CHARACTERISTICS OF TRADITIONAL HIGH RIDGE HOUSES IN
BANJARESE KAMPUNGS, SOUTH KALIMANTAN, INDONESIA

— A study on building form and structure —

インドネシア南カリマンタン・バンジャル人集落の RBT (屋根の高い家)

— その1 建築的特徴 —

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The objective of this study is to identify the formal and structural characteristics of a traditional house type the high ridge-house “*Rumah Bubungan Tinggi* (RBT)” in South Kalimantan, Indonesia and the process of conserving it as cultural heritage. The RBT is a traditional style of Banjarese house, which has changed in response to the development of social groupings. RBT in urban areas are clearly different from those in rural areas, and reflect differences of local environment, lifestyle and industry. We investigated a total of 13 RBTs (4 RBTs in 1 urban area and 9 RBTs in 2 rural areas). We introduce the general principles of RBT design, then analyze the floor plan, side elevation, and construction techniques. We present an evaluation of the RBT of South Kalimantan as cultural heritage and a framework for understanding the relationship between the houses of the three areas investigated.

Keywords : *Rumah Bubungan Tinggi* (RBT), characteristics, longhouse, kampung, Indonesia

ルマー・ブブンガン・ティンギ(屋根の高い家), 特徴, ロングハウス, カンボン, インドネシア

1. Introduction

The *rumah bubungan tinggi* (RBT) is the commonest form of construction of the traditional Banjarese house¹⁾ in South Kalimantan, Indonesia. Figure 1 shows the basic cross-shaped arrangement, the tall gabled roof, and the long front eaves that are distinctive features of this type of house, which is found in most of the settlements in the mountainous area, the flat land, and along the river banks throughout the Kalimantan region. The RBT design satisfies the need for a good living space and reflects the tight relationship within family groups based on Banjarese cultural concepts. In South Kalimantan, the RBTs in urban areas are clearly different from those in rural areas, reflecting differences in life-style and environment.

Fig.1 RBT of Banjarmasin in 1910
(Source: KITLV, The Collection of Royal
Netherland Institute)

Fig.2 Keraton-palace
Banjarese Kings,
1853-1854

Fig.3 Raft house in Ban-
jarmasin, 1899

The first RBT was built as the central building of a Banjarese palace (Fig. 2) that existed from 1526-1612²⁾. The first Banjarese king authorized people to build their houses in the same style as the RBT, and it was popular among Banjarese royalty and aristocrats from the 16th to the 19th centuries³⁾. The RBT developed together with the Banjarese *kampungs*⁴⁾. *Kampungs* originated as urban settlements for maritime traders and craft specialists surrounding the palaces of the kings and were distinct from rural villages, though the term now generally refers to an urban district. According to Saleh (1958), the RBTs were surrounded by scattered groups of raft houses and longhouses for the common people. These raft houses were made of bamboo and wood (Fig. 3).

There were seven *kampungs* in the Banjarmasin area during the 15th and 16th centuries⁵⁾, and each *kampung* had its own *patih* (the chief of the district). When space in the *patih*'s longhouse became limited, the building was enlarged. The pattern of settlement shifted dramatically as the number of houses

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Fig.4 Map of Kalimantan and Observation Area in three neighbouring cities (Martapura, Banjarmasin, and Marabahan).

Source: (a) Depart of public office province of South Kalimantan, 2006 (b) BAPEDA Kabupaten Banjar and Barito Kuala, 2006

in the coastal area increased to over 300 in 1612–1618. The longhouses were built on tall pillars to keep them above the water level⁶⁾ and there were groups of longhouses all along the coastal area. The government system and territorial divisions were changed three times in the period 1526–1905 under Dutch rule⁷⁾. A palace was built and developed in Martapura from the 17th to the 18th centuries. From the 15th century until the middle of the 19th century, various events affecting its urban character and growth pattern occurred in Banjarmasin. A gridded road system was laid out by the Dutch and houses were relocated along roads between 1959–1962. The number of rivers has decreased due to human intervention.

As a result of the cultural transformation accompanying modernization, new RBT are no longer constructed. With the development of small, simple houses⁸⁾, the original RBTs began to be demolished. At present, the linear settlement pattern and building form retain much of their original appearance, and many traditional houses can still be found in the old *kampung* sites. Currently, the complex social groupings and kinship patterns are steadily disintegrating and are being replaced gradually by nuclear families as independent units. Changes in the form of buildings and the organization of social groups reflect the development and the history of the Banjarese *kampung*. Therefore, although RBTs have not hitherto been considered as cultural heritage, they merit conservation as important evidence about the development of the native Indonesian residence.

Studies of the RBT are not numerous but, Bani and Ira (2007) described the general construction of RBT in the Teluk Selong (TS) district of Martapura, while Saleh (1958)⁹⁾, and Ras (1968) documented the history of South Kalimantan¹⁰⁾. However, there is no research study purely concerned with the RBTs of the three neighbouring cities of Martapura, Banjarmasin and Marabahan, with which this paper concerned.

2. Objective and Methodology

South Kalimantan, the smallest of Kalimantan's four Provinces, has about 2.9 million inhabitants living in an area of 37,660 sq. km¹¹⁾. Census data indicate that most Banjarese people (80%) in South Kalimantan live in riverfront areas. Administratively, South Kalimantan is divided into districts (*kota*), rural districts (*kabupaten*), sub-districts (*kecamatan*) and villages (*kampung-des*). This study is focused on the district and rural district divisions of South Kalimantan, and is concerned with the preservation and conservation of traditional houses¹²⁾. First, a social survey was conducted in April – May 2006 in an attempt to understand the cultural model. This survey considered historical aspects, social composition (household and groups), and spatial symbolism. Second, a measured survey of RBTs was conducted in May – June 2007, in which the buildings were recorded and orientation, room function, and construction materials were noted. In this paper we discuss building form and structure (We propose to discuss their context and setting in a future study).

We investigated the context (Table 1&2), and we interviewed several architecture students at the University of Lambung Mangkurat to determine the concentration of RBTs in each area. The RBTs we surveyed were concentrated mainly in the areas of Martapura, Banjarmasin, Marabahan, but there are also examples surviving in Kandangan. We chose these areas on the basis of historical background and development but we did not include Kandangan due to the limited time available. According to Seman and Irahma (2006), Banjarmasin has the largest and earliest surviving RBTs. It is possible that many RBTs may still be found hidden behind later construction. We surveyed four *kampungs* in the Banjarmasin and eight *kampungs* in the rural districts area of Martapura and Marabahan (Fig.4). We tried to select RBTs which retained their original appearance inside and outside for our survey.

Table 1 Characteristics of observation areas

(a) Profile of 3 cities in South Kalimantan	
Banjarmasin: 72 sq.km, the smallest town with high density population in Kalimantan 5% growing average almost landuse dominated for settlement 3.343 (Statistic,2007), 1st Kingdom period established in the 16 th Century (Saleh,1958)	
Martapura: 49 sq.km, Islamic dominant characters and life style, 40 km from Banjarmasin, second Banjarese Kingdom periods in the late 16th C (Ras, 1977)	
Marabahan: 20 Ha, the center of trading during Hindu periods (1400-1526) (Ras, 1977), There are Banjarese, Bakumpai Dayaks, Javanese, Balinese, and Sundanese (BPS, 2003)	
(b) Profile of 4 <i>kampungs</i> in Banjarmasin	
Kuin Utara divided into 2 part: Kuin Utara 1 and 2. the 1 st <i>kampung</i> developed since the Sultan period, cluster densely Banjarese house, Surgi Mufti: 10.803 people, 2.05 sq.km, a district center of north of Banjarmasin, linear grid dwelling pattern, Sungai Jingah: 9,437 people, 1.95 sq.km, located in the north of Banjarmasin and still familiar with water activities. The 2 nd <i>kampung</i> developed after Kuin since the Sultan period.	
(c) Profile of 7 <i>kampungs</i> in Martapura	
Kampung Melayu: 1,692 people and 2.00 sq.km, an old traditional moslem school village. Karang Intan: 742 people and 3.59 sq.km, a place where a palace of Sultan Sulaiman (the 15th Sultan of Banjar) until buried, Keramat Baru:732 people, 1.00 sq.km, cluster house following the Martapura river Dalam Pagar: 1,136 people, 2.00 sq.km, regular form of house, swampy grass land, the place where the palace of Sultan Tamjidillah (The 12 th Sultan of Banjar). Keraton: 14,106 people, 1.00 sq.km, the houses are flat and regular settlement. A place where Sultan Inayatullah(The 5 th the sultan of Banjar). Kampung Gedang:3,297 people, 1.25 sq.km, the environment show the high densely traditional house following road pattern. Teluk Selong:954 people, 2.25sq.km, a place where a palace of Sultan Musta'inbillah (the 4 th the Sultan of Banjar).	
(d) Profile of 2 <i>kampungs</i> in Marabahan	
Panglima Wangkang:5,509 people, 20.00 sq.km, a <i>kampung</i> on the main river, Barito River, 40 km to Banjarmasin, popular city in period of the 4 th king of Banjar in 1530. Since 19th C until now, the development has been growing very slowly.	

Source: (a) Statistic Projection of South Kalimantan Province'02-07 (b-d) Dinas Pekerjaan Umum South Kalimantan, 2005

Table 2 Main characteristics of RBTs according to the classifications

No	Location	Description	n	Ni	Fa	A	B	C
1	TS	built: 1867 year (anatomy of RBT); 1st owner, M. Arif, a stone merchant; the family was move to Java; conserved building.	16	0	374.21	C	Fg	Ua
2	KB	built: 1882 year (Interview estimated); 1st owner: H. Hasyim, a merchant; now Khadijah, still in use	16	3	172.39	Ir	Fg	Sa
3	DP	built: 1942 year (Interview estimated); owner: H. Hamid, a merchant; all families move to Java and the house donated to other	9	5	306.70	S	Fg	Sb
4	ML	built: 1850 year (Interview estimated); 1st owner: H. Ahmid bin Jamal, a merchant; still in use	15	6	116.80	Ir	Co	Sa
5	KG	built: 1856 year (Interview estimated); 1st owner: unknown, the merchant; the house has been living by poor family from outside	14	4	117.38	C	Fg	Unfound
6	KR	built: 1855 year (Interview estimated); 1st owner: H. Sa'aluddin, a public officer; still in use and original	12	3	145.59	S	Co	Ua
7	KI	built: 1945 year (Interview estimated); 1st owner: unknown; the house was transformed into warehouse, poor and unmaintained.	6	0	61.47	S	Fg	Sb
8	KU1	built: 1831 year (Interview estimated); 1st owner: Siti, she was a merchant; still in use	11	6	141.64	S	In	Unfound
9	KU2	built: 1830 year (Interview estimated); 1st owner: Asruni; He was a farmer; still in use	10	3	97.51	S	Co	Sb
10	SM	built: 1900 year (Interview estimated); 1st owner: Abdul Wahab- public servant's pension; still in use	12	5	115.58	Ir	Fg	Sa
11	SJ	built: 1853 year (Interview estimated); 1st owner: Hj. Khamesah, the rice merchant; conserved building	9	0	236.47	S	Fg	Sb
12	PW1	built: 1817 year (Interview estimated); 1st owner: HM. Adrak, a merchant; still in use	13	5	221.05	S	Fg	Ua
13	PW2	built: Unknown; 1st owner: unknown; still in use	12	2	440.80	S	Fg	Ua

LEGENDS:

n	Number of rooms	B	Layout :
Ni	Number of inhabitants	Fg	Family group (neighbourhood family+clans perfect)
Fa	Floor area (sq.m)	Co	Complex (small mosque+grave+neighbourhood family)
		In	Independent(without complex)
A	Axial access :	C	Loft :
	C Clear	Ua	Unaltered
	Ir Irregular	Sa	Slightly altered
	S Strong	Sb	Serious altered

Our objective was to explain the rules of RBT design in South Kalimantan by clarifying characteristics such as building form and structure, and to evaluate RBT as cultural heritage in view of their special architectural qualities. This study focus on their special architectural quality. However, although RBTs have a common basic spatial organization, differences in location, spatial layout, and method of construction are give them distinctive regional characteristics. In addition to the survey data, face-to-face interviews and informal discussions with local workers and officials were carried out, and literature related to the topic was examined. Historical topographic maps were based on the Colonial Historical Map, Royal Tropical Institute, The Netherlands¹³⁾. The latest topographic maps are based on local government surveys in the Banjarmasin municipality.

3. Analysis of the traditional house and its formation

3.1. Profile of a representative *rumah bubungan tinggi* (RBT): The preserved example at Teluk Selong

We begin by introducing the fundamental features of the RBT type, focusing in particular on an example which has been designated as a cultural property and is preserved at Teluk Selong in Martapura City. Figure 5 shows this building and the major elements of the design are indicated.

The RBT is a freestanding structure in an enclosure. It is raised up on piles designed to prevent flooding of the interior in the rainy season. The pillars support the house as legs support the body. It is

accessed by wooden walkways that are built 1.3 m above the water. It has a core which is a private family living space. Over the core is a high roofed loft. This roof is a symbolic landmark, visible from a distance. The main posts are very tall and the roof they support is often impressive and has a visible frame like an opened umbrella. This high roof is a symbol that reflects status and orientation to the upper world. The inside of the roof space is used for storage. Rat-guards are set on the main posts of the core and *pamedangan* -inner veranda. The *karawat* -loft is also used for sleeping by unmarried adolescent daughters. In front, under a long sloping roof is a space called *panampik* or *papilun* (*papilium* can imply a detached "pavilion" although it is not a separate detached building in this case) with an inner veranda at the front and steps giving access, which is used as a reception space and is open and often decorated. It projects like a nose, and its openness is characteristic of the inhabitants' welcoming attitude toward visitors. Open-ended *tawing halat* -decoration

Fig.5 Representative of RBT in Teluk Selong

wall partition is attached for screening between pavilions and family space. The height of floor

The Banjarese say that the RBT is *anjung*¹⁴, which means symmetrical with an attached space on either side of the core under sloping pent roofs. These spaces constitute 2 *anjungs* -sleeping spaces and are also used to lay out bodies before funerals. The most significant daily activities are concentrated in this area. One *anjung* is for the parents, and the other is for the children. This creates a symmetry that reflects the balanced lifestyle of the owner. In the *palidangan* -family space, there are eight main pillars that support the tall gabled roof. At the rear, the *padapuran* -kitchen (often today with a *padu* -dining space, under a separate roof, linked to the core by a *transisi* or transitional space) takes the form of a roof appended to the core. The height of floor from the verandas to kitchen stepped within different level of familiarity. It also shows from the roof-ceiling that stepped following the level of floor.

Thus, the house is characterized by a dominant core with a loft and spaces attached to it on every side. There is a clear *surambi* -reception space and a progression from public through living to service as one moves along the central axis of the house.

3.2. Prototype model of the rumah bubu- ngan tinggi

The RBT is a dwelling in a style that emerged before the industrial period as a response to the requirements of the indigenous people of South Kalimantan in a tropical climate . According to Ras (1968), each *kampung* in this area has its own *patih* (chief of the district). The house of the *patih* become a palace when a *patih* became the first Banjarese king in 1526. The prototype was a “*rumah betang* (longhouse)” but when it became a palace, three separate spaces were attached to the house; one each on the right and left sides, and one space at the rear of the house of the same length as the three spaces at the front. The spaces in the front of

Fig.6 Plan and side elevation of RBTs in Martapura

Source: Field-work'06-07

the house are *pagungan* (an open court for performance of *wayang wong* (dance drama)), *sitiluhur* (a reception court for masked dance theater) and *paseban* (an audience hall for rakit performances)¹⁵. The right-hand and left-hand spaces are bedrooms. This form of construction is conceptually the same as the Daha Kingdom palace¹⁶.

The longhouse has traditionally been a common form of dwelling in this area. In this case, as the owner was the chief of the district, the house initially had special features that distinguished it from others. The entire structure has the form of a long narrow rectangle. According to Winzeler (2004)¹⁷, a longhouse is divided into the following six distinct spaces (Fig.7): 1) The *surambi* (veranda), which is reached by steps formed from a tree trunk. 2) The *tajuk* or *jungkat* (living space for male visitors), which serves as a bedroom for young bachelors, and as a stage for the performance of ceremonies. 3) A transition space behind the *tajuk* that functions as a walkway and as an area where rice mortars are stored and used. 4) The *ambin* (sleeping space), of which there may be many, providing privacy for families, young unmarried women, young couples, and women visitors, (a special sleeping space may also be used for the marriage proposal ceremony). 5) A kitchen (although there is a kitchen in each bedroom, there is a special kitchen in the corner of the building). 6) A sacred loft in the roofs space, used for storage of money and valuables and a symbol of prosperity and fertility. The basic building materials were tree trunks and sago palm, but we have no detailed information concerning the construction of a *patih*'s house.

Based on this evidence we consider that the RBTs of the area surveyed have significance as a modification of the basic form of the Ngaju longhouse of Borneo Island. Due to the emergence of the Banjarese in South Kalimantan, the original Ngaju people who used to be the majority in South Kalimantan moved away to the west of South Kalimantan. Their house type has probably strong implications to the RBT. They may also give us an indication of the style of earlier palaces built in 1400–1526 during the Hindu period. We hypothesize that the appended spaces were initially different buildings in one palace complex.

3.3. Main characteristics of rumah bubungan tinggi today

Attempts to explain the main characteristics of RBTs today according to regional differences alone, ignore the impact of class distinctions which give rise to considerable variety among RBTs (Figs.6&8). We have attempted to construct a framework that will include all of the varieties of RBT in South Kalimantan. To do this we consider the following aspects:

a) *Axial access*: In Banjarmasin, most of the major axes in the plan are clearly and strongly expressed, while in Martapura there are more varieties that are irregular. The RBTs in Banjarmasin show the highest level of changes due to urban development. Many RBTs have been converted to contemporary houses, and the traditional axes are changed or suppressed in the course of modernisation.

b) *Layout and function*:

Inner, middle, and outer verandas (veranda 1-3): *pamedangan* -inner veranda is accessed from the front of *surambi* -middle and outer verandas. In the outer most veranda there is a porcelain jar for washing feet. Middle veranda is used to welcome and greet visitors. Inner veranda is a semi open-veranda with a higher floor and balustrade and a couple of long chairs to relax in the early evening. Recently most of the houses have only inner veranda as a terrace with little decorative balustrade. Small, middle, and large *panampik* -pavilions (P1-3): small pavilion (P1) has a floor higher than inner veranda, and is used as an ante-room to

Fig.7 Section and plan of South Kalimantan longhouse.

Source : Analysis

Note: 1) veranda (surambi) (2) living space (ruang tamu) (3) transitional space (4) sleeping space (kamar) (5) kitchen (dapur) (6) loft

Fig.8 Plan and side elevation of 4 RBTs in Banjarmasin and 2 RBTs in Marabahan

Source: Field-work '06-07

Fig.9 Gable and its characters of RBTs

Fig.10 Evaluation of space distribution and function

Source: Field work '07

more complex. The RBTs in Marabahan have a unique layout at the front; where there is a Javanese-type entrance hall, and we saw some decorations and a wooden sculpture of a man's face in the rear yard of the RBT. We hypothesize that RBTs in Marabahan have a strong relationship with the houses of the Dayaks tribes of Borneo Island.

c) *Plan and attributes*: The floor plans of RBTs are similar, although the size and dimensions are very variable. In Banjarmasin, there are small, compact RBTs, while those in Marabahan tend to be large buildings. In Martapura, RBTs show a great variation, which reflects the differentiation of the environment in relation to institutional organizations. We suggest that RBTs in Martapura are influenced by Arabic culture (because of Arabic calligraphy carved on wall panels), while those in Marabahan are influenced by Hindu *Kaharingan* culture (they have Dayaks-type ornament and sculpture). Finally, the design in Banjarmasin depends on the owner of the RBT. If the owner is a merchant, there may be several families living in each RBT and the arrangement of rooms may be complex.

d) *Gender status*: The loft reflected the gender status of the occupants, and had especially strong links with female creativity and fertility, due to the fact that young women traditionally slept there (the woman in a RBT family is a symbol of fertility). However, although the oldest residents of RBTs said that they attached such a meaning to the loft, in Banjarmasin and Martapura, the loft is becoming nothing more than a storage space and the original meaning is being lost. Only in Marabahan is there still a strong awareness among residents of the original meaning of the loft.

e) *Gable proportion*: Fig.9 shows the characteristics of RBT gable design based on the average width and height. We recognize 2 classes: class 1 is the earlier type of gable with an average ridge angle of 56–67°. Class 2 is a common style of gable for more recent Banjarese roofs. Both classes reflect the status of the owner, the higher the gable, the richer the owner.

4. Evaluation of the *rumah bubungan tinggi* as cultural heritage

4.1. The space and furniture arrangement of *rumah bubungan tinggi*

It is clear from the discussion above that RBTs have undergone changes in several stages in terms of form, use and decoration. Some of examples were the type of RBT commonly seen in riverfront cities in South Kalimantan, and some were the result of the special natural, human and cultural environment of South Kalimantan. This study explores the changes of RBTs with regard to space distribution and furniture arrangement (Fig.10):

a. *Space distribution and function*: In order to understand how the Banjarese live in the RBT, we visited all 13 of the RBTs included in this study. When we were allowed to enter, we observed the present usage pattern of each house, and how this had changed in response to drastic changes of lifestyle between 1970 and the 2007s. RBTs in Teluk Selong and Sungai Jingah without furniture have been taken under the control of local government as part of a preservation and conservation project. The RBT in Karang Intan is in poor condition. Our visit to the RBT in Keraton was to investigate the structure of the building, and the owner was cooperative, but when we returned to ask about use of the building, the owner would not allow us access. In the 1970s and 1980s, the room functions and furniture conformed to the pattern common for RBT in South Kalimantan. Some of the spaces were used for communal functions. In Banjarmasin during the

the reception space. Middle pavilion (P2) is the reception space for special visitors, and is used annual family ceremonies and social activities. Large pavilion (P3) is quite a large space and also used for special visitors, and is used for annual family ceremonies and social activities. The floor is sometimes higher than that of middle pavilion but may be the same. Recently most of the houses have only small and large pavilions because middle pavilion is not effective for everyday or ceremonial activities. Sleep-

ing spaces 1-5 (B1-5):According to the preamble, *anjungs* and *jurai* -sleeping spaces 1-3 (B1-3) were used for parents sleeping while most RBTs residents said that they used them not only for parents sleeping but also for their children without any permanent barrier wall. Sleeping space 4 (B4) is the newly attached space between small and large pavilions with a dividing wall. Sleeping space 5 (B5) was the transitional space, but is now used as a child's bedroom. However now, sleeping spaces 1-3 are divided from the family space by a partition.

Most RBTs have a physical layout that reflects the organization of local clans, which is traditionally family-based. The people in Banjarmasin and Martapura are organized into family groups, but the clan structure has broken down in Martapura. In Banjarmasin, the structure of RBTs has become increasingly more substantial and

time of reconstruction, mostly in response to the economic situation, the retention of existing things and the highly active inhabitants caused some of the space to be made private. In Marabahan, the original layout of the RBT has been retained, while in Martapura some improvements have been introduced to extend the life of the RBT.

b. Furniture arrangements: We chose 3 RBTs, 1 in the urban district (Kuin Utara 1) and 1 in each of two rural districts (Keramat Baru and Panglima Wankang 1). Generally, the arrangement of furniture has not changed since the 1970s, while recently, due to the building of new wall partitions, several smaller units have been created within the family space. In Keramat Baru, the furniture has not been altered since the 1970s. However, several smaller units have been created within the family space and the dining space, one mattress, a smaller unit, and a partition wall have been added to the dining room, and a toilet has taken up half of the rear terrace. In Panglima Wankang 1, the kitchen has been moved closer to the dining room, and the service area that was in the kitchen has been moved to the living area. In Kuin Utara 1, the main verandas have been removed to allow road development, and inner veranda occupies only a very small space. Sleeping space 3 has been created from large pavilion. A transition space has been replaced by an extra bedroom and several smaller units. There are several distinctive trends apparent in these changes, specifically: (a) a tendency to change veranda 3 and take space away from the pavilions; (b) changing the function of the transition rooms to activities such as sleeping and dining; and (c) taking space from the rear terrace or the kitchen for a toilet.

There has been a period of change between the old and the new forms of the RBT. The RBT in Teluk Selong and Sungai Jingah belong to the Banjarmasin local government and are already open to the public. The other 11 are an important part of our heritage and are worthy of retention and careful conservation.

4.2. Approach and Concept

Understanding the characteristics of the RBT is necessary for an evaluation of its potential cultural heritage and appropriate approaches to its conservation. We have attempted to offer an overview that encompasses all extant varieties of RBT in South Kalimantan. We have examined the particular characteristics of a range of examples, and made a generalizations concerning the various forms and structural types that have appeared as RBTs have interacted and evolved. We now present a conceptual framework and a summary of spatial features of this house types.

Conceptual framework: the form of the RBT is based on symbolic identity and social expression. The configuration of RBTs and kinship relations both reflect the socio-economic stratification of the Banjarese society. The RBTs in Banjarmasin are small-scale dwellings and represent the characteristics of the capital city. The families in Banjarmasin were generally enthusiastic supporters of the modernization. On the other hand, RBTs in Martapura and Marabahan are of various sizes and degree of complexity. These are modest RBTs in the style of the original main dwellings in South Kalimantan.

Feature of space: There is a duality in the degree of privacy. The need for a multi-purpose space may be regarded as a major factor shaping the RBT. The veranda and pavilion are central open spaces used by members of the family and the neighbors, for a range of purposes as required. The service space is mostly at the rear of the RBT. The size, location and architectural layout reflect the social status of the family and its relationship within society. The characteristics of family living in the RBT are closely related to their economic power. Most of the families living in RBTs are nuclear families, their lifestyles structured according to their economic capacity.

Finally, this study provides information about the cultural traits and identity of those who created the RBT. The RBTs in South Kalimantan serve as an important index for determining the socio-cultural character of this riverfront city. Such characteristics are relevant to establish the historical and social grouping of examples regionally, in preparation for a thorough process of evaluation of these houses as cultural heritage, which should be given priority in future research.

5. Conclusion

This paper discussed the 13 examples of *Rumah Bubungan Tinggi* (RBT) located in three neighbouring cities and considered the problem of how to determine the rules that govern the architectural special quality toward a study on the forms and structures of house building in South Kalimantan. The building characteristics were described and they were placed in their socio-cultural context, ready for evaluation as cultural heritage. It is observed that distribution of spaces in the houses look complicated due to ethnicity, tradition, and limitations. On the contrary, the space formation demonstrates the characteristics of shared socio-cultural norms. Fig. 11 is a diagram showing the composition of spaces of the RBT. The findings are outlined as follows:

- 1) Substantially the floor plan is arranged in cross-shape with a core of family space with eight main pillars and high roof. The plan boundaries themselves are divided exquisitely into smaller territories according to the degree of openness or intimacy gradient by various means such as putting transit spaces, setting screens, differentiating the height of floors and roofs-ceiling.
- 2) The houses may vary in size. The house in urban area apparently compact while in rural area large, however the large or small dimension of buildings will not determine the fundamental distribution of spaces. But there were found more variation at the rear of the building. Though the ethnicity might cause the variation

Fig.11 Process of building reconstruction and the composition of space

of size, plan, roof shape, it remains just a hypothesis.

3) Through modernization though the usage of space and the arrangement of furniture have changed gradually with time, the core is maintained. However, special purposes of open court in verandas are not discovered anymore.

The further research of the paper will study the RBT groups of Banjarese *kampung* to clarify the organizing principles in the meaning of urban fabric.

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Endnotes:

- 1) According to the Encyclopedia of Vernacular Architecture of The World, Paul Oliver, 1997, Vol. 2, pp. 2.II, the *rumah bubungan tinggi* (RBT) is called 'house of the high ridge' or sometime high roofed-house. However, the Banjar house is also called a *rumah bubungan tinggi* (academic people) due to the *bubungan* (in Banjar language)-roof or *rumah ba'anjung* (indigenous people) due to the *anjungs* -sleeping space, which refers to the steep roof at an angle of 45°. This house was the core building in the complex of a Banjarese palace where the king and his family would resided, Seman Syamsiar, Drs, H, *Rumah Adat Banjar* (Banjarese House), Departemen Pendidikan dan Kebudayaan, Jakarta, 1982.
- 2) According to the history of Banjarmasin, Saleh. M. Idwar, *Sejarah, Daerah Kalimantan Selatan* (History of South Kalimantan), Dirjen Kebudayaan, Banjarmasin, 1977, a palace that was established in 1596s and burnt by the Dutch colonists in the 1860s was the first palace of the Banjarese Kingdom in Banjarmasin, and is one of the most complete examples of prestigious Banjarese traditional architecture in South Kalimantan. After that, the Banjarese Kingdom was moved to Martapura and Marabahan. The Banjarese believed the layout of the RBTs was a symbol designed to ward off misfortune.
- 3) See the periods of the Banjarese Kingdom in South Kalimantan from Hindu-Muslim periods; (a) *Daha* Kingdom periods (1400–1526): *Ampu Djamika*, *Aria Magatsari*, *Tumanggung Tatah Djiwa*, four quarters of the realm (*Patih Pasi*, *Patih Baras*, *Patih Luhu*, and *Patih Dulu*). (b) Sultan Periods (1526–1860): there were 17 sultans during this period. The first period was under the rule of *Sultan Suriansyah*. The genealogical tree is very similar to that attributed to the *Daha* Period (Ras, 1968). *Sultan Suriansyah*, *Aria Taranggana*, *Patih Masih*, the four quarters of the realm: *Patih Balit*, *Patih Muhur*, *Patih Balitung*, and *Patih Kuin*, Ras.J.J, *Hikajat Banjar A Study in Malay Historiography*, Dissertation, University of Leiden, Netherland, June 1968
- 4) Definition of *kampungs*. See Funo, Shuji. (2002). Typology of Kampung House in detail. The description of the construction of various house types in the kampungs of Surabaya city. The typology of the kampung house, based on a narrow site and an access road, was investigated by studying the changes of space usage in the dwelling units
- 5) Ras.J.J, *Hikajat Banjar A Study in Malay Historiography*, Dissertation, University of Leiden, Netherland, June 1968
- 6) According to the Ming Dynasty, 1918, a house could hold about 100 people from multi families. These houses originated with the Ngaju Dayaks tribes. Valentijn, 1706, describe groups of raft houses supported by rattan rope tied to a riverside tree and connected by small bridges. See http://id.wikipedia.org/wiki/Keraton_Banjar
- 7) Saleh, M. Idwar, op cit
- 8) After 2002 and 2003, the Indonesian government adopted a national strategy to build a million unit of housing development as well as small, simple houses, see Indonesia Housing Policy, 2002. This strategy has been implemented, especially in the Banjarese communities in South Kalimantan. The concept of a small, simple house for one family (for example, 21 m² and 36 m² floor area) became an alternative type of house for developers to build, and the original RBTs began to be demolished.
- 9) In earlier research, the structure of RBT in Teluk Selong, Martapura were described by Bani and Ira, *Anatomi Rumah Bubungan Tinggi* (Anatomy of *Rumah Bubungan Tinggi*), 2007, the history of Kalimantan and culture Amir Hasan Kiai Bondan, *Suluh Sedjarah Kalimantan* (The History of Kalimantan).1957, Saleh. M. Idwar, op.cit, Ras, op.cit, but this research is not complete.
- 10) There has been some research into the types of kampung in Indonesia, such as work by Funo and Silas. The kampung can be found in Indonesia inner city settlements or in other districts with a low average income
- 11) According to the 2007 census projection issued by the BPS
- 12) The survey by the Banjarmasin local government resulted in the revitalization and rehabilitation project for RBTs in the Sungai Jingah area (2006 and 2008) and in Teluk Selong (1998), and upgrading of Kuin old settlements (1998–2005). In MTP, the local government has decided to develop the implementation of Banjarese conservation kampung houses, especially the RBTs, and a model kampung is under construction.
- 13) Based on the map compiled around 1900, <http://maps.kit.nl>
- 14) According to Idwar Shaleh,1984:5, the Banjarese *rumah bubungan tinggi* is also called the *ba-anjung*. This means that the house has *anjung*, or space, placed symmetrically on the right-hand and left-hand sides of the body of the house. *Anjung kanan* (ina), the right *anjung*, is for the parents' bedroom, and *anjung kiri* (ina) the left *anjung* is the same as the right *anjung* but, when required, it is using for giving birth, and for washing and shrouding the deceased. See the anatomy of RBT, Bani and Ira, 2007, who describe the construction of general RBT in Teluk Selong.
- 15) Ras, op cit.
- 16) See Ras, op cit, The *Daha* Kingdom palace was formed by the *Majapahit* expansion. The *Majapahit* was the Indianized kingdom concept (George Coedes, 1886–1969). The *Majapahit* Kingdom concept was described by the Dutch architect Henry. Maclaine Pont, who contributed to major town planning projects in Indonesia during the Dutch periods. One expansion of the *Majapahit* Kingdom in Borneo is the *Daha* Kingdom. It was the first kingdom of *Syiwa-Budha* in Borneo, and was located first in the city of Amuntai (65 km from Banjarmasin), then in the city of Nagara (40 km from Banjarmasin), and was a trade harbor in Marabahan of the *Tumenggung* period (c. 1500–1526 BC). Thus, *ba-anjung* house have resulted the amalgamation from the vernacular culture of *Syiwa-Budha*, Kaharingan, and Islam.
- 17) Winzeler. Robert. L, *The Architecture Life and Death in Borneo*, 2004.

和文要約

本稿は、インドネシア・南カリマンタンに特徴的なルマー・ブブンガン・ティンギ（高い屋根の家、RBT）と呼ばれる伝統的な住宅についての研究のその一。建物単体に焦点を当てる。12のバンジャル人のカンボン（集落）に見出された13のRBTを実測

調査、それらの空間構成を比較検討・分析し、RBTに共通する5つの特徴を明らかにした。さらに、家具の配置や住み方の変遷から、RBTを現代に受け継ぐ場合の課題を探った。

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