

THE TYPOLOGY OF TRADITIONAL HOUSE: BALE TANI IN SADE VILLAGE, LOMBOK, WEST NUSA TENGGARA

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Abstract

The lack of knowledge of the present generation in understanding the cultural heritage of the ancestors as well as the socio-cultural changes is due to the advancement of tourism. This becomes a phenomenon that could result in the loss of local architectural knowledge, and the loss of cultural values as it is especially the case in the traditional house of Sade village. In an effort to explore the condition, this study on typology of traditional house, especially traditional house of Bale Tani in Sade village, Lombok, West Nusa Tenggara was conducted. In addition to socio-cultural factors, there are other factors that also affect the variety types of its forms such as climate, technology, land selection, availability of materials and construction method.

The research used qualitative method with naturalistic approach supported by literature and comparative study. The result of the research indicates that there has been a transformation process in the form of traditional house of Bale Tani but it is not dominant (it does not affect the visual form as a whole), it has slow progress (it happens within the long time span) and it happens on some parts/elements of Bale Tani only. Factors that influence the change are endogenous (understanding the cultural values by the Sade society) and exogenous

factors that is the influence of social culture (tourism).

Keywords: Typology, traditional house, Bale Tani

INTRODUCTION

Architecture as a cultural product reflects the civilization of the local community in which the value has passed down over generations, and it is reflected in the architectural appearance of the built environment (Budihardjo et al, 2011). We know that the culture of a society is constantly changing. The cultural change in this study is a process of shifting, in the form of reduction, or addition of elements of the cultural system because of adjustment to the environmental conditions. This is because of the dynamics of interaction with other cultural advocates as it is also happened to Sasak traditional house in Sade village. Since the beginning of its establishment, Sade village has undergone a process of change and development until the present time. (Preliminary observation data, 2017)

This phenomenon of change is important because it relates to the

preservation of local values which tend to be less of attention. This is coupled with lack of knowledge of the present generation in understanding cultural heritage of the ancestors. Therefore, this study was conducted to identify the process of change in the form of traditional house of Sade village. In addition to socio-cultural factors, there are factors that also affect change such as climate, technology, land selection, availability of materials and construction methods (Rapoport, 1969). The existence of these factors will become the parameters of change that occurred on the architecture of traditional houses in this Sade village. The observation focuses on the form of three level of change. As revealed by Sugini (1997) the outer level is the physical object, then the physical phenomena, and the deepest is the concept idea. It is expected that this study can reveal the phenomenon of change that will later be useful for the development of Sade traditional house in the future.

RESEARCH METODOLOGY

This research employs qualitative method based on naturalistic approach in terms of literature study on architecture and field study on *Bale Tani* in Sage Village. The data was gathered by recording photo media, recording and drawing tools, as well as interviewing selected figures in Sage Village. The combined data was summarized and processed in the form of categorization then was analyzed in order to draw conclusions regarding the findings.

LITERATURE REVIEW

Morphology is used by various branches of science. Literally, morphology means "the knowledge of form" (morphos). Morphology is composed of two words i.e. *morph* which means form and *logos* which means science (wikipedia.org). Morphology in Architecture is the study of the product and the changes of building physic and spatial forms.

Morphological studies began in the Renaissance, when the discovery of new areas with flora and fauna were very diverse. In subsequent developments, morphological studies did not only acquire the classification of the shape and structure of an object, but it also developed an understanding of the evolution and transformation (metamorphosis). In the field of architecture, the concept of morphology is a fundamental study in seeing and sorting components and classifying them into types; morphology is also a study of type and model evolution; morphology demonstrates transformation and metamorphosis; and morphology is a study on typological and transformation (Mentayani, 2007). In conclusion, morphology is the study of typology of form metamorphosis.

Typology is a way to classify all kinds of objects based on similarity, function, trait, trend, size, and hierarchy (Moneo,1978). The study of typology involves the study of types, viz., to examine the formal similarity of a group of objects. Typology can also mean as the study of object groupings (as models) through structural similarity. This formal structure contains meaning that is not only related to physical geometry, but it also related to real conditions, ranging from social activities

to building construction. The study of typology also includes categorization and taxonomic efforts. Taxonomy is the formulation of the rules of the information on the object through the arrangement of hierarchical categories of order. In classifying, categorization is also carried out by looking at the differences so that in the study of typology uniformity and diversity can be directly perceived. (Mentayani, 2007)

Form is a basic entity in architecture. The work of architecture depicts a formation in which it contains definite engineering systems (structures and constructions). This form is created to accommodate an activity, function, as well as meaning (Salura, 2007). The shape of a dwelling if manifested by the anthropometrics of the human body is manifested through the roof as the top (head), the body as the middle and the bottom as the foot of the human body (Frick in Lihawa, 1997). Rapoport (1990) articulates that artificial cultures and environments are changing simultaneously. Each change is divided into three parts: (1) core elements which are slowly changing and becomes the identity of the owner, (2) peripheral element is a part that is not too important and easy to change (3) new element adopted by the owners of the culture and a new part of architecture.

There are three aspects that can be used as a benchmark to perceive changes in the physical environment of unified settlements system (Habraken in Lihawa, 1978), namely:

- 1) Spatial system that is various aspects of benchmark relating to organization of space or spatial. This system includes space types, space orientation and spatial patterns of space.
- 2) Physical system that is various aspects of guidelines associated with the construction and use of used materials in realizing a building. This system includes structures, roof construction, walls, and floors.
- 3) Stylistic system that is various aspects of principles associated with the model or style that embodies the form. This system includes the facade, the form of doors and windows, as well as other elements both inside and outside the room.
- 4) Amos Rapoport in the book *House, Form and Culture* states that the occurrence of vernacular forms or models is caused by several factors known as modifying factors, i.e.:
- 5) Material factor, the selection in using materials is influenced by the society's view of the natural surroundings. This society tends to use natural materials categorized as 'friendly' with nature.
- 6) Construction methods, the construction experts is rarely employed because in the vernacular environment the applied model is shared, clear, and easy to be understood by the community when they build their own house.
- 7) Technological factors, the technology is inherited and becomes a tradition and closely related to the cultural, material, and construction factors.
- 8) Climate, material selection, construction and technology factors

are always used to refer to the surrounding environment so that vernacular forms are the result of solving the environmental problems, especially climate.

- 9) Landscape selection, environmental limitations or existing resources may cause the choice of possible forms to be limited and decreased, so land has an important role in determining vernacular models. Land selection is basically influenced by several elements such as tradition and economy. Land selection provides meaning to the building in terms of physical (religious condition).
- 10) Socio-cultural factors, social factors include family structure, social organization, community relations and livelihoods while cultural factors include the human view of nature, ideal life ideas, symbols, beliefs, and religions. These two factors influence other factors in the process of modeling in vernacular design.

RESULT AND DISCUSSION

This study discusses the transformations of *Bale Tani* in term of the changes physical and spatial forms.

However, this paper will only focus on the discussion of shape transformations in terms of physical form. The discussion will be initiated by the head (roof), the body (wall), and the foot (floor, foundation). The location of Bale Tani traditional house can be seen in Figure 1.

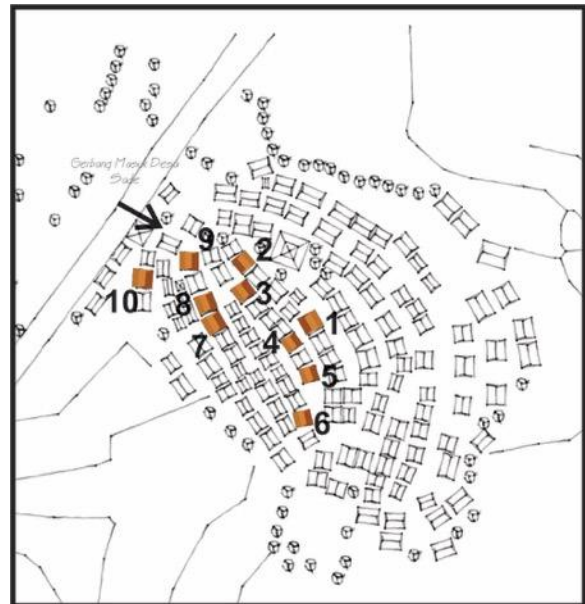


Figure 1. Location of Bale Tani Building
Objects studied

Source: observation data, reprocessed from
google maps, 2017

The process of categorizing the physical form of Bale Tani can be seen as follows:

typology / categorization of physical form												
Element	Component	Early B. Tani	Bale Tani 1	Bale Tani 2	Bale Tani 3	Bale Tani 4	Bale Tani 5	Bale Tani 6	Bale Tani 7	Bale Tani 8	Bale Tani 9	B. Tani 10
Element of the head (the roof)	Roof Shape											
	explanation	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form	gunungan form
	Roof Types	TBA X	TBA 1	TBA 1	TBA 1	TBA 1	TBA 1	TBA 1	TBA 1	TBA 1	TBA 1	TBA 1
	Roof Materials	using the straw material found around Sade Village										
	explanation	rice straw	rice straw	rice straw	rice straw	rice straw	rice straw	rice straw	rice straw	rice straw	rice straw	rice straw
	Roof Material Type	TMA X	TMA 1	TMA 1	TMA 1	TMA 1	TMA 1	TMA 1	TMA 1	TMA 1	TMA 1	TMA 1
	Frame + Roof Tie	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame	Bamboo Frame
	explanation	Bamboo Rope Tie	Nylon Strap Tie	Nylon Strap Tie	Bamboo Rope Tie	Bamboo Rope Tie	Bamboo Rope Tie	Bamboo Rope Tie	Bamboo Rope Tie	Bamboo Rope Tie	Bamboo Rope Tie	Nylon Strap Tie
	Frame Type + Roof Tie	TRA X	TRA 1	TRA 1	TRA 2	TRA 2	TRA 2	TRA 2	TRA 2	TRA 2	TRA 2	TRA 2

TBA = Tipe Bentuk Atap (Roof Material Type)
TMA = Tipe Material Atap (Roof Material Type)
TRA = Tipe Rangka + Pengikat Atap (Frame Type + Roof Tie)

Figure 2. The types of roof cover form
Source: observation results, 2017

Typology / Categorization by Physical Form												
Element	Component	Early B. Tani	Bale Tani 1	Bale Tani 2	Bale Tani 3	Bale Tani 4	Bale Tani 5	Bale Tani 6	Bale Tani 7	Bale Tani 8	Bale Tani 9	B. Tani 10
Body Elements (Wall / Fasade)	Door	using a two-sided door model										
	explanation	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo	wooden door with woven bamboo
	Door Type	P X	P 1	P 2	P 3	P 3	P 4	P 3	P 3	P 5	P 6	P 7
	Window	There is a window as a ventilated air vents on the front side of the bale										
	explanation	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows	wooden windows
	Window Type	J X	J 1	J 2	J 1	J 3	J 4	J 5	J 1	J 6	J 1	J 1
	Wall / Partition	The walls from woven bamboo										
	explanation	using woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo	woven bamboo
	Wall Material Type	TMD X	TMD 1	TMD 1	TMD 1	TMD 1	TMD 1	TMD 1	TMD 1	TMD 1	TMD 1	TMD 1

Figure 3. The types of wall components
Source: observation results, 2017

Typology / Categorization of Physical Form

Element	Component	Early B. Tani	Bale Tani 1	Bale Tani 2	Bale Tani 3	Bale Tani 4	Bale Tani 5	Bale Tani 6	Bale Tani 7	Bale Tani 8	Bale Tani 9	B. Tani 10
Body Elements (Wall / Fasade)	Shape / Overall Look											
	explanation	symmetrical between left-right view of the building	symmetrical	symmetrical window difference	symmetrical	symmetrical difference windows and walls	symmetrical	symmetrical difference windows and walls	symmetrical	symmetrical	symmetrical	Asymmetrical
	Facade Type (Symmetrical / Asymmetrical)	TF S X	TF S1	TF S2	TF S1	TF S3	TF S1	TF S3	TF S1	TF S1	TF S1	TF AS1

TF S = Tipe Fasade Simetris (Symmetrical Facade Type)
 TF AS = Tipe Fasade Asimetris (Asymmetrical Facade Type)

Figure 4. The variety of facade
 Source: observation results, 2017

Typology / Categorization by Physical Form

Element	Component	Early B. Tani	Bale Tani 1	Bale Tani 2	Bale Tani 3	Bale Tani 4	Bale Tani 5	Bale Tani 6	Bale Tani 7	Bale Tani 8	Bale Tani 9	B. Tani 10
Foot Element (Floor)	Floor Shape											
	explanation	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps	consists of 3 steps
	Floor Type Shape	TBL X	TBL 1	TBL 1	TBL 1	TBL 1	TBL 1	TBL 1	TBL 1	TBL 1	TBL 1	TBL 1
	Floor Closures Materials	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay, coated with cement	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung	Using a mixture of straw and clay and coated with cow dung
	Floor Type Material	TML X	TML 1	TML 2	TML 1	TML 1	TML 1	TML 1	TML 1	TML 1	TML 1	TML 1

TBL = Tipe Bentuk Lantai (Floor Type Shape)
 TML = Tipe Material Lantai (Floor Type Material)

Figure 5. The types of floor section
 Source: observation results, 2017

The categorized data is further analyzed based on the reasons of change and the results are as follows:

Main Element – Roof form Based on the cases being studied (*Bale Tani 1 - 10*), all the Bale Tani employ *gunungan form* as the model of roof shape. There are various reasons for the use of that particular form as the model of bale tani roof. One reason is that it is not allowed to construct other types of roofing models because it is the regulation in Sade Village (it is not just

roofs but the shapes and materials as well). Although it is prohibited for Sade villagers to build different model houses they are allowed to construct Bale Tani with other models outside Sade village area (rule factor). Another reason is to maintain the typical village as the tourist village, where the roof shape has a strong role in the visual form. The typical roof shape provides an identity for Sade's traditional village (identity factor). In addition, the people still respect the philosophical value of the

gunungan form, as a symbol of greatness (value factor).

Roof Cover Materials

Straw is applied as the roof cover material on all *Bale Tani* type. This means that, there is no change in terms of materials used from the beginning, because it is not allowed to build with other materials (rule factor), the materials can be easily found around the Sade village (amenity factor), and the straw material provides thermal comfort in the afternoon day (climatic factor). In addition, the use of materials has become a hallmark for the Sade community. Although, the use of straw requires extra maintenance (it needs replacement in every 5-15 years), it is still preserved by the community (value factor).

The Structure of Frame and Roof Cover

Bamboo is used as a frame for roof structure (*Bale Tani* 1 - 10). The reason for the selection is due to the availability of materials around the village of Sade (convenient factor) and the habit of using bamboo as roofing cover (technological factor).

There are two types of roof frame binder, i.e. binder by using a strap of bamboo fiber and a string of nylon thread. The use of nylon ropes is found in *Bale Tani* 1 and *Bale Tani* 10, while the other *Bale Tani* still apply the earlier traditional material that is rope from bamboo fiber. Sometimes the plant fiber rope is used as alternative strap.



Figure 6. Top: Using a natural string,
Bottom: Using a Nylon Rope
Source: Author, 2017

This is because of the durability, in which the use of nylon rope is considered more durable than natural rope as it is not necessary to replace the roof frame earlier than the expected time. In addition, the use of bamboo roof frame binder is based on the reason of availability in that it is easier to obtain although it needs to be replaced more frequently (ranging from 5 to 15 years).

Body Elements Doors (Front Door)

There are only three doors of ten which retain the similarities in shape (physically and proportionally) while the remainder have different shapes (frame order and cover of different materials). In general there is a common thread of the same design in the form of straight pattern on horizontal-vertical lines. In addition, the same type of material with the previous *Bale Tani* is applied i.e., *bedek* (woven bamboo), bamboo or wood. In terms of design, the door carries a special form but it still retain its general guidelines

that must be implemented. This is believed to be the unwritten rule that must be obeyed by the whole community. The use of different materials and shapes becomes the concern because the balance with the surrounding environment is important.



Figure 7. Several types of doors on bale Tani studied, still using bamboo, wood and bedek materials, with different shapes but still in the same design language.
Source: Author, 2017

Window

As it is occurred with the door, there is no design of windows which is exactly similar to others. However, the design still has little resemblance to one another. Changes are more directed towards the development, in this case from a modified form to another form or pattern of other arrangements. Patterns are mostly used in horizontal and vertical straight lines and wood is mostly used as the materials because it is easy to get (convenient factor) and to keep the shape in order to maintain balance with with the environment.



Figure 8. Several types of windows from wood materials in *Bale Tani*, in similar design
Source: Author, 2017

Wall

All the *Bale Tani* walls are made of woven bamboo as wall because it is easy to obtain and it is the local rule. Another reason is that the bamboo material is considered as the heat conductor and it has high porosity so that during the day the condition of the house is cool.

In general, the form of *Bale Tani* is symmetrical, it can be found in *Bale Tani 1* to (although the symmetry level differs among houses but it is considered symmetrical if it has the same composition i.e., the door in the middle with the window on the left-right sides). There is a slightly different form in *Bale Tani 10*, where the visible form does not meet the symmetrical criteria in this grouping of forms. Based on the result of the observation, this *Bale Tani* is a newly renovated one after previously suffered considerable damage. The limitation of funds in building *Bale Tani* resulted on the careless construction of *Bale Tani*, so it does not meet the rules of symmetry that should be applied. Nevertheless,

the selection of materials and the general rules are still applied. This type of house is still accepted as a part of the typology of Sade village house because according to the local agreement it does not have visual gap with other *Bale Tani* performance.

Foot Element - Floor

There is a general resemblance to the floor form of *Bale Tani* in which there is a 1- 2-3 steps-pattern based on the floor height. The pattern of 1-2-3 steps occurs in each *Bali Tani* but with varying heights. The altitude is influenced by natural factors because *Bale Tani* is constructed in a hilly land area so that this pattern of steps is constructed accordingly. However, it is also found that in flat surface conditions the pattern of 1-2-3 pattern is also applied as it is found in *Bale Tani* 10. Another reason is that this pattern is related to the teachings of *Watu Telu* as the belief of Sade village community. The form of three staircases symbolizes the teachings so that it becomes the grip/pattern of this *Bale Tani* development.

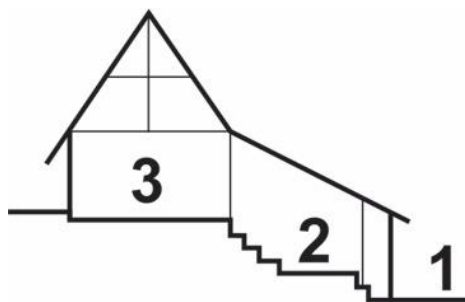


Figure 9. The pattern of floor heights 1-2-3 of the *Bale Tani*
Source: Author, 2017

Floor

The floor material cover consists of a mixture of straw and clay coated with cow dung on the top. It is found in *Bale Tani* 1, 3, 4, 5, 6, 7, 8, 9, and 10. The use of cow dung in the society is described as a genuine floor material because it is believed that it will create warming effect at night and it is also a part of the maintained and preserved tradition and culture of Sade community. Differences found in *Bale Tani* no 2 where the floor material has been coated with cement but there is no information regarding the change of material. Yet, the change in function from merely a house into a workshop highlights that the use of cement is selected to support the new function of this *Bale*, in that, the change of function influences the type of material used.



Figure 10. Right: Coated Cow Dung, Left: Coated Cement
Source: Author, 2017

From the above discussion, it can be concluded that the typology of *Bale Tani* is manifestation of :

- 1) The similarity of form as an identity of togetherness
- 2) The form provides identity to the owner of *bale* and the uniqueness of Sade traditional village. The similar

physical form of *Bale Tani* is a symbol of togetherness and social equality. This is the actualization of Sade community's pride that they are different from others.

- 3) Shape as a symbol of value
- 4) The form of *Bale Tani* is the manifestation of local values, such as: roof is a symbol of greatness; floor is a symbol of the teachings of *Watu Telu* (Sade's ancestor belief). The implementation of these values keeps the *Bale's* peasant to pay more attention and respect the traditional norms.
- 5) Shape as a response to nature
- 6) The use of high-ridge straw roof affects the low room temperature, in addition to the porous bamboo wall. Cow dung floor related to local climate response. The stepped terraces reflect that the house located at hilly land.
- 7) Forms as indicator of the awareness of cultural sustainability
- 8) The awareness of cultural sustainability arises from the understanding that a physical traditional characteristic should be maintained and well packed. It is considered that the preservation of physical and traditional values can improve the number of tourists and can increase the occupant's income.

CONCLUSION

The conclusions of study are:

- 1) The physical changes occur in: 1) the components of doors and windows; and 2) the use of new materials such as nylon and cement yarns. The rest of physical form did not change significantly. In term of

space values, the change occurs in term of room functions.

- 2) The persistence of *Bale Tani* traditional form is significant to be conserved due to the physical changes are not dominant and it does not affect to the physical performance visually. While the existing change leads to the provision of spaces for the needs of visitors/tourists.
- 3) The changes of physical and spatial aspect are relatively slowly in advance and it runs faster after the local government assigns the Sade village as a tourism village.
- 4) The causes of change are divided into endogenous and exogenous factors, that are: 1) endogen is related to the occupant's comprehension in term of their cultural values ; and 2) exogenous is related to the current Sade village existence as tourism village.

This research could be an initial step to develop the conservation guide line of *Bale Tani* traditional house that will support the Sade village as tourism object.

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