

# Bornean Longhouse in Kahayan and Kapuas River Basin: The Process of Metamorphosis Architecture

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**Abstract:** This paper analyzes the process of changing living space in the Dayak tribes in Central Kalimantan, which is a complex phenomenon. The process of spatial discussion in Dayak settlements is useful in the planning and design process relating to housing and settlements, among others concerning environmental aspects, relocation, resettlement, urban renewal, and preserving local wisdom. This research is trying to develop the concept of change in living space that starts from a Dayak community value at the level of transition by using local material as a reference. The Dayak tribes in Central Kalimantan as the object of this study, specifically those in the large and small watersheds of Central Kalimantan as a reference, and field research as a research method. Asking research questions that arise is like asking whether the spatial discussion process is carried out on Dayak tribes in Central Kalimantan. The steps undertaken to answer the research questions are: first, finding the initial process of the Dayak concept of settling; second, to find the concept of changing space from non-permanent (nomadic) to semi-permanent (settled) and settlement. The results of this study contributed to the development of a revised architectural metamorphosis theory, such as questioning the settlement process of the evolving of Dayak tribes.

**Keywords:** *metamorphosis space, process of spatial, living culture, Dayak Central Kalimantan.*

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## Introduction

### 1. Research Background

In the conception of culture, a society develops and undergoes dynamic changes, from the recorded events that occur at the time to metamorphose through various processes. The cultural journey of settling begins with a life that goes around / moves around (nomadic). The way of life and moving habitation then turns into a pattern of inhabiting settled. The pattern of inhabiting settled is done by humans in groups in the form of community unity that lives in caves, and in trees. At that time the concept of culture settled in the mountains, hills, and forests. Furthermore, when human development has chosen to inhabiting settled, residential space is understood normatively in the context of the value system that is formulated in the wisdom of nature and its environment. Egenter (2006) in Subroto (2015) explains that the inhabiting process is divided into 4 (four) phases of living style, namely (1) subhuman architecture which refers to the phase in which the complexity of the system in building inhabiting behavior has changed the way of inhabiting settled which then initiates the emergence of various basic forms of residential

buildings; (2) semantic architecture, refers to the expanding phase of development of residential building types that conventionally have a distinct identity. In building residential space in this phase the use of hand skills and anthropometric measures involving community members both sociologically and culturally (society-fibroconstructive industries); (3) domestic architecture refers to the experimental development of humans in building residential buildings that are colored by the cultural complexity and pragmatism of human activity structures and their natural environment spatially. This then affects the development of techniques and forms of residential buildings in accordance with events in the past, the local cultural character semantically inhabited space elements are expressed through the symbols contained in the elements of residential buildings; (4) settlement architecture refers to the evolutionary stage of the embodiment of residential space that has taken into account the territorial control factor in how to inhabit the settled and form a residential entity (nuclear border / settlement core complex). In this phase, residential space has one structural entity and spatial system which is a combination of elements found in the semantic architecture phase and the domestic architecture phase.

Based on the above stages according to [Sunarningsih \(2018\)](#), at the beginning of the Dayak tribe, their lives moved, and proceeded to choose to live permanently. In this case, it can be seen in the archeological data found in the former village (*kaleka*), and also the village environment which is still a place to live. In semantic architecture, the life of the Dayak people when they were not familiar with tribal fights and living in peace, their form of residence was the roof house. At that time the Dayak people were still moving and so was the concept of their cultivation. Furthermore, in [Salilah \(1977\)](#) after a tribal warfare, a communal house called *Betang* (Dayak tribal house) was formed which could accommodate up to 100 households (*Bet*), *Betang* was the smallest form of a group of social communities living under one roof. The Dayak people in Central Kalimantan live in a community (in groups) on stilts. Furthermore, because of an inter-tribal warfare event, so the Dayak tribe developed a simple technology by erecting a stage-shaped house building that reaches a height of 3 meters to 7 meters, but also the house on stilts is surrounded by a fence (*Bakuta*) or can also be called in the concept of a fort to protect themselves from the danger of the enemy at that moment. The pattern of settlements in this nomadic community, *Betang* residential buildings are of two types, namely: *Betang* which is not fenced around (*kaleka*) and *Betang* which is fenced around (*Bakuta*), while the height of the fence is 25 meters, the shape and size are 40M x 25M.

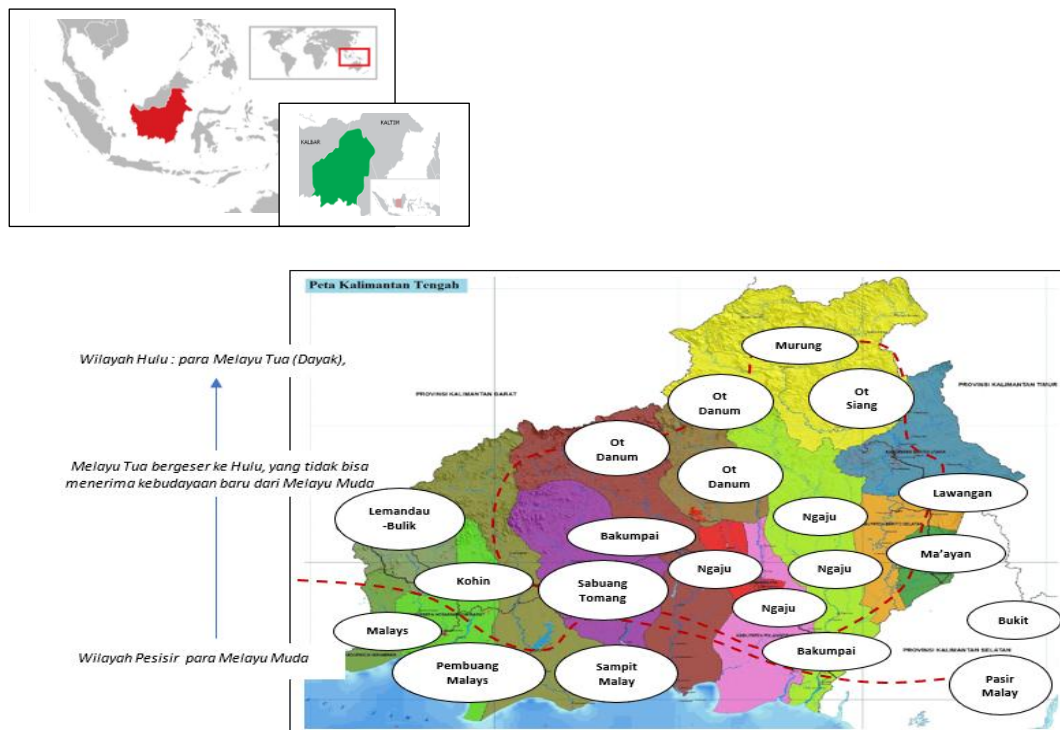
Traditional society expresses its spatial life in defensible space. The principle of survival such as protects oneself (self help) and controls the environment, in creating security. According to the traditional community, the survival principle can be seen from the concept of site selection, such as in the mountains and in the middle of the forest, and if they feel it is no longer safe then they move again to the new location that they think is best. Nomadic patterns of life which subsequently proceed to become semi-settled, and develop into complex residential spaces (settlement) are interesting phenomena and are defined by several researchers, including [Stokol and De Haan \(2001\)](#), [Whelan \(2010\)](#)([Whelan, 2010](#)), [Gottfredson](#), and [Brower \(1985\)](#) in [Lewicka \(2011: 207\)](#), which considers occupancy to be one of the greatest forces integrating human thoughts, memory, and dreams. [Bachelard](#) also states that occupancy is the world's first human being ([Stokols and Altman, 1987](#); [Crowe, 1995](#)). Occupancy describes the connections between the past, present and future for its inhabitants ([Israel, 2003](#)).

The importance of research on residential space metamorphosis in the Dayak tribe in the upper Kahayan River, which began from the 4<sup>th</sup> century to the 19<sup>th</sup> century, especially in the

concept of survival in living space. Local wisdom of the Dayak tribe can be an interesting case to learn how they create the principle of survival to protect themselves and their communities from a sense of security. So it is deemed necessary to develop sensitivity to the concept of living in modern architecture of the existence of nature, humans and culture they have. The Dayak tribe is an Austronesian society which has local wisdom values that need to be preserved in order to improve the identity of local architecture in Indonesia, so as not to be eroded by the flow of modernization and industrialization in which the concept of housing is changed in the concept of homogenizing force from the forces of modernization and capitalism that ignores reality traditional housing as a local element that needs to be maintained.

## 2. The community value: an approach to a history in space of Dayak

Residential space is the first world of human life processes that are not permanent (nomadic), semi-settled (settled), and become a residential complex (settlement). So in this section focuses on historic villages that can provide information about the architectural journey of the Dayak tribe in the past. As an approach to define and analyze the process of spatial metamorphosis in the dwellings of the Dayak tribes in Central Kalimantan, the Dayak tribe is a nation that lives in community / groups of each other with their respective territorial boundaries. The information data is also associated with stories and mythology to rebuild the concept of residential space from the process of changing space that starts from habits, spaces, and places. This metamorphosis approach is to build understanding of the concept of space, especially in the traditional life of the Dayak tribe in Central Kalimantan, which can be seen in the picture [figure 1](#).



**Figure 1.** Simplified location of Bornean culture areas and Various Dayak Tribes in Central Kalimantan

(Source: *Sellato, 1989 dan Riwut 2003*)

**3. Methodological Approach**

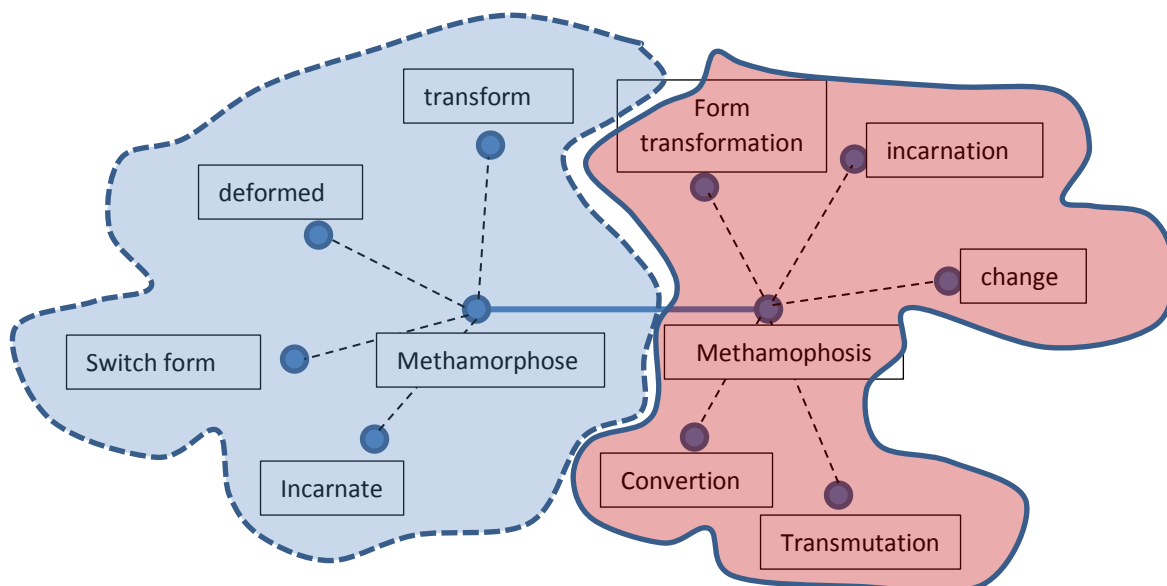
The traditional approach of the metamorphosis study of the Dayak Ot'Danum tribal space in Central Kalimantan is descriptive with inductive reasoning (Koentjaraningrat 1997: 29-32). Primary data were collected from the results of archaeological and architectural anthropology research. The location of the findings is obtained along the Kahayan River Basin, and secondary data in the form of other references in the form of literature review. Data will be analyzed based on the type. The process of space metamorphosis or the journey of architectural space transformation, environmental analysis and spatial analysis. The process of synthesis and interpretation uses theories obtained from literature studies. One of the theories obtained is Henri Lefebvre (1991), Bernard Sellato (1994), Antonio J. Guerreiro (2003), Egenter (2006), from these theories both constructive, normative, and inductive, can help to elaborate on the process of occupancy of the Dayak Ot'Danum tribe.

According to Selatto (1994) in the process of activities (habits) before, the Dayak community lives in the middle of wilderness and rivers as access to life, the process is in the first level savagery, survive by hunting, fishing and collecting food. Furthermore, along with the mastery of technology, people's lives began to change and survive by cultivating land for farming and gardening and being able to raise animals, the second level of barbarism. The community lives in a larger group in the village, and is able to increase agricultural output. The last (third) level is called community / civilization, which is the concept of group dwelling. Development of the concept of housing in the form of community, living together which in the initial stage still has villages that are able to provide food and equipment needs, such as farmers, ranchers, and craftsmen (Childe 1950: 4). From this whole series, it can also be explained in Egenter (2006) as a residential space phase that has one structural entity and spatial system which is a combination of elements found in the semantic architecture and domestic architecture phases called settlement architecture.

**4. Result**

**4.1. Culture Metamorphosis process**

The term metamorphosis is form transformation, conversion, incarnation, change, and transformation (sinonimkata.com).



**Figure 2. Meaning of Metamorphosis**

(source: sinonimkata.com)

Based on the visual meaning of the word above, metamorphosis is synonymous with 5 words, namely: conversion, transformation, change, incarnation, and form transformation, which can be seen in the picture [figure 2](#). Changes in a whole or dramatic form in form or appearance. In this case, the process of cultural metamorphosis depicts the gradual change of human culture that proceeds from a simple form, to a complex, dramatic form, adjusting to the needs and development of human culture. The process of metamorphosis can also be said to have evolved because it describes the gradual and gradual development of culture, which is based on the growth of human culture as a sign of progress and more systematic development.

**4.2. Metamorphosis in the History of the Dayak Settlement Approach**

In the perspective of anthropologists, most ethnographies about Dayak specifically focus on longhouses and the structure of social relations. According to [Geddes in Maunati \(2004: 62\)](#) the longhouse (betang) is an indication of the way of life of a typical land of Dayak people. Geddes compared the communal life found in the longhouses with European individualism, stating that the lifestyle of the Dayaks was a more perfect manifestation of European life.

Dayak settlements are generally located on the banks of large rivers or river basins, usually one village has a longhouse ([Lebar 1972: 169](#)), [Whittier \(1978: 99\)](#), [Furness \(1902\)](#). Patterns of life in groups, sharing, cooperating (handep) are characteristic and social characteristics of the Dayak tribe in general, as well as in resolving conflicts. According to Geddes and Furness, the main reason for the construction of a longhouse was to protect themselves from sudden attacks by head hunters ([Geddes, 1968: 30](#) and [Furness 1992: 1](#)), the principle of survival (defensible space) according to [Newman \(1996: 9\)](#) or protect themselves (self help) and control the environment, by creating a sense of security one of the principles of protection in a Dayak community. In addition, Geddes also stated that building a longhouse near the river makes it very easy to distribute building materials, and an economical choice because it only requires wood to be sawn in the forest.

According to an ancient story / mythology of the Dayak tribe (tetek tatum) the process of settling carried out in a nomadic way, in searching for the location of the Dayak tribe, did so with the media of "Manajah Antang" (calling the Eagle), they believed that the gods, and their ancestors continued to accompany them in life in the world. This form of closeness can take the form of the entry of these holy spirits, into the bodies of other living things, such as birds. Because the language of birds and humans does not match, humans try to interpret the bird's message from its flight movements, the sound of its voice or with the help of other means provided. In choosing the location of residence, the Dayak tribe asked for help or guidance from the *antang* by carrying out the *menajah antang* ceremony (*manajah* means fortune telling). Previously, they had erected three directions (called *petinju*) at the top which were given a place for the eagles to land and their decoration in the form of a piece of plain cloth that was yellow, black, green.

The *patinju* from each color of the cloth shows the direction where they will go. The three *petinju* who were established set one direction namely the names of rivers such as the Kahayan river, Samba river, Katingan river. When the eagle arrives, then it is seized by one of the *petinju*, then that is where the direction of their decisiveness is obtained from the results of the *manajah antang*. All property that could be transported was taken and which could not be dragged like a dwelling house burned by them. The process towards a new residence, to avoid and protect themselves from the danger of extinction from inter-tribal warfare, namely *asang kayau* war (head cut). The Dayaks also use Rooster's media to predict where they stop, when roosters crow,

that's where they live, and which can be seen in the picture [figure 3](#). The Map of Methamorphosis Stages of The Dayak Settlement Culture

#### 4.3.1. The process of metamorphosis of the Dayak Occupancy

The roof house is the beginning of the Dayak house, where at that time lived peacefully, did not yet know the fighting / war between tribes and mutual *asang-kayau* (head cut). Then after that there was a tribal war. They built a small village both fenced around (Bakuta) and not fenced around (kaleka), both types of villages are still mobile ([Salilah: 1977](#), [Riwut: 2003](#), [Sunarningsing: 2018](#)). They are looking for places that are safe from attacks by other tribes. Furthermore, for the safety of the tribe, they built large, tall and strong houses, so that they could accommodate one hundred to two hundred people in them. The house is called the *Betang* house, which then emerges other types with less capacity such as *Huma* (house) *Hai* (great) 'great house', *Huma Gantung* (high), *Karak Betang* (split / broken family from the *Betang* house).

In various folklore there is not much to say about the existence of the shape of the roof house, based on the findings of architectural buildings in Kuala Kapuas, and Mandomai shows that, the type of roof house does exist, the possibility of architectural DNA from the roof house, as written in the book *Dayak Technology* ([Damang Salilah, 1977](#)).

Dayak architecture, built and developed with various functions and their needs at that time, according to [Salilah \(1977\)](#), [Rampai \(2005\)](#) the name of the residence that was once known to the Dayaks, namely: 1). *tingkap*, a temporary shelter from heat or rain, erected in the middle of a field; 2). *punduk*, temporary shelter for several days / weeks, mainly related to gathering or gathering forest products, established in the middle of a forest; 4). *dukuh*, a place to stay for a number of years mainly related to farming / gardening activities, was established around the field; 5). *huma*, a permanent residence for a batih family, built in the village; 6). *Betang* / longhouses, permanent residences for generations, were built in the village by several family heads who still had blood / family ties.

#### 4.3.2. The emergence of a small city called Kuta

The initial concept of the city was reflected in the state and the concept of *kuta* or *kutha*. *Kuta*, literally, can be interpreted as a residential area protected by a square-shaped wall. This wall is also a strong boundary. In other languages, according to [Herry Porda et.al. \(2017:19\)](#) cities in civilization are emanations of great traditions, and are identical with the central system of high political authority and of course civilization in hospitality. The concept of *kutagara* as other than *kuta* or city then developed into an official designation of an area characterized by parallel cities and the term city.

*Kuta* in the *Dayak Ngaju* tribe in Kapuas, Central Kalimantan, is defined as a residential area protected by a square-shaped wall. This wall is also a strong boundary. As stated by Abdul Fattah Nahan and During Dihit Rampai, the village area that surrounds / is fenced with ironwood rods that are planted upright called *kuta*, is like a fortress to defend against enemy attacks. This is a story about folklore figures in Central Kalimantan, namely Rambang and Ringkai who went to the *Tanjung*

*Pamatang Sawang / Kuta Bataguh* area to help his family, Nyai Undang. Together with Rendan from the Upper Kapuas River who brought pieces of ironwood, they then made a fortress so that Tanjung Pamatang Sawang is also called the *Kutta Bataguh* or a toughened fortress.

Schwamer explained that the population spread along the main river in the Central Kalimantan region built a *Kutta* to defend against enemy attacks or other Dayak tribes, a village surrounded by a circular fence. The existence of the *kutta* is only used for a short time and usually after a few more years is abandoned (Schwamer, 1854: 108, 219). Weber's view of the city, is the existence of a separate collection of dwellings but in a closed settlement. In this closed space, the armed / militaristic aspects of a city are mixed (because a city is a fortress) and the market aspect where various commodities are exchanged and transformation / interaction between cultures is brought together. Evidence of many findings or sites of the *Kutta* are found, such as *Kutta Hantapang*, *Kutta Mapot*, *Kutta Bataguh*, *Kutta Madehan*, and *Kutta Amay Rawang*. The age of the site is estimated from the 4<sup>th</sup> century or 301-400 AD. Same with the era of the Majapahit kingdom of the Gadjah Mada era, and the era of the Roman empire Constantine.

#### 4.3.3. "Kaleka" Dayak Village

The semi nomadic pattern generally chooses to reside along the River Basin from downstream to upstream. There are two kinds of ancient dwellings of the *Dayak Ngaju* tribe in Central Kalimantan, which are fenced-in dwellings (*kutta*) and dwellings without fences (*kaleka*). The pattern of living space is almost the same as that of *kuta*, which consists of: longhouses, granary buildings, *patahu* (small walled huts, containers for saving sacred objects, and degrees), secondary graves (*Sandung*, *Sapundu*). Outside the Longhouse layout, according to Usop, KMA in Syamsudin (2007) on the front page is (1). *Sandung* is a bone container. The process of death of the first Dayak people was buried, up to 3 years or more later the process of death of the two corpses was cremated and continued with the *Tiwah* ceremony, the bones were burned (not destroyed) with the intention of being purified, washed in the river, then through the ceremony and ancestral bones placed in stacks. The roof can be removed to place the next bone. The *Sapundu* building is accompanied by *Sapundu* (a statue of a deceased man in *Sandung*). The number of *sapundu* shows the number of ancestral bones in the stumbling block. (2) there is also a *Sanggar pantar*, located on the edge of the stumbling block, equipped with a carved (dragon) symbol function for the spirit vehicle towards *Lewu Liau* (Afterlife). (3) *Pantar Panjang* at its peak there is a carving of a *tingang* bird which functions as an intermediary to pick up spirits.

The number of residents varies, which is certainly more than *Kuta*. There are a number of reasons why some villages have strongholds, namely in the story of *Kuta Bataguh* the history of the brave brave woman leader Nyai Undang, building a *kutta* to deal with enemy attacks from other Dayak tribes, their village is equipped with a strong ironwood iron fence. While *kaleka* is a village without a fence, not equipped with a fortress, but their longhouse has a concept of defense from enemy attacks. Various *kaleka* sites are found. The results of this information are obtained from the public who deliver based on their memories. Dayak traditions when moving, they

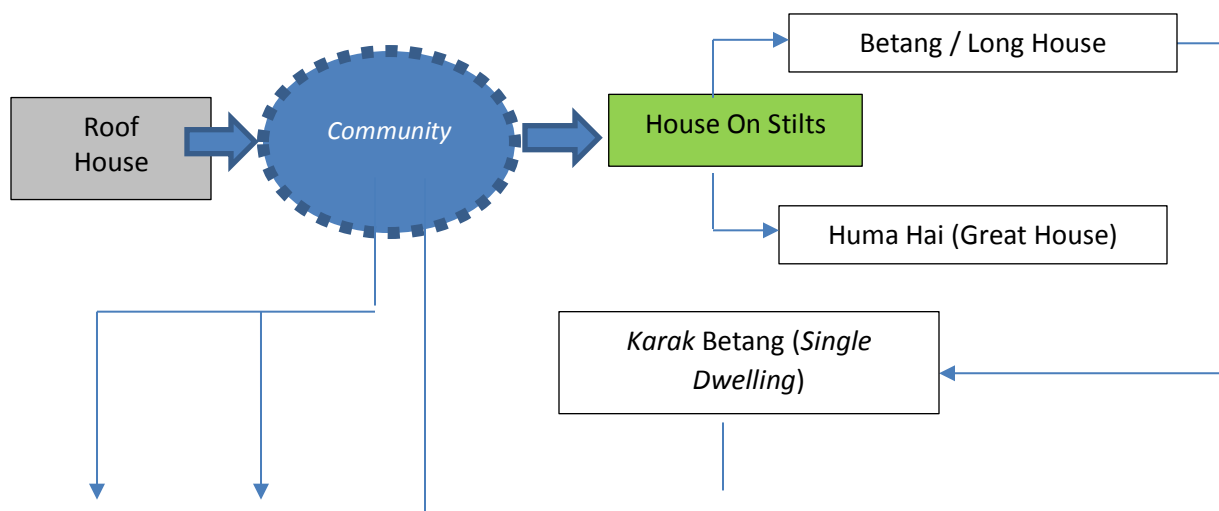
bring goods that can be brought, and those that cannot be taken are burned. Therefore, the existing sites were found the rest of the burnt debris, or which are still intact taken by the community for their building materials. The names of *Kaleka* are based on archeological findings, namely: *Kaleka Lawang Jori*, *Kaleka Dambung Gundung*, and *Kaleka Baseha*. The age of the site is estimated from the 4<sup>th</sup> century or 301-400 AD. Same with the era of the Majapahit kingdom of the Gadjah Mada era, and the era of the Roman empire Constantine.

#### 4.3.4. Dayak Longhouse in Central Kalimantan

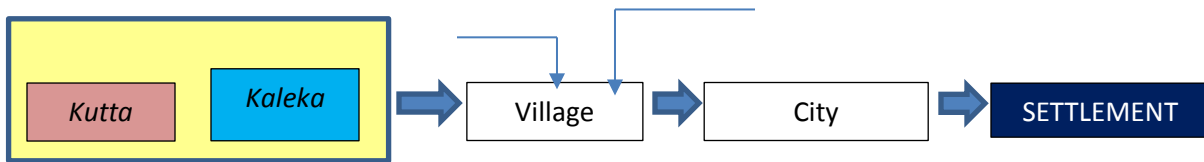
The beginning of the longhouse was built not too high (Salilah, 1977), because of the war and wild animals, they raised the building. The form of a longhouse was built facing the river, or facing east, philosophically facing east is the direction of life (the direction of the *pembelum*). The basic shape of the rectangular building reaches 100-500 m with the building width of 20-25 m, the shape of the gable, with the height of the mast reaching 4-7 m, access to go up using the stairs. The longhouse is a permanent residence for generations, built in the village by several family heads who still have blood / family ties. One of them is the house of *Buntoi*, led by a *Singa Djala*, and *Betoi Toyoi* was built by *Toyoi bin Pandji*, an elder in the village (*pembakas lewu*).

Judging from the strength, the *Betang* house building was erected solidly, built on a round pole, joists, almost all of the roof and floor buildings were made of durable iron wood. Each family is the owner of the building material space. However, the entire community is responsible for the spiritual welfare of the *paniang* house and holds ceremonies that are centered on the only element of shared property.

Each longhouse, according to Usop, KMA in Syamsudin (2007) there is no binding rule on each spatial layout, with each other longhouses varying in their spatial arrangement. According to Riwut (2012) in the space in a longhouse there are many rooms that are plots for one family's residence and each family has their own kitchen. In the front room there is a place to receive guests or as a meeting room and usually this room is directly related to the stairs (*hejan*).







**Figure 3. The Map of Methamophosis Stages of The Dayak Settlement Culture**

(Source: various sources)

## 5. Discussion

Archaeologically, the development of old houses, inhabiting rock shelters, inhabiting natural caves (*abris sous rouche*), making simple wooden dwellings and lean to / wind shelter, moving towards the wind shelter waters such as rivers and beaches due to basic food needs such as fish, began to build houses on stilts to avoid water. After becoming familiar with farming, humans began to settle in a relatively long time and built permanent houses. Hudson (1972: 21) in Waterson (1997: 84), the settlement of the Ma'ayan Dayak tribe, there are still several longhouses, very high, which still survive from the 1880s; the building process took a long time, namely *Batang Toyoi* in *Tumbang Malahoi*, *Gunung Mas* Regency, built in 1869, took 7 years to build, together with relatives, worked together to collect selected wood materials and built gradually, until now the building *Batang Toyoi* still stands firmly and is inhabited by descendants of Toyoi Bin Pandji. Once the need for defense ceased, they were almost all replaced by new ones with much lower buildings. Guerreiro (2003: 301) until the 1950s, most Dayak tribes who lived in longhouses began to move, every ten or fifteen years to the same river basin. There are many reasons for moving, namely: bad omens, dreams, epidemics, religious beliefs, series of deaths, or the location of fields, hunting grounds and fishing farther from their villages. The migration process, residential building materials from hard wood / iron wood / ironwood used on poles, beams, rafters, cross beams, floorboards can be reused several times.

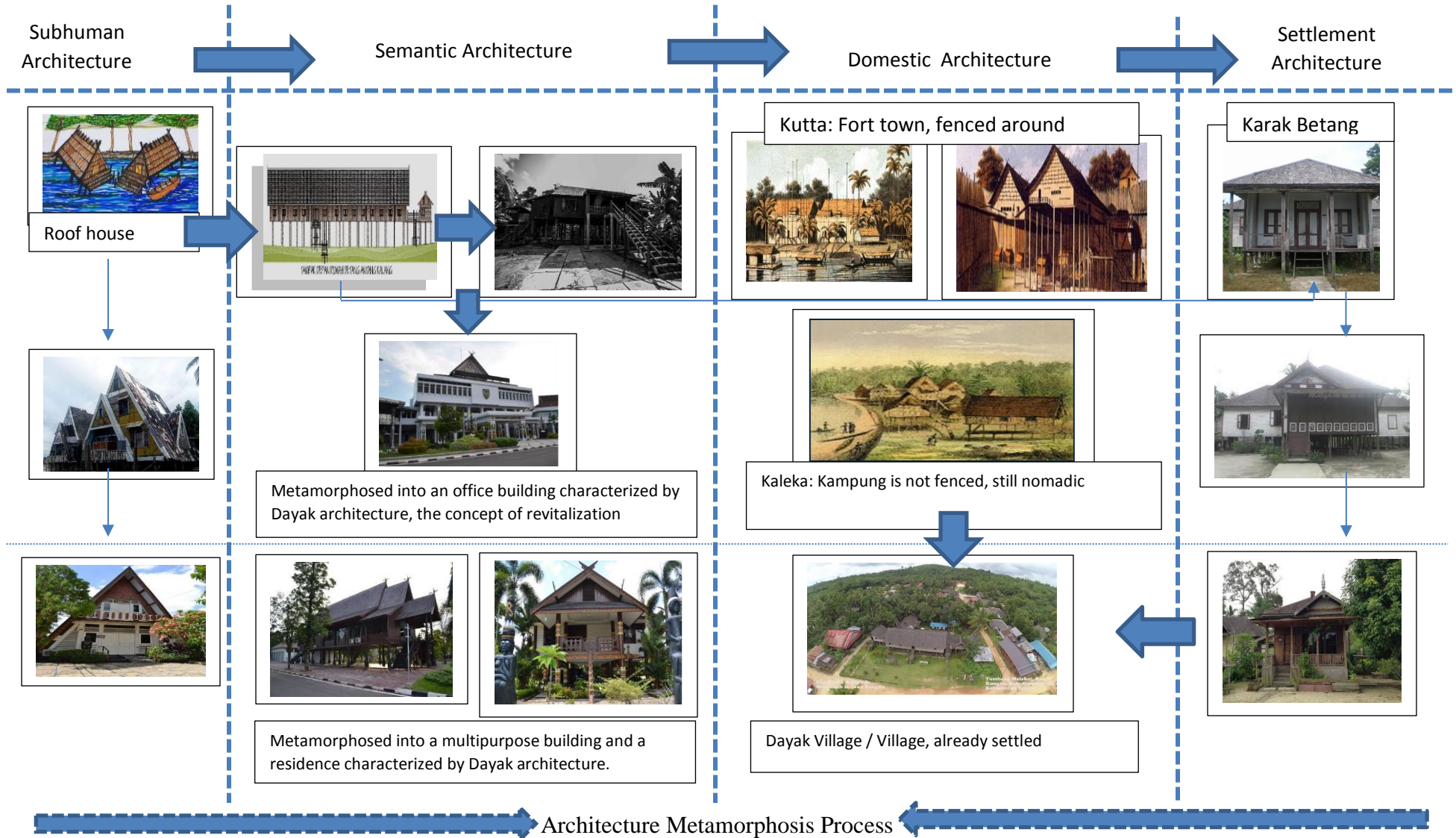


Figure 4. Times of Process Methamophosis of The Dayak Settlement Culture

*(Source: various sources)*

In the case of migration, the Dayak only take their valuables, such as gongs, clothing, weapons, equipment, baskets, and movable property. Genesis that occurred in the past resulted in a change that could be said to mutate to become stronger, the Dayak dwelling patterns showed a long time travel process, and the changes that occurred were influenced by an event to stay afloat, and protect themselves. As quoted in historical stories about the *Kutta Bataguh*, why was it made a *kutta*, which is to make a stronghold in their village that will be attacked by the enemy, and build a longhouse that is strong and sturdy. *Kutta*, could be an existing village, and equipped with a fence or fortress for a condition of resilience. Ba-Kutta village is the longest inhabited for 10-15 years, if deemed safe, then they move their dwelling to a new environment. The types of buildings contained in this *Kutta*, such as: there are longhouses, barns, guard houses, surveillance towers, fortresses, logistical houses, *sapundu*, stumbling blocks, *pasah patahu*).

Dayak tribal longhouses are also of a different type, *huma hanging*, *betang*, *huma hai*. Based on available evidence, showing the Dayak tribe since 4 BC has been familiar with technology in terms of building houses, the process starts from trial and error. In terms of building they also see from the needs of the building is used and functioned as what? Was built for hunting purposes in the forest then built a hut (*pasah*), built for in the garden or in the fields called a *pasah tana* building. The stages of metamorphosis of Dayak architecture in general, based on time travel, can be seen in the picture above. finally since more than 150 years ago no more community activities have been found in the hinterland to build new *betang* houses like those of previous generations. *Betang* families tend to get out of their neighborhoods to build new dwellings according to the demands of life's needs as well as adjustments to the process of changing social, cultural, environmental systems that occur simultaneously and comprehensively continuously. and which can be seen in the picture [figure 4](#).

## 6. Conclusion

This paper shows that Dayak architecture is a vernacular architecture that was born from the people, and evolved in detail, which can be seen from the behavior and elements of the building, and indirectly kinship relationships and community culture that live together in a longhouse, so that their civilization shows kinship close, solid, and strong to protect each other in their survival, and when they migrate to find a new location, they also carry out a repetitive process also at that place, and then as the level of Dayak human civilization develops, advancing, with technological knowledge they have then their level of culture changes towards a new form, because culture is essentially dynamic in the concept of humans as social beings.

The architecture of the longhouse, the layout of the interior does not bind to a rule, the layout in each longhouse varies and is different, this can be seen when you visit the longhouses in Central Kalimantan alone or throughout Borneo. The concept of life of the Dayak people believe that their life is close to their ancestors, and the ancestors can help them when they need it, so every long house or other house (which still adheres to *kaharingan* beliefs) has a stumbling block (a small house where the ancestral bones are stored in the second burial ceremony / second burinial). The elongated shape of the house, the repetitive spatial pattern, indicates that the Dayak tribe is a pragmatic nation, with the rationality of thinking and living in community as the key to their life at that time.

This rationality when they form their resilience space, spatial designs that are arranged in detail, which occupy the vestibule are the eldest who have the skills to protect, while the children, are protected in the living room. The concept of a longhouse space is everything for Dayaks. Likewise the space for education for their boys and girls, boys are expected to have hunting skills, and live in the forest, while girls are taught to have aesthetic handicraft skills, namely making fine mats from rattan, and rattan bags which called the *kuwu* room. Therefore studying part of the life of the Dayak tribe is an interesting thing to study as an interesting reference for the continuity and continuity of culture amid modernization and transformation at this time.

## 7. Acknowledgments

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