources were exposed. It meant that the pattern of house and the procurement of resources was a traditional pattern and the society pattern.

The pattern of the house procurement has been done traditionally and continually by Sentani community because it was the eldest's heritage to the next generations. Thus, the decisions were always influenced by the norm (of the Sentani community customs). When the conclusion has been decided, the community would gather new resources, build the house on the provided-land that has been provided in the area of their clan. Then, the results were delivered despite in closed-traditional form against the outsider. On the other hand, the next house procurement pattern in society which was decided was always the result of reciprocal influences with the resources (people have the cost of the new work to build a house). Then, there was a building achievement on the land (the land above the lake in the clan area), and the result was the establishment of the house in the community. It achieved to develop and improve the house on the next level and vaguely influenced by the norms. Those norms which influenced the community decisions have outcome the other norms characteristic. They were open characteristic from the outsider.

The community house of Sentani increased along with socio-economic growth as described by Silas (1999). He stated that the house is the whole of the residential. It was not only the physical results finished at once but also continually and progressively process which related to social-economic growth of its inhabitant. The changed-process of the house implemented by the house's occupant in order to increase the individual's welfare and the community. The revealing of traditional value of the residence was connected with the concept of residence space, the people's belief (belief in ancestors and belief in God / religion), the function of the residence became more open, the society activities in the social environment changed from closed system to opened system. The opened-system received and reached outside of its territory. Moreover, the view of life that was primitive became modern because there was formal education in the community. The connection among the meaning, architecture and history were influenced the changes in the residence of Sentani people. The meaning became the essence which was born from the minds of some elements of residential. They became a fact of human's thought and environment to maintain the existence of traditional residential. Meaning and traditional values of Sentani people environment occurred when people responded to the environment in giving the meaning of their environment.

VI. CONCLUSION

The study concludes that the transformation of residence's values and meaning of Sentani people exposed on the way to build, the construction system and the used-building materials. They transformed in the period of 1907.1925, 1991 until today. The transformation was found on: the process of house establishment, and the changes in the use of the system and the structure of building materials. They were found changes which were in the beginning of all activities focused on the belief of the ancestor spirits. This traditional value was maintained in order to protect and preserve the belief's changing into religious beliefs. The changed lay out on tradition symbols, songs and worship have been removed from community traditions and values. However, the changes did not happen entirely. There were remained-symbols that gave special value and meaning to the ancestors.

The transformation which occurred on the value and meaning of traditional residence of Sentani people was influenced by the system of community beliefs, the system activity, space function and a social community. The changes occurred from the way of life system of people activities which was originally closed-system became opened-system. However, It did not happen entirely to all aspects. The closed characteristic was still remained on aspects of their owned original tradition territories. The formation of clan territory formed traditional residential in each village. Such changes did not influence the gender system of woman and neither the residential patterns of Sentani people. The position of man was more dominant in the community tradition. The changes of the traditional society ways of life gave the effect of least tradition existence because of globalization, such as: the time changing and education in the community. The transformation of the traditional residence led to better changing which adapted to, nature, climate and culture, in order to maintain the sustainable life.

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