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## SUSTAINABILITY OF THE TRADITIONAL FORM OF BATAK HOUSE IN SAMOSIR ISLAND

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### **ABSTRACT**

*Samosir Island in Toba Lake has a huge variety of traditional settlements which are still inhabited by the clan family and relatively well preserved by the inhabitants. As a matter of fact, many traditional houses are being abandoned by the inhabitants because of the large amount of money needed for the restoration and different needs of spatial uses of the modern household. Field research has been conducted to investigate the changing way of life of the inhabitants and the new needs out of these, that cause obvious impact to the spatial arrangement of the traditional houses. The research is expected to have findings in the relationship of socio-cultural and economical factors that govern the sustainability of SStraditional Batak Toba houses. Part of the field research will be presented in this paper, which illustrates the existing condition of traditional houses in Samosir Island and its recent development regarding physical changes undertaken by the inhabitants. The discussion will concentrate on the expansion process and method of the house and will analyze the typical pattern that may encourage or discourage the sustainability of the traditional form of the house.*

**Keywords:** *traditional architecture, sustainability, Batak Toba, Samosi*

### **I. INTRODUCTION**

Each community in Indonesian ethnic groups has its own distinctive form of traditional house. The house provides the main focus for the family and its community. The house is the orientation of any other activities of its residents and becomes the center of social and religious life. Some parts of the house are not structurally essential but are decorative elements that have a cultural function. The traditional house of Batak Toba has a post and lintel structure with wooden walls and a thatched roof, and is built on stilts. The stilts are quite tall and can be set directly into the ground or rest upon flat foundation stones. The house is raised to a height at which cooling breezes can penetrate and away from the rain mud whereas in hot weather the breeze provides under-floor ventilation. The raised floor also prevents inhabitants from mosquitoes attack and adds security of the house. Foundation stones allow the house resting on them to move without damage during earthquake and to avoid termites. The substructure of the house adds stability by a system of beams into the piles, which creates also night-time stalls for cattle and chicken.

The traditional houses of Batak are renowned for the dramatically inclined roofs, which allow rainwater to run swiftly and safely away, and the overhanging eaves shade the windows and protect them from the rain. The walls of the house are dwarfed by a vast roof and have few windows. Compared to the roof, the wall is insignificant. The sloping roof ridge ends curve dramatically upwards like the prow and stern of a boat. The piles and structural beams are usually hardwood and the walls are made of soft- and hardwood. The roof is thatched with leaves of coconut and other palms, however nowadays zinc roofs have largely replaced thatch. A combination of joints, wedges, pegs and lashing ensures a sturdy yet flexible structure

## A. Indigenous Architecture as Basic Architectural Design

needing no nails, which is better able to withstand earthquakes. The interior of Batak house is dark, cramped and smoky. The house is used for working, cooking and sleeping, while at the same time securing a domain separate from the surrounding wilderness. Most of the activities during the day are spent out of doors. The exterior of house is mostly decorated with painting and wood carving.

The original interior of Batak Toba house is just one common room for several families (mostly 4-8), with no walls and room divider. All household activities take place in the common room whereas the cooking stove symbolizes the existence of the inhabitants. The extension of the traditional house is usually arranged to cover various needs of the family members such as private sleeping room, kitchen and storage spaces.

Case studies for the research are selected out of the traditional settlements (huta) along the coastal areas in Samosir Island where most of the recent developments are taking place. The southern part of the island is more densely populated and more developed for international and domestic tourism. Most of the well preserved traditional settlements are to be found in this area although some of them are yet inhabited permanently.

## II. RESEARCH METHODOLOGY

The field research is undertaken in four traditional settlements (huta) which exhibit distinctive character of traditional houses and apparent effort in preserving the heritage and keeping the housing environment well organized. All of the settlements selected are inhabited by the clan family and some houses mostly are in good condition to live in. A few settlements are targeted to be tourist destination but the rest of them are just housing for the family. The huta Siallagan is picked out as the core object and reference of the investigation for several reason, a) the settlement is still inhabited by member of the clan, b) the settlement is physically in a good state as it was in its origin, c) the settlement has been developed as an important tourist destination, d) the settlement is a typical traditional settlement of Batak Toba. Other huta being investigated are in the neighbourhood of huta Siallagan with a distance of approximately 20 km (1,2,3). All of the huta selected meet the same criteria as the core object, except the one as a tourist destination, in order that comparison between different contexts could be outlined. Houses that are being selected as samples of the research are representative of the outstanding physical changes that have undertaken in the settlements mentioned.



Figure 1. Map of objects location

Source : <http://www.samosirtourism.com>

(S) Huta Siallagan, (1) Huta Lumban Simarmata, (2) Huta Sibatu-batu, (3) Huta Janji Martahan.

The field survey is undertaken to identify and analyze the original form of the house and the physical changes that have taking place in the house, which significantly influence the image and overall design of the traditional architecture. The focus of the analysis is to identify the tendency and pattern of building extension and accordingly the roof composition that may

agitate the cultural image sustainability of Batak houses. The investigation is limited to the visual analysis of building appearance and arrangement of building elements, e.g. substructure, enclosure, wall opening, roof, and building material.

### III. THE TYPOLOGY OF BUILDING EXTENSION



Figure 1. Type 1 Huta Siallagan  
Source: Field study, 2010

The original house is extended at the back by imitating the original building style. A harmonious composition is being created by using similar building material and expression. Horizontal line in building façade is being kept up although its position is not exactly at the same level in old and new building. The same material is being applied for the substructure, building enclosure and roof. Variation of wall opening is being applied without disrupting the character of the old house. The new roof is a simpler version of the old one. The orientation of the new building is perpendicular to the old one and a kind of bridge structure is being put between the old and new building. The separation of the new from the old one is underlined by different color and system of the bridge structure, but rhythmic appearance is being set up by putting stone steps to the entrance of the house.



Figure 2. Type 2 Huta Siallagan  
Source: Field study, 2010

The original house is extended at the back by constructing a different building system: masonry, with no reference to the old house. The new building is set up as an attachment to the original one, yet with a completely different expression. Anyhow, it stands as a subordinate of the main building. The substructure of the main building is not respected, but the original roof's inclination is being kept. The new roof is expressed as an extension of the main building. The mass of the new building is perpendicular to the old one, but there is no transition structure between them. Masonry and wood structure is attached next to each other disregarding of its position and system. A new space configuration is created in front of the

## A. Indigenous Architecture as Basic Architectural Design

new building by putting lines for hanging clothes. The new masonry wall generates a spatial enclosure between two neighboring houses, which is not common in the spatial pattern of traditional settlement. The existing repetitive rhythm of traditional houses is distracted by the striking contrast of new building element and activities.



Figure 3. Type 3 Huta Siallagan  
Source: Field study, 2010

The original house is extended at the back by a two-storey construction. Although similar material has been applied for the extension, but the contrast color and distinctive scale of the new building have interrupt the harmonious composition of the old house. The extension is by no means incorporated to the original house as it stands more as an opponent to the old one. The substructure and architectural form of the main building is not respected, and therefore, the new building is defined as another system in the house. Consequently, two separate architectural form and expression are being joined with no reference at all. The mass of the new building axially corresponds to the old one, but there is no unity between them. The bigger size of the new building disrespects the older one and disrupts the character and style of the settlement.



Figure 4. Type 4 Huta Sibatu-batu  
Source: Field study, 2010

The original house is extended at the back by constructing a masonry house axially in line with the original one. Although building enclosure has a different system yet the wall opening adopts the pattern of traditional house: door opening at the front façade and window opening at the side façade. The opening system is restating the traditional art of putting one opening for each side of the building. Roof structure and its architectural style does not correspond to the traditional house, and the roof system applied is a typical small size modern urban building. Window and door opening are also typical of modern style of urban houses. The new building does not indicate the distinction of lower and upper level of the traditional

## A. Indigenous Architecture as Basic Architectural Design

house, therefore there is no unity between the new and old building. They are purely two different houses with two different expressions, yet belong to the same ownership and household.

Figure 5. Type 5 Huta Janji Martahan



Source: Field study, 2010

The original house is extended at the back by imitating its building system. A harmonious composition is being created by using similar building material and expression. Horizontal line in building façade is being kept up although its position is not exactly at the same level in old and new building. The same material is being applied for the substructure, building enclosure and roof. Variation of wall opening has been applied without disrupting the character of the old house. The new roof is a simpler version of the old one. The orientation of the new building is perpendicular to the old one and a kind of middle roof has been put between the old and new building. The separation of the new from the old one is underlined by different roof system and building mass, but new wooden steps is imitating the older version of the house.



Figure 6. Type 6 Huta Lumban Simarmata

Source: Field study, 2010

The original house is extended at the back by a one-storey wooden house which is axially in line with the original one. The building enclosure has a different system following the construction system of the roof. Roof structure and its architectural style does not correspond to the traditional house. The roof system applied is typical for small size building structure that is usually incrementally built. Window and door opening are arranged randomly with no correspondence at all with the opening pattern in the old house. The new building does not indicate the distinction of lower and upper level of the traditional house, therefore there is no unity between the new and old building. The use of similar material for the wall and roof helps indicate the growing process of the house.

#### IV. ANALYSIS AND DISCUSSION

The extension of original house is identified and analyzed by making comparison to the traditional system according to its building system and architectural style. The building system is divided to three parts: substructure, main building and roof, following the classification of building system in traditional architecture: kepala (head) – badan (body) – kaki (foot). Hence, the changes of physical appearance to the original house can be clearly identified and described.

Table 1. Comparison of the new building to the traditional building system

Building system	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
<b>Substructure</b>						
Structural system	<b>similar</b>	none	none	none	<b>similar</b>	none
Material	<b>similar</b>	none	none	none	<b>similar</b>	none
Usage	<b>similar</b>	none	none	none	<b>similar</b>	none
<b>Main Building</b>						
Structural system	<b>Post-lintel</b>	Bearing wall	Post-lintel	Bearing wall	<b>Post-lintel</b>	<b>Post-lintel</b>
Material	<b>wooden</b>	masonry	wooden	masonry	<b>wooden</b>	<b>wooden</b>
Usage	<b>kitchen, service</b>	kitchen, service	kit, serv, sleep	kitchen, service	<b>kitchen, service</b>	<b>kitchen, service</b>
Building mass	<b>1 storey</b>	1-storey	2-storey	1 storey	<b>1 storey</b>	<b>1 storey</b>
Architectural Expression	<b>harmony</b>	disharm	disharm	disharm	<b>harmony</b>	<b>harmony</b>
<b>Roof</b>						
Structural system	<b>congruent</b>	incongr.	incongr.	congruent	<b>congruent</b>	<b>congruent</b>
Material	<b>similar (zinc)</b>	similar (zinc)	similar (zinc)	similar (zinc)	<b>similar (zinc)</b>	<b>similar (zinc)</b>
Inclination	<b>dissim</b>	similar	dissim	dissim	<b>dissim</b>	<b>dissim</b>
Roof's ridge	<b>perpendic</b>	axial	axial	axial	<b>perpendic</b>	<b>axial</b>

Two types of houses consistently adopt the substructure and building enclosure of the origin to the new building. Both types compose new building mass in a configuration that is perpendicular to the old house, wherein it establishes a new interpretation of a housing layout which differentiates the representative front and the supportive back of the house. The new composition at right angles enhances the uniqueness yet nobility of the origin and expresses its potential to be in compliance with any new development and challenges. The dissimilarity of inclination of the roof underlines the hierarchy in composition and spatial usage, and further it helps sustaining the traditional values of the original house. The lack of substructure in house type 6, even though other components are in compliance, illustrates that discontinuity in the building system undoubtedly is unconstructive for the sustainability. The typology of extension in Batak Toba houses exemplifies the variation of people's responses to local tradition and traditional values.

## A. Indigenous Architecture as Basic Architectural Design

The growing process of traditional Batak Toba houses is performed at the back of the house which indicates the consciousness and respect of the people to preserve symbolic expression and uniqueness of tradition. Nevertheless, new needs and new way of living of the people are accommodated by creating an adaptation mechanism which is at variance to their sensitivity and awareness on cultural values and to their means of financial resources.

In fact, instinctive and functional reasoning of the people has introduced a new classification of zoning mechanism in housing area. The front of the house is then identified as communal property that has to be preserved for the sustainability of tradition, and the back of the house is designated as private zone that is autonomous to be explored according to individual needs and potentials. Sustainability, in this sense, is defined and comprehended as available space for self determination in advancing cultural tradition and private life of the inhabitants.

New architectural form will turn up in response to new challenges through the process of adaptation and transformation along the time. Inhabitants has the authority to perceive and explore tradition differently either to solve their practical problems or to emphasis identity and originality. The stilts as substructure of the house are to signify the important continuation that has to be set up for a house composition which is partly modern and partly traditional. Further innovative changes may be exercised through different material and spatial arrangement.

## V. CONCLUSION

The sustainability of the traditional architecture is governed by pragmatic motivations and functional considerations of the people inhabited the house. The reasoning about facts, decisions, beliefs and values to extend or renovate a traditional house is no longer considered to be based on the authority of cultural tradition, but instead intertwined with personal ambition, financial resources and pragmatic motivations. It is necessary to facilitate traditional architecture of Batak Toba to have a dialectical relationship with the inhabitants who have the need and authority to express and communicate their reasoning beyond tradition.

The transformation of the substructure into a kind of uninterrupted structure of the extended house is the key factor in sustaining the traditional character of the original house. Variety of roof architecture does not influence the sustaining charm of the traditional architecture, as far as the additional roof is subordinate to the original in scale and inclination. Architecturally speaking, building enclosure of Batak houses is very accommodative to the new interpretation and new challenges. Different combination of construction materials and methods may be developed for different solutions to the new needs, new uses and new inhabitants.

## VI. ACKNOWLEDGEMENT

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