Re-programming Sa’o, pursuing sustainable architecture in Ngada traditional house: a recommendation

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Abstract. Traditional house is cultural heritage owned by a nation recognized with its identity and history, memory, and culture. On its development in this modern era, buildings that was created by its local values have changed on its function and utilization. Sa’o as traditional house of Ngada people likewise has changed in interpretation and function. Through adaptive reuse, it became most popular approach in the earlier 21th century along with sustainability issue in architecture. Altering the interior spaces can achieve the conception of adaptive reuse which creates sustainability. This concept is related to culture, economic, and environmental aspect. This research offers recommendation to undertake adaptive reuse concept in Sa’o traditional house in order to gain preservation and commercial value.

Keywords: traditional house, re-programming, adaptive reuse, space orientation, space zoning

1. Introduction

The house, has been identified for years as a media from natural changes and protect from wild animals attack. Furthermore, Indonesian traditional houses (or widely known as Rumah Adat) consist of philosophical values, more than just a shelter or dwelling space. Traditional houses can accommodate spiritual needs, human habitation and adaptation; climate, nature conditions, social relations, craftsmanship, materials, and other non-tangible values. As Rapoport [1] said that customary house (traditional dwellings) have non-tangible aspects, not only as a living space, but it also become a physical manifestation between human and the universe [2]. Consequently, it usually takes time and costly to make a customary house along with the specific rituals to achieve a holistic connections.

Nowadays, there are several challenges for the traditional houses to answer its function as a human basic needs amongst technology (modernization and diminishing of the resources), culture, and lower pride and value of their traditional house from certain tribes in Indonesia [3]. These challenges have drove a paradigm and affected on the certain function in the traditional house. The changes are not only predispose the spatial use in the traditional houses, but also embodied the changes between the building fabrics, materials, and embraced value. As time goes by, many changes also implemented to
preserve the existence of traditional house, especially for the habitable one. The changes are costly and consume more energy. As Budiharjo explained, the effort of building conservation and historical environment which aimed to preserve city identity, among other acts are giving a new function in the old building, façade preservation, and conservation to protect the habitable architectural building [4]. This statement is supported by Silas, that restore the authentic form of the house can accentuate the historical region’s characteristic [5]. Hereafter, other activities can be added in the traditional houses such as restaurant, souvenir shops, art market, and local craft center to turn any other benefits [6]. The utilities traditional houses became commercial space happens because the different needed and function between the past and the modern era. For example case in Java, recently, most officials bought the traditional house in Java (Omah), for later used as a commercial space usually used for restaurants, hotels and so forth, and make a lot of changes because the needs of those format [7]. Both of the owner and the investor of traditional house need the benefit by changes the function.

Facing all the challenges above, the traditional house has a potential to be developed further without making significant changes on the physical form. This effort can be supported by the adaptive reuse concept. Following Bullen, adaptive reuse is the way to maintenance the heritage building with sustainability in culture, economic, and environment [8]. Adaptive Reuse became most popular approach in the early 21st century in conjunction with the growth of sustainability issue in architecture world. Re-use in architectural concept is simply described as using a building or structures to give a “new life” to its function [11]. Compare to build a new house or building, this process is more efficient by playing an important role on the energy consumption. By adaptive reuse, utilization of the traditional house, as a form of green lifestyle that refers to reuse, reduce, recreate, responsible and as potential way in reducing construction waste [7].

Adaptive Re-use itself can perform as a memories and function keeper in such areas, more than just protect the body of the building. This approach also maintains the authenticity of a space and place in the house. Moreover, in this context interior design was emphasized apart from just aesthetically pleasing, but concerned about safety reason and direct impact to the human as well [10]. In practice, Adaptive Re-use concept is frequently applied on the old or historical buildings, or the buildings that specifically protected with legal aspect. This concept also can be applied to the buildings with “Cultural Heritage” by private ownership or non – government ownership as listed on Indonesia’s government regulation, UU no 11 tahun 2010 about heritage. The objective of this paper is to identified re-programing recommendation in the interior areas of Sa’o (Ngada Traditional House) to activate the other function of Sa’o.

2. Methods

This observation were took place during art and design residency program of IKKON that has been accomplished by the author in 2016. All of the observation process, identification, analyse, synthesis, and result of this recommendation were done by the author during the residency in Bena and Tololela Megalith Villages in Ngada Regency, East Nusa Tenggara, Indonesia. This study was conducted in two phases; the identification of the interior space of Sa’o and analyses the zoning for homestay. The first identified the presumed existing traditional ‘core’ by Kotharkar & Deshpande [9]. Identification process was done by literature review, field observation, and drafting the residents’ activities. The second analysed the zoning areas in the traditional Sa’o into homestay. The analysis process was done by connecting activities and space requirement from the resident and tourist. This process using zoning and grouping technique to achieve the most effective zoning recommendation for the traditional house.
3. Result and Discussion

3.1. Traditional house Sa’o in Ngada
Sa’o Traditional house has a stilt construction with “umpak” foundation. In the traditional form, Sa’o used natural materials such as straw roof, wooden wall and structure, and bamboo flooring. The number of Sa’o is various depend on the number of sub-tribe in every village. Sa’o has several types, there are Sa’o Saka Pu’u (main house), Sa’o Saka Lobo (supporting house), and some of Sa’o Pibe / Dai (tribes member house). The research object is traditional dwellings of Ngada indigenous people located on two traditional villages, Bena Megalith Villages and Tololela Megalith Village in Ngada Regency, East Nusa Tenggara, Indonesia (Figure 1).

![Figure 1. Megalith stone and Buffalo horn ornaments in front of Sa’o (left), Landscape of Bena traditional Village right). (Source: Siti, 2016)](image)

3.2. Zoning Areas in Sa’o
Generally, all Sa’o types has the same zone; Teda Mo’a (public veranda), Teda One (living room/semi private area), and One (Ritual chamber as a private area). One is one of the important parts of the house and only selected people may enter the room. There are several areas for specific sacred ritual inside One such as Lapu (sacred kitchen/fireplace), Ulu (Head of family area), Papa Bhoko (woman area), Papa Lewa (man area), and Ruru Wea. Every zone in this house has different floor levelling (stepped flooring) and divided by the wall or wooden fence. Every step and zone represents maturity process from childhood to adulthood. In the evolution of Sa’o, there are certain changes on the building form and the materials. There is a “healthy house” concept introduced by the Dutch Missionaries and adapted by the government of the Republic of Indonesia in the 80s era [12]. This conception persuade the society that a healthy house is built on the ground surface (not a stilt house), has large and plenty windows, has a kitchen and toilet in separate building. This idea has successfully changed the dwelling pattern of Ngada people, most of them left their villages and started to build hybrid houses (healthy house) outside the traditional village along with various adjustment, such as the number of rooms in the house, or other areas to accommodate their daily needs. Besides all of these changes and development, main zoning system from the traditional Sa’o was still used to the spatial pattern of the hybrid house interior (Figure 2).
Based on the sustainability context, Sa’o traditional house has a potential to be activated as a dwelling house and other activities with economic value. In the tourism scheme, traditional house has a potential to become a homestay for overnight tourist in the traditional villages. Reconstruction is one of the best way to give economic benefit through utilize architecture as a conservation effort [3]. Local government of Ngada regency has formulated a program to bring back Ngada people to traditional villages as an endeavour to revive activities in the traditional villages through tourism. As response to the situation, adaptive re-use can be applied in the traditional villages in order to achieve efficient cost and development. In addition, it can reduce energy consumption on the renovation process.
Figure 4. Divided space for the guests and the hosts in Teda One. (IKKON Team, 2016)

Teda One as a neutral area (semi–private) is utilized in a new function as hosting guests area (Figure 4). However, the main function of Teda one was has no specific area for the guests. User activity table below shown that both host and guest are frequently used this area at once (Table 1). Whereas, the guest will use this area to sleep and store their goods. In this case the private barrier for the guest and the host was disappear. In the hospitality view, host orientation in the Teda One area has been changed from private to semi-public so that they can host any guest in Sa’o. This adjustment requires a spatial re-programming to achieve well-proportioned space, between the hosts and the guests in order to maintain social distance from both users without requisite build a new room or divider. Thus, the guest will have a good space experience during their stay in Sa’o. The experience qualities are reviewed from the side of privacy, cleanliness, and safety.

Table 1. User Activity in Sa’o Table.

| ACTIVITY                        | HOST                                                                 | GUEST                              |
|---------------------------------|----------------------------------------------------------------------|------------------------------------|
| Weaving/ Wickering in veranda   | Travel around the village (Short visit)                              | Teda Mo’a                          |
| Hosting guest                   | Visiting Sa’o (long visit)                                           | Teda Mo’a                          |
| Mate Manu Ritual                | Mate Manu Ritual                                                     | One                                |
| Cooking in the kitchen          | Other activities                                                     | Service Area                       |
| Other Activities                | Put carrier bag/suitcase in Sa’o                                     | Teda One                           |
| dinner together with guest      | dinner together with the host                                        | Teda One                           |
| Sleeping                        | -                                                                   | Private bedroom                    |
| -                               | Sleeping                                                            | Teda One                           |
As seen on the illustration above (Figure 5 and 6), re-programming intervention was done to preserve authenticity of the original Sa’o. Prevention encompasses all the material used in the house, so that any other decorative changes can be avoided. In this discussion, re-programming focus is in Teda One as the most complicated areas in the house. The scheme shown the zone of distribution on Teda One has been divided into 2 parts; wet area and dry area. Wet area is the zone with direct circulation access to the public kitchen to support dining activity. Meanwhile, the guests can put their stuff in the dry area. This area also can accommodate sleeping activity for the guest using sleeping bags or mattress. For additional recommendation, the host has to adjust their goods or home furnishing to the other area from the dry area to give adequate space for the guest. Both of the users have their own circulation access and tolerable border for their private space.

4. Conclusion
By using this re-programming, Sa’o need no massif border (divider or partition) to facilitate guest activities. Built a space perception and orientation within the new zoning can effectively optimize the open space with different function. This study also has a potential developed into the shop house. Teda Mo’a as a public space can be utilized as display area. Furthermore, this zonation plan can be a
guide to activate other function in the traditional house, without avoiding all the customary rules in the interior spaces of Sa’o.

This plan needs more coordination and good communication between host of the Sa’o and also the head of the tribes so that the perception can widely understood by all of the host in the traditional villages. Cooperation between the hosts is needed to communicate the room orientation to the guest who wants to stay overnight. Furthermore, formulated the tourism system in the traditional villages including make a continuous simulation (exercising the system) in every Sa’o are strongly needed to implement the concept in the real practice. Moreover, further research is required to accomplish this recommendation.

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Acknowledgement
The authors gratefully acknowledge that the present research is personal and dedicated this research for Interior Design Department, Bina Nusantara University Jakarta, Indonesia.