

# Changes of architecture expressions on *Lanting* House based on activity system on the river

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**Abstract:** *Lanting* house is a traditional house from Banjar, South Borneo, Indonesia. It floats on the river as an expression of Banjarese culture adapted to the river. In the past, *lanting* house grew simultaneously with the growth of river transportation. Nowadays, settlements develop more on land, and the river transportation started to be declined. This affected the *lanting* houses; especially examined from the activity system, the significance of river by its inhabitants changed *lanting* house expression. Using qualitative approach, this research aims to find the changes in architectural expression in *Lanting* House based on the phenomena found. Results shows that most room layouts and buildings frontage are not oriented towards the river anymore. Elements that supports activities connected to the river is also gone, this is because essential activity of the river like river transportation is long gone.

**Keywords:** Change of Expression, *Lanting* House, Activity System, River

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## 1. Introduction

Rivers in Banjarmasin have major role and function in the live hood of the people. Daily activities involve and use the river that creates river culture. The river culture means that the way of life, behavior, and adaptation of the people to live are influenced by the river for many generations (Nurfansyah, 2006). One type of Banjarese traditional houses which demonstrate riverside culture is the *lanting* house. From eleven types of Banjarese traditional houses (Semana and Irahmana, 2001), *lanting* house is the only type constructed floating on water. Factors like local natural condition, available natural resources, human resources and local culture, influenced housing that adapts to the environment (Sunarningsih, 2002). Floating *lanting* house adapted to the local environment that is flexible to the changes of water level as the form of Banjarese culture.

However, the existence of *lanting* house is decreasing with the changes of time (Mentayani, 2007). The habit of using *lanting* house along Martapura River (main river in Banjarmasin) is starting to disappear because of the growth of the city. Kusliansyah (2011) stated that physically-spatially Banjarmasin transformed from a water city to land city and its

development. This changed the river culture to land culture.

Physically, the form of culture can be seen from the work made by the people (Koentjaraningrat, 1985). *Lanting* house is the physical form of Banjarese river culture; now it also experiences changes. Change in *lanting* house is formed by building expression to identify the importance of river as house location. Consequently, there is the need to identify the architectural expression on *lanting* house concerning the significance influence of river to its inhabitants. To explore *lanting* house expression according to Rapoport's theory (2005), the shape of built environment (in this case *lanting* house) can be examined more specifically using activity system and system of setting.

## 2. Literature Review

### 2.1. Culture and Built Environment Concept

Culture is close in relation to built environment as they both are man-made. Built environment as part of culture is formed by the people's personality, culture and way of thinking and doing which were shown in their activities (Daeng, 2008).

According to Altman and Chemer (1984), there are 5 important factors of association between culture and environment: 1) natural environment; 2) environment orientation and way of life; 3) environment cognition; 4) environment behavior; and 5) environment as final product. These 5 factors are interconnected to show the relation between culture and built environment.

Culture can be seen in a form of complex activities of the people (Koentjarningrat, 1985). Culture is very broad; one small part of culture is man-made physical environment. According to Rapoport (2005), culture can be seen from conceptualizing built environment such as: 1) arrangement of room, time, meaning, and communication; 2) background system; 3) cultural landscape; 4) configuration of permanent

elements (infrastructure, building, wall, floor, ceiling, roof, foundation, etc), semi permanent elements (building, interior and exterior finishings), and nonpermanent elements (humans and their activities, behaviors, clothings, vehicles, and also animals and plants).

To understand culture in built environment more easily, Rapoport (2001, 2005) dismantled culture vertically and horizontally. Vertically, culture can be elaborated into tangible social expression with potential for observations; this includes kinship, family structure, social role, social network, status, identity, institutional, etc. Horizontally, culture can be explained into life philosophy such as values. These values are divided into two, first is about ideals, images, scheme, meaning, etc; second is about way of life and activity system.

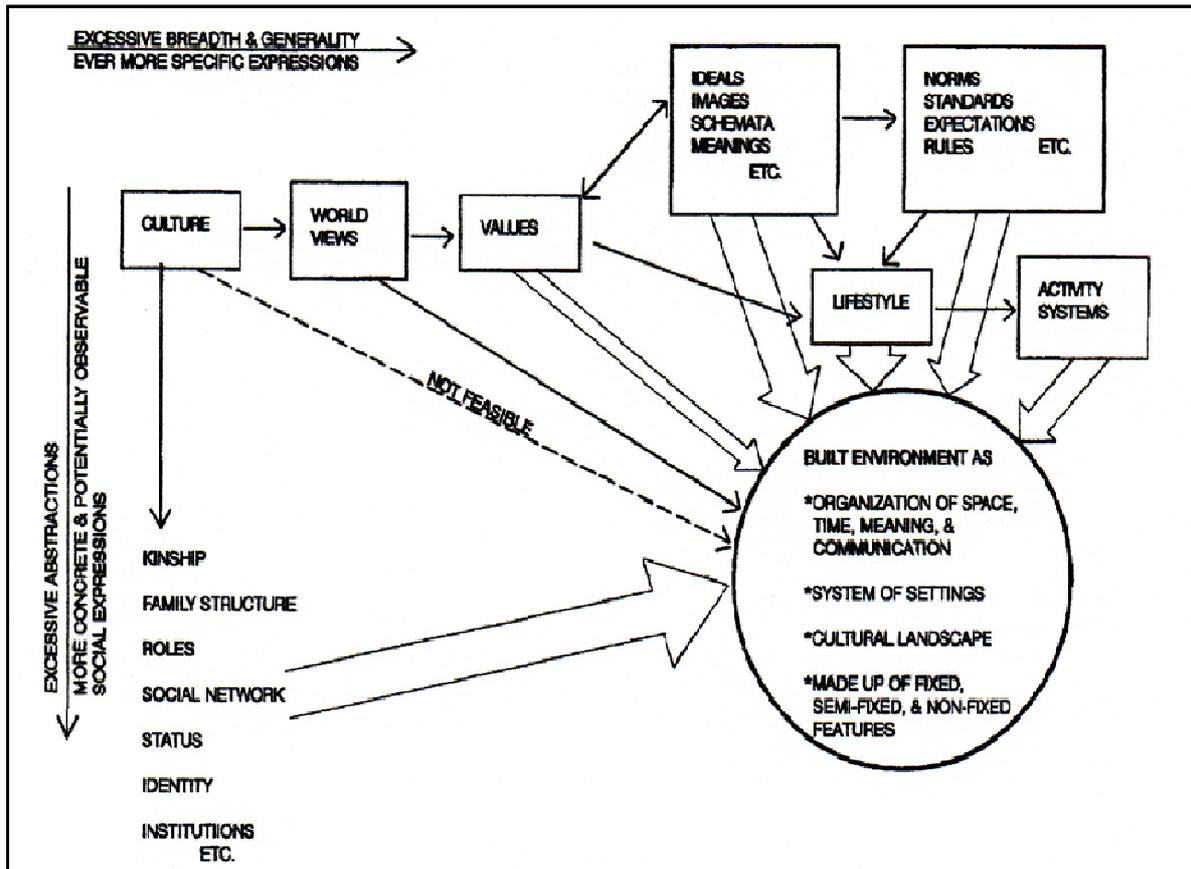


Figure 1. Dismantling of “culture” and relating its expressions to built environment

Source: Rapoport, 2001

### 2.2. Architecture Expression

According to Surasetja (2007), the expression of building shapes is influenced by three aspects: function, structure, and culture. However, Muchammad (2010) argues that expression in architecture includes three components: message, media, and receiver. Message is seen as architectural practice and knowledge is design. Media is the outcome of architecture such as building, (including shape of building, such as façade, envelope, etc; space and its components such as roof, wall, floor, etc). Receiver means the response the viewer gave to architecture design, it can be measured by design quality and

building performance. Receiver is the dweller/inhabitant or community that can see that building.

### 2.3. Changes in Housing

Housing is not static, it is dynamic, and it evolves with changes of time. Housing as a place for daily activities, is adjusted to fulfill the human needs. It illustrates current behaviors, culture and way of life. Wulandari (2010) explained the main factor of changes is the expansion of accessibility in surroundings (circulation and streets), and the effects of modernization in globalization.

Changes in housing include change in construction,

materials, shape and room layout. These were done to satisfy the inhabitants' needs and wants; to improve their life quality (Ariffudin, 2009). According to Lang in Supriyanto (2000), changes in housing occurred by 2 factors: life requirements and transformation of its surroundings. Daeng (2008) stated that activities influenced room requirements, whereas culture values influenced use of room.

### 3. Research Method

To identify the changes of architectural expression on *lanting* house based on activity system on the river, the research method used is qualitative descriptive. By using this method it is expected to find the natural phenomenon of the changes that happened.

Area of research is *lanting* houses along Martapura River, Seberang Mesjid area, Banjarmasin, South Borneo, Indonesia. Martapura River is a river that flows in downtown of Banjarmasin. There are still 10 *lanting* houses in this area. Field surveys are taken to collect data the room layout, frontage, construction, and materiality. Observation includes sketches and documentation, also doing in-depth interviews with inhabitants about the changes in *lanting* house expression in relation to activities on the river. Data collected are analyzed qualitatively to find clear understanding about changes of *lanting* house expression.

## 4. Result and Discussion

### 4.1. River Culture and Lanting House Expression

The existence of *lanting* house in Banjarmasin started from early 19<sup>th</sup> century. The development of *lanting* house came from 3 ways:

- Banjarese community needs a moveable housing to accommodate their occupation as wood gatherer in the woods. *Lanting* house is portable, it can be moved according to their place of job (Mentayani, 2007).
- River is the main transportation mode. To fulfill the needs of the ships and boats, the people sell their products by the river; they use *lanting* to get near their customers. Here, *lanting* also functions as shop/store (Dahlioni, 2006).
- New settlers from Hulu Sungai (Nagara), well-known as a community that trades using the river. This new settlers brought their *lanting* house and settled in places they considered preferable to live and trade (Dahlioni, 2006)

According to Muchammad (2010), *lanting* house expression can be analyzed from the layout plan, building frontage, construction and materiality. Building expression is related to inhabitants' activity system towards the river.

#### 4.1.1. Room Layout (Plan)

*Lanting* house has a simple rectangular room layout, positioned lengthwise to the river to minimize water current effects on building structure. *Lanting* house size is about 4x6m

to 4x7m. The size is not big because of the bamboo foundation bearing load.

In this research, the house plans are separated into 3 types according to the house orientation to the river:

#### 1. Room Layout I (Figure 2);

Made up of 3 main rooms: living room, bedroom, and kitchen; faces the river and the land, has access to both sides; existence of deck which faces the river and land, the one that faces the river functions as bathing area while the other faces land as washing area. In this type of layout, living room is multifunction with access to both river and land.

#### 2. Room Layout II (Figure 3);

Similar to Room Layout I, this type is made up of 3 main rooms: living room, bedroom and kitchen; originally this type faces both river and land, but the river access is closed as it was not needed; deck is found both on the river and land side, but the one on the river side is only used occasionally. Access to the river side is closed to function as bedroom and kitchen.

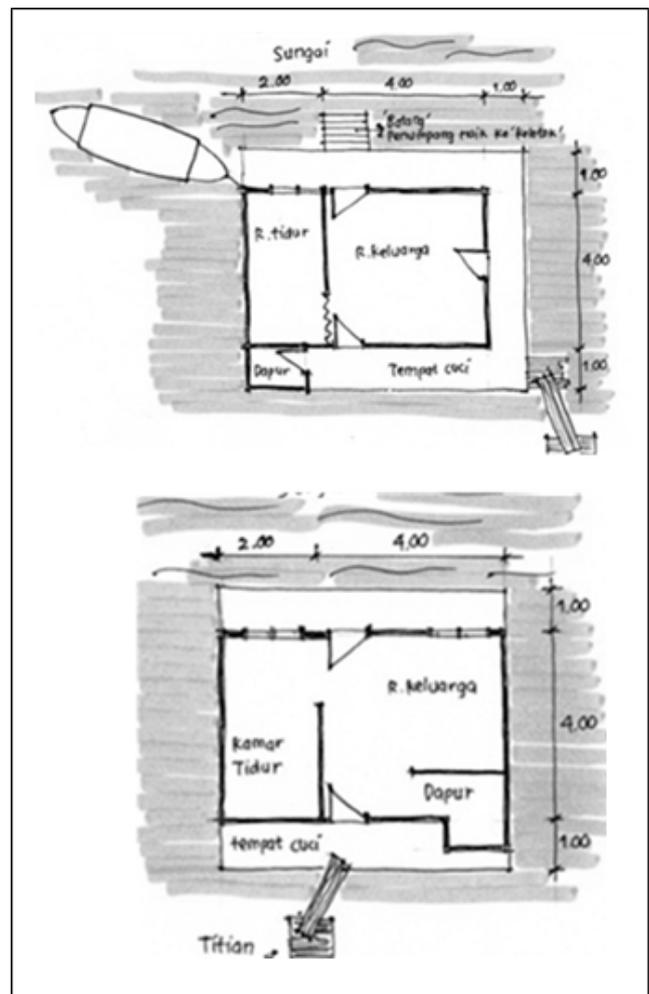


Figure 2. Lanting house Room Layout I.

Source: field data, 2014

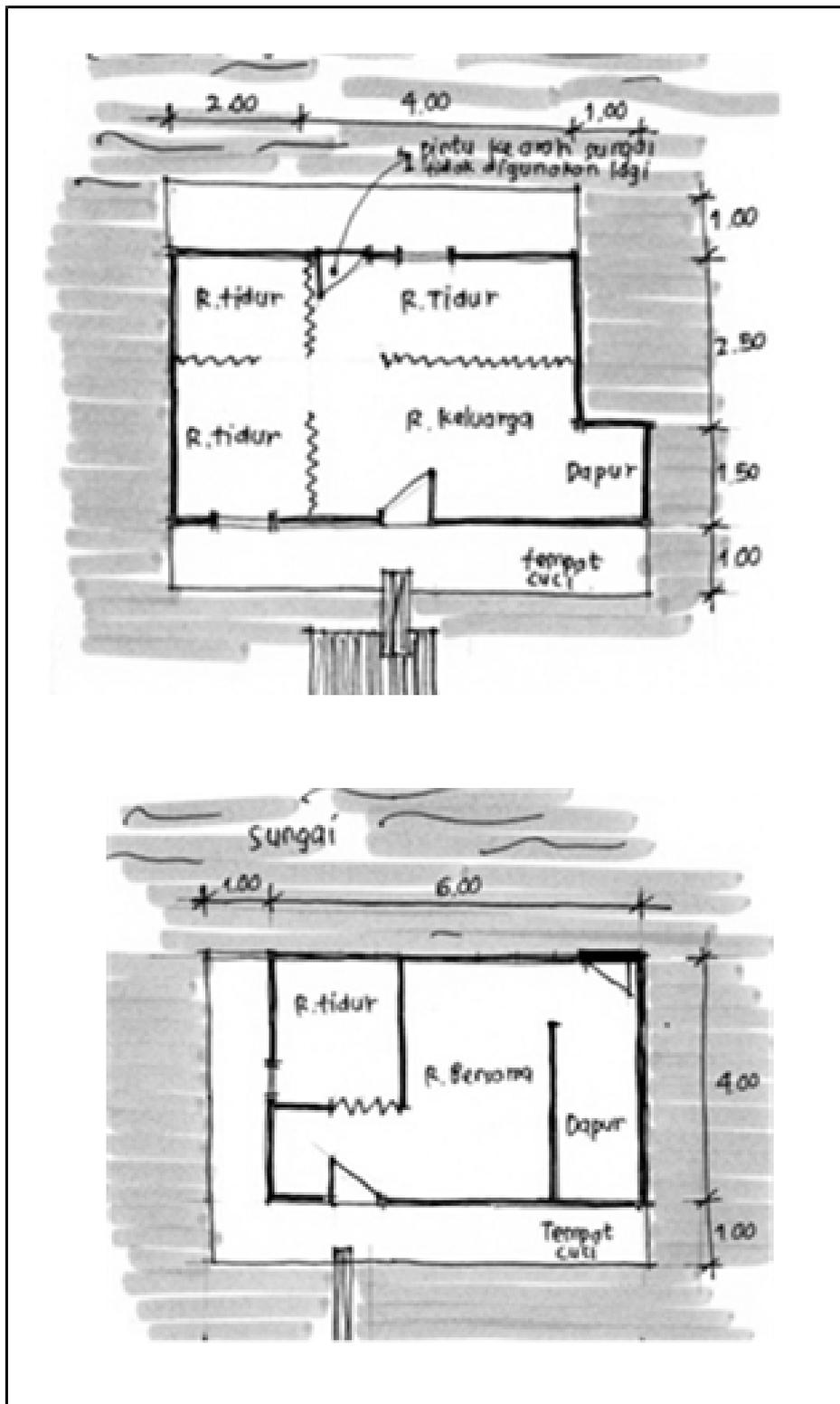


Figure 3. Lanting house Room Layout II.

Source: field data, 2014

3. Room Layout III (Figure 4);  
Similar to Room Layout I and II, this type is also made up of 3 main rooms: living room, bedroom, and kitchen;

there is no river orientation nor river access; deck is found on land side; washing area is at the deck which faces land; there is bathroom/WC linked to the building.

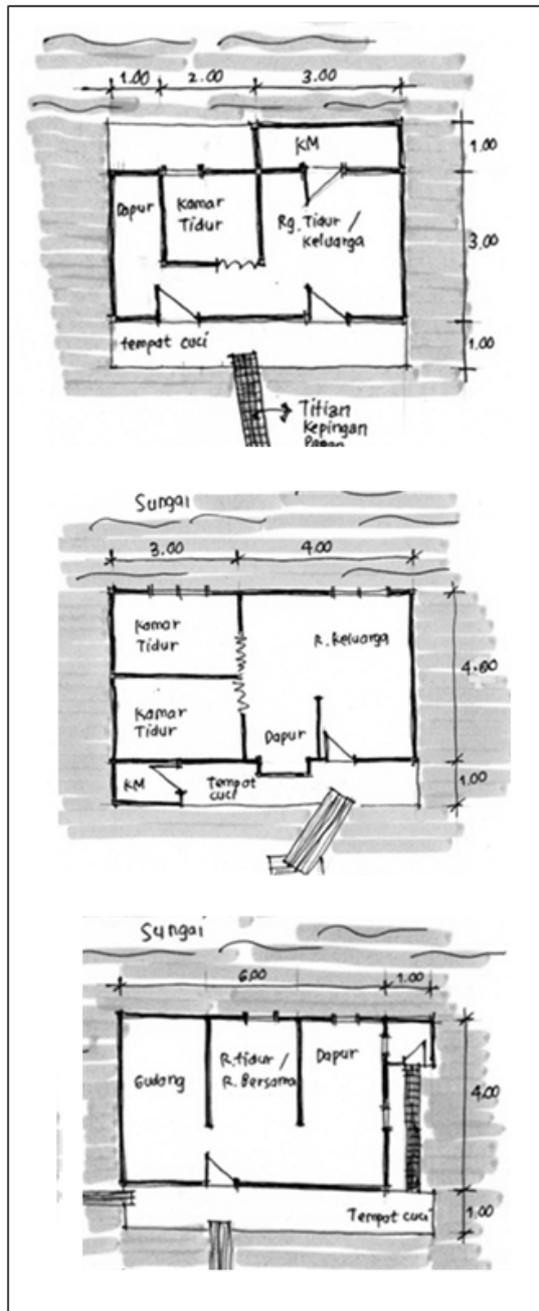


Figure 4. Lanting house Room Layout III.

Source: field data, 2014

#### 4.1.2. Building Frontage

According to Surasetja (2007), building expression can be influenced by 3 aspects: function, structure, and culture. On lanting house, functional building expression is found on the tires arrangement near the foundation that faces the river. These tires are part of the additional building's facade; its function is to avoid the building structure from water currents, and mainly to minimize impact if boat/ship/kelotok stopped by. The existence of tires showed the cultural aspect on the building frontage, it shows the river is still used as mode of transportation. Other than the tires, the river culture influence can be seen by the access/door that faces the river. These 2

elements showed the existence of activity that connects with the river (Figure 5)



Figure 5. Lanting house frontage from the river.

Source: Personal documentation, 2014

#### 4.1.3. Construction and Materiality

Lanting house expression is also influenced by structure system (construction and materiality). Construction and materiality can explained as followed:

Foundation can be made of wooden log, bamboo, or GIV pipe.

- Bamboo; 100 bamboo sticks are tied together; each bundle is linked using pegs to each floor beam. There is 1 bundle of bamboo per 1 meter width of house. The bamboo foundation is changed once every 3 years to avoid decay.
- Wooden log; each log is about 1m in diameter, but since 1990s this kind of log is harder to find so it is switched to bamboo. Existing lanting houses that still use logs are leftover from the past.
- GIV pipe; it is made of metal with 80-100cm diameter, welded together including partitions; this type is the newer innovation of floating foundation.

Floor beam is from iron wood (*Eusideroxylon zwageri*) with apron 5/10 and floor beam 5/7. Flooring is from iron wood planks for the deck and lanan wood planks for inside. Column is from iron wood 6/8 at corners of the building and every 2-3m width. Wall is made of lanan wood horizontally placed, and plywood for interior partition. Roof structure is from lanan wood 6/8 for roof truss and purlin, 5/7 for common rafters and 3/5 for roof battens. Roof cover is from corrugated zinc or sago palm leaves (*rumbia*).

Lanting house is a simple square building with gable roof. This simple shape and roof is to accommodate the foundation load bearing capacity. Materials used are also lightweight to

ensure the light load for the foundation, to make it easier to float.

**4.2. Activity System Influence to Changes in Lanting House Expression**

Culture is dynamic, not static. Changes in culture will influence building expression, including room layout (plan), building frontage, construction and materiality. Activity system is specific in cultural expression; it derived from way of life. According to “dismantling culture” (Rapoport, 2005), activity system is the most concrete of cultural expression.

Main aspects of activity system are function and meaning. Changes in *lanting* house expression according to activity system can be explained as followed:

**4.2.1. Plan in Lanting House**

Daeng (2008) stated that activities influenced room requirement, whereas culture values influenced the use of room. *Lanting* house encountered changes because the inhabitants’ activities changed and developed through time. Room requirements also change to accommodate those activities.

*Table 1. Changes in house plan of lanting house expression*

Past Condition	Present Condition
<p><b>Function</b> Historically, <i>lanting</i> house is functioned as floating shop on the river to support the busy water transportation. A few is functioned as both shop and home. As a shop, there was no partition in the plan. If the house is functioned as a shop and home, it is separated into 2 main rooms: the store and the living space was multifunctional for living, sleeping, eating and cooking.</p> <p>Past Condition</p> <p><b>Meaning</b> With the busy river transportation at this era, <i>lanting</i> house dominantly faced the river, the main access had wide opening towards the river. River had big meaning to the inhabitants of <i>lanting</i>, not only as transportation but also other activities that was related to the river. Access and deck that faced the river had big meaning to the inhabitants. They used it for daily activities such as ‘parking the boat, calling water taxi, buying daily need from passing vendors/sellers, bathe, wash, etc.</p>	<p><b>Function</b> Further development, <i>lanting</i> house was used only for living, not used as double function as shop and home. This was influenced by modernization of globalization with the development of road travels; river transportation was slowly abandoned. With the change of function, there was also a change in house plan to accommodate the activities; <i>lanting</i> house was separated into living room (multifunction), bedroom, and kitchen.</p> <p>Present Condition</p> <p><b>Meaning</b> In current condition, river has meant less to the <i>lanting</i> inhabitants. This was due to the increase of land transportation and the decrease of river transportation. As seen from the house plans, access to the river is closed or not built at all. The deck facing the river is also gone. There are 3 patterns of changes with the river-facing deck: Deck is still existed but unused because the access is closed off. Deck previously is existed, but the function is changed into bathroom/WC with new built massive walls. This also meant no connection to the river. River-facing deck was eliminated altogether during house renovation as it was considered not needed by the inhabitants.</p>

Source: Analisis, 2014

Other than the changes in function and meaning above, there is one room that still maintains its original function. All *lanting* inhabitants still use the land-facing deck as washing area. This washing area shows that the river culture (bathe, wash, etc) is still existed. Washing area at the land-facing terrace showed that previously land was considered as back of house, whereas river is front of house.

**4.2.2. Building Frontage**

*Table 2. Changes in building frontage of lanting house expression*

Past Condition	Present Condition
<p><b>Building Orientation</b> As main transportation mode, river was the building orientation. <i>Lanting</i> house dominantly faced the river. This was also influenced by its function as shop. (Figure 6)</p>	<p><b>Building Orientation</b> With the growth of land transportation, <i>lanting</i> house orientation was changed towards the land. Shop function is non-existence. A few <i>lanting</i> still have river orientation and access, but most do not have them. (Figure 7a and 7b)</p>



**Figure 6.** Building orientation in the past condition. *Lanting* house dominantly faced the river. This was also influenced by its function as shop



**Figure 7a.** Building orientation in the present condition. In the past, the *lanting* house function as a shop, but now is changing become a house for living only

Source: Personal documentation, 2014



Figure 7b. Building orientation in the present condition. *lanting* house orientation was changed towards the land. Shop function is non-existence.

Source: Personal documentation, 2014

Past Condition	Present Condition
<p><b>Semi-fix elements</b> Semi-fix elements as additional elements to building frontage used tires arrangement near river-facing foundation construction. There was only 1 house that still uses these tires to avoid impact from boat/klotok. This house still uses tires because the inhabitants' occupation is a klotok driver (Figure 8)</p>	<p><b>Semi-fix elements</b> Semi-fix elements such as tires arrangement is no longer used by most <i>lanting</i> houses. Activities involving the river significantly decrease; the inhabitants considered the tires are no longer needed as element on their <i>lanting</i> house (Figure 9)</p>

Source: Analisis, 2014



Figure 8. Semi-Fix element in the past condition. Semi-fix elements as additional elements to building frontage used tires arrangement near river-facing foundation construction

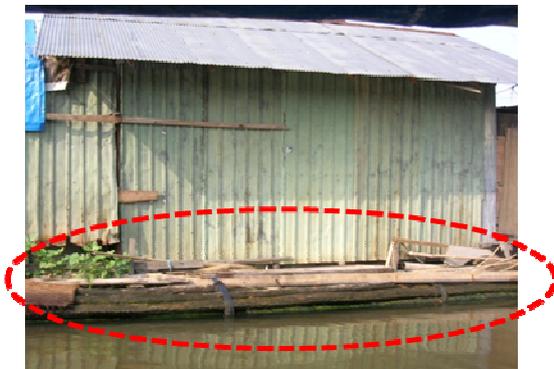


Figure 9. Semi-fix element in the present condition. Semi-fix elements such as tires arrangement is no longer used by most *lanting* houses.

Source: Personal documentation, 2014

#### 4.2.3. Construction and Materiality

Changes in *lanting* house expression for construction and materiality are found on the foundation material.

Table 3. Changes in construction and materiality of *lanting* house expression

Past Condition	Present Condition
<p><b>Foundation</b> Wooden log with 1m diameter was still easily found in Kalimantan. Using this log, <i>lanting</i> house dimension can be made longer because of the strong load bearing capacity.</p>	<p><b>Foundation</b> Wooden log with 1m diameter is long gone. <i>Lanting</i> houses that still used logs are only a few, beside using recycled logs from the previous house, the new foundation is combined with bamboo. The construction uses bamboo mostly as foundation, which is bamboo tied in a bundle each 100-150 bamboo. With this foundation, <i>lanting</i> house dimension cannot be very long, in accordance to the dimension and strength of bamboo. One weakness for this type of foundation, in every 2 years it is needed to be renewed. This is a complication for the inhabitants, they need regular maintenance cost to repair the foundation to keep their house floating (Figure 10)</p>

Source: Analisis, 2014



Figure 10. Foundation Construction in present condition is using bamboo

Source: Personal documentation, 2014

The construction of *lanting* house can see in figure 11.

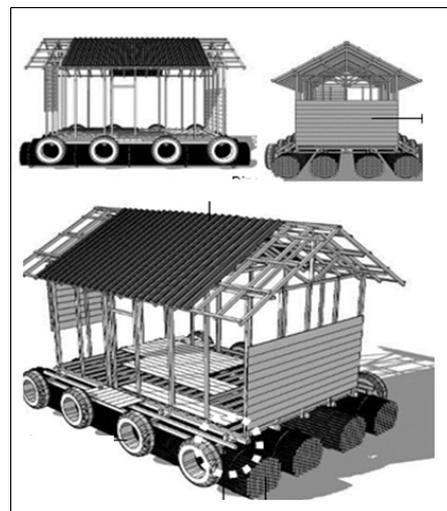


Figure 11. The construction of *lanting* house

Source: Dahliani, 2013

## 5. Conclusion

Changes in building expression can be seen from specific culture expression which is activity system. Activity system of *lanting* house is connected with its site on the river. Changes in expression can be found in room layout (house plan), building frontage, construction and materiality.

- There was change in function and meaning of the building concerning river transportation activities; this changed the *lanting* house expression with its room layout.
- There was change in building frontage as building orientation and access changed from the river to land; it showed a change in river system activity.
- There was change in usage of construction material that can float on water with the shortage of wooden logs; this influenced the change in house dimension.
- The changes in *lanting* house is according with Daeng's theory which stated that activities influenced room requirements, whereas culture values influenced use of room. The dimensions of *lanting* house did not have a significant change, but the space inside which undergo changes with a clearer division of space to meet the inhabitants activity.

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