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“Synergizing Local Efforts In Fighting Global Crisis”

2nd CONVEESH 2012
13th SENVAR 2012
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International Conference on Sustainable Environment and Architecture

November
29th - 30th, 2012

isbn here !!!
PROCEEDING

International Conference
13th SENVAR and 2nd CONVEEESH
"Synergizing Local Efforts in Fighting Global Crisis"
PROCEEDINGS
International Conference
13th SENVAR and 2nd CONVEEESH
"Synergizing Local Efforts in Fighting Global Crisis"

Yogyakarta, 29th - 30th November 2012

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Speech

We give an honor to the President of SENVAR and CONVEEESH who give our institution a chance to organize the International Conference of 13th SENVAR and 2nd CONVEEESH. We realize that the academic perspective is richer when meets professionals and researchers experience. The issue of sustainability should be responded as a way to unite all the courses, so that they should sit together in a forum discussion, sharing the latest information and experience. It will open the wholeness-understanding about the sustainability in various perspectives. The Department of Architecture, Faculty of Architecture and Design, Duta Wacana Christian University is trying to build the synergy with others disciplines in order to achieve ‘The Entrepreneurural Researche University’. The SENVAR, which is concerned on sustainable environment and architecture, and CONVEEESH, which is concerned on engineering, environment, economic, safety and health, are the latest perspectives that give new direction to us, as an academic, an architect/planner, a professional and a researcher.

We also give thanks to IAI (Ikatan Arsitek Indonesia), Indonesian Institute of Architect - Jogjakarta Chapter as profesional organization who always has a willing to join hands with us.

The motto of the Faculty of Architecture and Design’s NURTURE, INNOVATIVE and CONSERVE (NIC (read= ‘and I see’)) is supported the team who have worked hard behind the preparation process of the conference. We do the ‘NIC’ and hope they feel the’ NIC’, too. Personally, I give high appreciation to all the colleagues, alumni and undergraduate students for your dedication and enthusiasm.

Yogyakarta, 26 November 2012

Head
Department of Architecture
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Ir. EDDY CHRISTIANTO, MT., IAI
Preface

In the last decades we are more and more having better understanding about what might be happening to our world. The future seems so gloomy despite of modern marvel achievement. Our earth home is facing the devastating consequences because of human greed. It is our responsibility, not just as academicians but more as human being, to change our destructive behavior toward the environment.

The second International Conference on Engineering, Environment, Economic, Safety, and Health is held side by side with thirteenth International Conference on Sustainable Environment and Architecture between the 29 and 30 November 2012 in Duta Wacana Christian University, Yogyakarta - Indonesia will bring some creative thoughts of academicians and professionals from Indonesia and other countries, to share and learn solutions for our home world problems.

Under the theme of “Synergizing Local Efforts in Fighting Global Crisis”, 2nd CONVEEESH and 13th SENVAR underline the join force of majors in Architecture and environmental design, Bio-technology, Public Health, World and local economy, Product and Industrial Design, and Peace studies and pluralistic.

There are eight plenary lectures covering the different areas of the conference:

- **Eka Sediadi** from Universiti Teknologi Malaysia as Chairman of SENVAR.
- **Sri Probo Sudarmo** from Wolrd Bank Jakarta – Indonesia talked on “Opportunities in Community-Based Development”.
- **Prof. David Jones** from Deakin University – Australia talked on “Cultural Regionalism and Environmental Planning and Design, Charting Regionalism in Deference of Globalism”
- **Eko Agus Prawoto** from Duta Wacana Christian University Yogyakarta – Indonesia
- **Prof. Joseph Khedari** from Rajmangala University of Technology Rattanakosin - Thailand
- **Prof. Wallace Chang** from Chinese University of Hongkong – Hongkong
- **Teddy Sangkertadi** from Sam Ratulangi University, Manado – Indonesia talked on “ A Filed Study of Outdoor Thermal Confort in the Warm-Humid Environment”
These plenary public talks held on Thursday and Friday morning covered the full range of the conference topics. In this publication, both plenary and parallel lectures papers are compiled to identify priority needs that must be addressed in order to advance the conservation of our home earth. Last but not least, organizer wanted this conference to result in something more than a contribution of talks and papers. Something that spoke more directly to the nagging question always asked after every conference, “So now what?”

Yulianto
Chairman 13th SENVAR and 2nd CONVEEESH International Conference
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ABSTRACT

One of the goals of architecture is to create a sustainable built environment. Related, according to Oliver and Al-Sayyad (2006), in the 21st century, the vernacular architecture challenge is to meet the high demand for adequate housing. In addition to the need for housing, sustainability is also determined by the availability of energy, comfort, safety, and health. To meet the housing needs, the one of this ongoing effort can be learned from the knowledge and experience of local communities in various regions that have proven successful. From many societies, it has a specific tradition of living and its efforts to meet the housing needs are Dayak Bukit tribes, which live in the area of Mountain Meratus, South Kalimantan province. This peculiarity can be seen from the characteristic values of Dayak Bukit’s culture, which is the nomad living, live together in a communal dwelling, and keep the farming culture. On the Dayak Bukit’s living, the issue of population growth also occurred and resulted in the increasing demand for housing. However, in contrast to modern society, Dayak Bukit tribes transform their houses in order to meet the housing needs by fit the values of the cultural traditions and natural environment. For this reason, the study aims to understand the perspectives and activities in meeting housing needs, as one of the local community efforts, from traditional forms of residential houses until today. Transformation based on the basic needs of shelter that the appropriate way of life and knowledge, which is the focus of this paper. Based on the data and analysis, it has been acquired the transformation process of Dayak Bukit living tradition that is an effort to meet the demand for housing, which based on the traditional values of huma (dry rice cultivation) cultured.

Keywords: Dayak Bukit tribe, sustainable, housing, vernacular architecture

I. INTRODUCTION

In the book of Vernacular Architecture in the Twenty-First Century
(2006), Asquith and Vellinga had expressed Oliver’s concern, which had been lectured at the Prince of Wales Institute in 1999 on the same title; *Vernacular Architecture in the Twenty-First Century*. Oliver describes how the vernacular architecture was not considerate and got support from professional architects and policy makers or politicians who related to the field of architecture, particularly in the housing sector. Vernacular architecture is often connoted with the past, backward, and synonymous with the poverty. Only some few of planner, designer, architect, and politician interest in this topic, even so, the vernacular architecture has proven the excellence, highest knowledge, the experience, and the expertise in producing highly qualified various buildings around the world. According to Oliver and Al-Sayyad (2006), the problems and the challenges of the vernacular architecture in the 21st century are to meet the housing need for the world's population that, approximately in 2050, reach 9 billion people and all need a place and environment to living healthy.

Indeed, one of the goals of architecture is to create a sustainable built environment for better human life. For that reason, the existence of the vernacular architecture scattered all around the world, which is generally as a house or a dwelling, is an endless source for the architecture knowledge. However, compared to other topics in the field of the architecture, not much vernacular research has been done and benefits derived from vernacular design in creating a sustainable built environment, especially for people who have a vernacular design. For example, the problem to meet the high demand for adequate housing for traditional societies is different from the urban society. For traditional societies, a house is a part of the way of life and based on the basic needs but, on the other hand, the effort to meet the housing need still have a problem, which saw the fulfillment of mass housing as a mass production. It built a mass housing means in compliance with the basic need and the culture and based on the environment sustainability. Meanwhile, the mass production of housing is seen as a mere production of goods that are no longer looking at differences based on inhabitant’s cultural values and the natural environment. Consequently, it would appear other bigger problems in the future.

Based on the above reasoning, this paper aims to reveal the efforts of traditional communities who living in the South Kalimantan province, namely Dayak Bukit tribe, to meet the housing need. Currently, various changes in Dayak Bukit’s houses are not in spite of population growth, limited land, increasing the need for decent housing, the natural environment changes, etc. As a global’s trend, the factors are also causing increased housing needs of Dayak Bukit tribe.

II. METHODOLOGY

This research relied on the naturalistic paradigm which holds that there are many conceptions can be built from a reality. A reality cannot be seen only from one aspect, otherwise influenced by many other. In the context of Dayak Bukit or this vernacular research, every field of science or scientific perspective can build a conception on the recent reality, and the results would be depended on
the Dayak Bukit’s point of view.

Therefore, compared by the positivistic, naturalistic paradigm is more suitable chosen as a perspective to build Dayak Bukit conception of knowledge to understand and explain the reality of living culture. Nevertheless, conception that built from the architectural point of view is not the only one of the truths about the vernacular design of Dayak Bukit tribe.

Accord with the assumptions of relationship between researcher and the object, on the process of data collection, the researchers plunge into the field and interact directly with the Dayak Bukit society as builders and occupants. Researcher is also required to observe first-hand the architecture of Dayak Bukit houses. However, the findings of concept are strongly tied to the context of place and time of the reality.

Based on the goals to understand how Dayak Bukit tribe solves the need for housing so this paper aimed at exploring the living culture of the Dayak Bukit tribes and explain it. The research is carried out by ethnography methods. In general, the term ethnography refers to the distinctiveness of writing or reporting based on intensive field research and eventually became the method which is intended to produce the reporting. Distinctive feature of ethnography is holistic, integrative, thick description, qualitative analysis in order to get a native's point of view. The main data collection techniques were participant observation and open interviews and in-depth by the researchers themselves. In operational research, this method refers to structure of Spradley's ethnographic methods (1979). The research used twelve houses or balai-adat as a research case and all at once represents the settlements of Dayak Bukit tribes in Loksado sub-district. The descriptions presented in this paper are an overview of cultural interpretation and the notion of Dayak Bukit tribes.

Figure 1. Balai-adat of Siputan: one of Dayak Bukit’s houses
Source: Field observation, 2011

The traditional settlements of Dayak Bukit tribes are the Meratus Mountains region in the South Kalimantan province. The location of research restricts on one of the Dayak Bukit tribe’s residential area, Loksado sub-district.
The Architecture of Dayak Bukit’s Houses

As known, Dayak Bukit tribe is an aboriginal inhabitant of the Meratus Mountainous region in South Kalimantan Province; they live in groups based on the kinship and live communally in a traditional house called balai-adat. The basic form of balai-adat is rectangular that shaped by some of the space that converging oriented or centralized. Balai-adat have three types of space; the ceremony space or pamatang space located in the center of balai-adat, shared space or laras space that resembles veranda surrounding the ceremony space, and living space or bilik space surrounding the shared space (fig. 3). In the balai-adat, each family has a bilik and lives in their own. (Muchamad, 2007).

III. THE ARCHITECTURE OF DAYAK BUKIT’S HOUSES

Figure 2. Research location: (A) South Kalimantan Province, (B) Hulu Sungai Selatan Regency, (C) Loksado sub-district.
Source: Muchamad, 2012a

Figure 3. lay out of balai-adat (typically)
Source: Muchamad, 2007
Balai-adat built using traditional construction and natural materials such as wood, bamboo, rattan, bark of the tree, leaves, etc. There are six main pillars (tihang guru) which support the construction of the roof and a few others supporting an extension of the roof that surrounds all the shared spaces and living space. The six main pillars are using a continuous ironwood from the foundation up to the roof.

In addition, there are some rows of sticks that held the floor and made a pillar construction. Bamboo that has been cut in half is used as floor material, as well as for the wall. For the wall’s materials, in addition to bamboo also uses bark of the tree that has dried. Currently, the bamboos as both floors and wall's materials are still often found in the balai-adat. Meanwhile, the roof is used two kinds of materials, namely bamboo and palm leaf. Bamboo that is used for the roof processed by cut in half and mounted it back and forth to each other until close the roof or called tangkup roof.

Regarding to the measurement, there is no provision of the dimension between the balai-adat. The dimension of balai-adat was customized by the needs or amount of families that will occupy. The more family is the bigger shared space and living space required, however, from the data, the number of families that inhabiting of a balai-adat ranging over 20-30 families. The dimension of the balai-adat is based on the capability, in terms of cost, labor, and materials, etc., and always changes at any movement regarding the needs of the space and the ability of the group to build.
IV. LOCAL EFFORT TO MEET THE HOUSING NEED

The problem of the high demand for adequate housing has been responded, at least, by three ways. The first is extended the bilik or living space at the balai-adat. The second is built the huts behind the bilik or living space at the balai-adat. The third is built houses around the balai-adat. As notes, this paper is focused at the balai-adat as a communal dwelling for Dayak Bukit tribes, meanwhile the origin of balai-adat that also describes the transformation of Dayak Bukit’s houses was described by Muchamad (2012a).

Description of the efforts was obtained from data, which is collected in the field and the analysis. All effort is based on both Dayak Bukits’s native point of view and activity., Dayak Bukit tribe is an aboriginal inhabitant of the Meratus

4.1 Extended the bilik or living space at the balai-adat.

The first effort to meet the housing need is extended the bilik or living space at the balai-adat. This phenomenon is obviously seeing from the building envelope of balai-adat that has change. The expansion of living space is driven by the increasing of the needs of the place for the larger family activity, either due to the
addition of a family member or household furnishings. The expansion of the volume of the living space varies to depend on the needs and the economic capabilities of each family, so it is not at all the balai-adat that found this space expansion.

The extended of living space is built using the wood construction, and the material derived from the natural environment. The structure of extended living space made by wooden rod; walls are made of bamboo (paring) that cleaved-dilated (called dinding balatai) or plaited-bamboo; floor coverings made of divided bamboo, and the roof frame also used the materials of bamboo, while the roof using divided bamboo that arranged cross (tangkup) or by palm leaf. The entire construction using grafting techniques with rattan or bamboo rope ties.

![Figure 5. illustration of the extended of living space at balai-adat](Source: Muchamad, 2012)

Currently, the expansion of the living space can still be found in some balai-adat, but because of it is no longer used, the conditions are already badly damaged. It is different than the hut that built behind the living space which preserved because of it is still inhabited or used as a rice barn or to store other agricultural products.

![Figure 6. the expansion of living space at balai-adat and the current condition.](Source: Observation, 2011)

4.2 Build the huts behind the bilik or living space.

Other than extended the living space, Dayak Bukit tribe also builds the huts behind the living space. Same with the previous reason, the main reason to build the hut is to accommodate the increasing family members that cannot longer be accommodated within the existing living space. When enlarging the space for increasing living space will change the main structure of the house that was required
the heavy demands so, for option, build huts around the balai-adat is an alternative to the most convenient and inexpensive. In addition for housing needs, the reason to build the hut is to store a variety of crops, such as hazelnut or other forest products such as cinnamon, etc. Meanwhile, the paddies who yield from agricultural fields remain stored in the rice barn that located on the farm (huma). Other than the crops, forests, and farms, there is also the rubber sap that blocks shape stored by placing in the water in the rivers. Today, the hut that is built around balai-adat is easily to be found, ranging from the original condition up to the hut that has been rehabilitated become the houses. Each family will build a hut right on behind the living space

![Figure 7. huts behind the bilik or living space](Source: Muchamad, 2012)

Now, best parts of Dayak Bukit tribe are no longer stays in the balai-adat and they were moved into their own private houses. The function of the hut is to accommodate invited guests were present at the ceremony called aruh ganal and to prepare of dishes for the guests. At the ceremony of aruh ganal held, the guests, both from the Dayak Bukit tribe or other communities, who generally come from far away will be lodged in the hut. Other than, each family will stay in their own living space or in the hut. In other words, during the process of aruh ganal, the balai-adat will be fully functional as a dwelling. This is what led to the hut generally maintained condition. One example hut that maintained is surrounding the balai-adat of Tanginau.

### 4.3 Build houses around the balai-adat.

Nowadays, the efforts reach the highest level which is built the houses around the balai-adat. As before, the development of the houses is to meet the growing needs of living space that was not accommodated in the hut. Some houses were built by develop the hut. Due to the development of the houses around the balai-adat, it is finally formed a compound or traditional village. There are two pattern of the traditional village: centralized to balai-adat and linier. The spread all over the houses that made a traditional village is shown below.
Figure 8. (left) the huts around the balai-adat of Tanginau. (right) House that built from the hut. Source: Muchamad, 2012.

Figure 9. the pattern of the compound. Source: Muchamad, 2012.
The whole efforts to meet the housing need are not running evenly, because it depends on awareness, education and of course, the economic capabilities of each family or group. Economically, when they have the ability, they will build homes with a variety of types, kinds of materials, structures, and other supporting elements. Meanwhile, for families who have not been able to build a home, they will stay in balai-adat and extend existing bilik space. This is why there are some Dayak Bukit people seemed to be less feasible. Nowadays, the local effort to meet the housing need was supported by the government’s policy. It is launched to the empowerment the indigenous communities through the resettlement program, namely Indigenous Community Empowerment or Pemberdayaan Komunitas Adat Terpencil (PKAT).

It is a policy to break the chain of poverty and improve living standards as well as cater for the families of the Dayak Bukit that economically did not have the ability to build their own houses. The related paper had been described by Muchamad (2012b).

V. CONCLUSION: THE TRANSFORMATION

All the efforts to meet the housing need that shows a transformation of Dayak Bukit houses is shown bellow.

![Figure 10. the transformation of dayak bukit’s houses](source: Muchamad, 2012)

In the early phase of open land, Dayak Bukit tribe built a simple hut (called lampau) which is only consisted of floor and roof. The function of this lampau is for a place to sit and rest while clearing land to plant rice seedlings. At the phase of planting, the fields shall be maintained. For that reason, the lampau began to be installed wall coverings for a temporary living place. The whole family spends time during the growing season by staying in the hut in the field. At harvest time, and thereafter, the function of the hut has changed into the rice barn. Dayak Bukit tribe began to develop one of the huts belonging to a senior family becomes a gathering place and implementation of ceremony. Family gathering process is then followed
by the construction of the chamber rooms to a communal dwelling as the forerunner of balai-adat (Muchamad, 2012a). From this point, the transformation has three ways as describe above.

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REFFERENCES


