Building Task Concepts of the Vernacular Settlement in Tamkesi Village

Reginaldo Christophori Lake, Benediktus Boli, Ubaldus Djonda, Yohanes Nurak Siwa
Universitas Katolik Widya Mandira, Kupang, Indonesia,

Corresponding e-mail: egilake@yahoo.com; egilake@unwira.ac.id

Abstract. Tamkesi village in Timor Island is a vernacular village designed and constructed by the local people based on local wisdom and knowledge. The Tamkesi settlement was developed on the basis of culture of Southern Biboki ancestral traditions, either in terms of the order of space outside the building or the order of space inside the building. The mass building of Tamkesi people contains 6 masses, either occupancy masses or non-occupancy masses. Tamkesi vernacular settlement is very significant to be analyzed because of the phenomenon of its local wisdom concept. This research, therefore, was focused on the process and concept of building task architecture. Such concept is believed to contribute to today’s architectural designs. This study used literature review and field notes as its methodology. The employed reading tool in this study is based on the relationships which exist in function-form-meaning of vernacular architecture. The building task analysis was used as an identification tool of a concept which influences function-form-meaning of a case study. The result indicates that the building task of the study object is a phenomenological concept of the existence of a vernacular settlement which has been survived until this time based on the local natural condition and social symbol of cultural settlement. The contribution of the process to discover the concept of building task of Tamkesi vernacular architecture is the understanding about the value of culture and the symbols of tradition as the concept of local identity of today’s architecture.

Keywords: building task, traditional vernacular architecture, Tamkesi village

1. Introduction
Tamkesi village is a vernacular village [1]. A vernacular village is designed by the first generation of the villagers and further developed by their descendants [2]. The development of village’s space as a whole refers to the physical order established by the founding generation through customary rituals, in which the ancestors were invited to be present and give the directional signs to the villagers [2]. The understanding of such village spatial phenomenology is evident in Tamkesi village, which can be described in the socio-symbolic spatial concept of the settlement inner space, that is, brotherhood relationship of the ethnic/tribe, spiritual relationship, relationship of the obedience to the tradition, and the special relationship of humans and nature [3].

The establishment of retidential space of Tamkesi village is very unique, which is composed of grave part (naukel), traditional farm (lele), customary forest (nasi), and a new village (kuan feu) [1].

In the settlement tradition, Tamkesi people talk about the expressions which indicate the category of “in-village” and “outside-village”. The socio-culture of Tamkesi reveals that Usboko is “an inner
tribe/the guardian of in-village”, because Tamkesi people acknowledge Usboko tribe as the revelation of Usboko (as the descendant tribe of Tamkesi sonaf Kaiser). Some people claim that Fai San Nionu tribe which is located in the east of Tamkesi village and Belsinkone tribe which guards the west part as “outside-tribe/ the guardian of outside-village”. Based on the local phenomenological concept, this reality indicates the existing of spatial awareness among the villagers in terms of the relationships of settlement spatial orders through actual experiences on such reality [1].

This spatial perception is based on the tasks and functions of each tribe in Tamkesi village. Tamkesi people say that the West part and East part are outer village because those areas are known as the territory used to collect tributes by Fai San Nionu tribe and Bel Sinkone tribe to be offered to Kaiser (king) which resides in ‘in-village’ (Usboko territory). The living experience on such spatial concept was finally crystallized and giving birth to typical expressions of Tamkesi village [1].

The settlement phenomenon in Tamkesi village is interesting to be observed, especially the meaning of “building task” concepts of Tamkesi people settlement based on their ancestral cultural customs.

This paper aims to explore the phenomenon of concept and function of elements which establish spatial form of Tamkesi village as an internal inspiration for Tamkesi village and the motivations for other villages to maintain their typical characteristics and identity through the preservation architectural settlement elements. The research problem was formulated as, “What is the meaning of spatial physical form based on the theory of building task function of the vernacular settlement of Tamkesi village?”

2. Methods

The methodology used is literary review, that is, the elaboration between building task theory [4] and the ordering principles of function-form-meaning (Pursal, 2010), supported by the field notes (logbook) produced from the results of research process based on on the physical trace, and equipped with ethnographic verbal data [2]. The field notes used as the data of this paper were taken in 2010 and 2014, used in the thesis entitled, “Konsep Ruang Dalam dan Ruang Luar Arsitektur Permukiman Tradisional Suku Atoni di Kampung Adat Tamkesi di Pulau Timor” (The Concept of Indoor Space and Outer Space Architecture of Atoni Traditional Settlements in Tamkesi Customary Village in Timor Island) and the book with the same title, completed in 2014. The data on the concept of settlement phenomena in the thesis field notes [5] that was examined through the building task concept has never been used as the materials for research paper due to its variation of contents. Thus, the data is deemed relevant to be used in a research paper with the specific topic on the phenomenon of building task concept in vernacular settlement in Tamkesi village.

2.1. Case Study

Tamkesi traditional village is located in the hamlet III of Southern Biboki Usboko, North Central Timor District (TTU). Geographically, TTU district is located between 9° 02’ 48”LS-9° 37’ 36” LS and between 124° 04’ 02”BT-124°46’00”BT [6]. The borders of Tamkesi traditional village: North side with Tautpah and Sapaen villages, East with Oekopa and Oriabesi, South with T’eba and West with Tokbesi [1].

Specifically, Tamkesi village which consists of 3 hamlets is located in RT. 2 Usboko. Tamkesi village is a home to 18 families [1].

2.2. The Analysis Procedures

Literature review was done on substantial literature and the literature on methodology. The substantial literature contains the information about Tamkesi village, among others, a descriptive book [1], and the research report [3]. In literature review, the data was read again with the focus on the spatial aspects of Tamkesi vernacular settlement, either on the scope element or its function and meaning. The reading of Tamkesi vernacular spatial case was purposively based on the the principles of searching building task concept [4] and ordering principles of function-form-meaning [7].
The overall picture of this study can be illustrated as follow: (see figure 1 below).

![Figure 1. Research design.](image-url)

The analysis consists of two main parts, the first, physical analysis of the study object, and the second, theoretical analysis. In the first analysis, the object was redrawn in three dimensions, and then parsed based on the scale (scope) of the site and the mass. This analysis was done in order to know in details the building task concept of all elements forming Tamkesi settlement architecture. In the second analysis, the relationship of function-form-meaning aspects according to the ordering principles was operationalized. Although the three aspects cannot be separated, the scope of this study focuses on functional aspect which is related to form and meaning. This analysis is based on the theoretical analysis.

3. Discussion

3.1. First, the Building Task Analysis of the Village Scale (Site)

The elements which form the scale of the village (site) consist of open space and mass.

3.1.1. Open Space

The open space in this context is the outer space, which is located around the building, and the opposite of interior space. In the compound of Tamkesi vernacular settlement (Sonaf Biboki), there are some open spaces, namely: settlement courtyard (open courtyard), graves and circulation [8].

a. Settlement courtyard (open courtyard)

The pattern of Tamkesi vernacular settlements is formed in cluster (tanean) with the arrangement adjusted to hill contour conditions in the form of a linear pattern, so that the houses (ume, lopo and sonaf) grow in a circle on the hillsides. The arrangement or hierarchy of settlements in Tamkesi is also influenced by the customary provisions, characterized by the special or sacred zones (places) that need to be taken into considerations [3].

Sonaf is a name for the king’s residential house (palace) which is regarded as a sacred house or a house with some restrictions. In the daily life, the open courtyard (settlement courtyard) is usually used for social activities, a place to dry up agricultural products, even as children’s playground, see Figure 2) [9]. However, in a special open courtyard, there is haumonef (a pole...
with three branches having a flat stone as its altar to place offerings), used for spiritual activities (customary rites). It means an offering place to show dependence, respect and gratitude to the Almighty (Uis neon) and the ancestors (Usif) [1].

**Figure 2.** Open courtyard characterized by the existence of nopon mat and haumonef.

b. Grave (naukel)

The stone grave (naukel) which is circularly arranged (nopon ni nopon) is one of the megalithic traditions in the Tamkesi customary settlements (see Figure 3). Most graves are special tombs for Usif (king), and amaf (tribal chief) buried in the vicinity of the Tamkesi customary settlement.

The tomb is made of circular cobble stones. The tradition to put tombs around Tamkesi vernacular settlement is an expression of respect of Tamkesi people to their ancestors and a belief in the spirit which guards Tamkesi customary settlement [10].
c. Circulation

Tamkesi vernacular settlement is a close settlement, on the basis of regulations of customary traditions. It is a fortress palace, with only one main gate as the entrance and exit access to the settlement. Having only one access (circulation) is believed for security and defense purpose. The circulation pattern symbolizes that the Tamkesi vernacular settlement is central to the activities and life of the Tamkesi-Biboki community, since the beginning (birth) to the end (death) [1].

The Tamkesi settlement pattern is generally oriented towards the North-South, with the south direction as the the entry toward the circulation, the northern direction as the peak of the ritual, marked by the presence of sonaf mnasi (the residence of King/Kaiser). This pattern also indicates that the position (orientation) of the settlement is similar to the position of a sleeping man, that is, the head rests on the mountain (north direction) and the feet are on the river (south direction).

The concept of cultural settlement in Tamkesi has 4 circulation zones in the settlement pattern, namely: (i) The eno naikah zone (first door/ front zone) is the entrance zone (entrance gate), occupied/guarded by taslulu tribe and tkafun tribe whose title is meosopan (warlord/fenching); (ii) The eno tnana zone (second door/middle zone) is a zone to bring tributes to Uis neon and Kaiser, occupied/guarded by Uskono tribe, Uskent tribe, and Bel Sinkone tribe whose title is aat (Kaiser spokesman/ press secretary of Usif king and amaf-amaf tribal chiefs); (iii) The natna zone is called the seventh ladder, as the center of Kaiser’s residence. This zone is intended for the descendants of the king (Usboko tribe); (iv) The eno kotin zone (back zone), consisting of rocks, hill cliffs and Biboki customary forest, is a defense area at the back circulation.

The consequence of the existence of these four types of zones/circulation is the sustainable efforts by the tribes on customary rules and settlement traditions as well as the responsibility to own and maintain the territory of living space in Tamkesi.

In addition, the hierarchy of zone designation in the settlement culture of Tamkesi custom is based on the concept of sacred area (private/fafon) to the profane (public/munini). The settlement culture in Tamkesi customary village believes that the higest area or Biboki hilltop as private space (sacred/fafon) while the hillside section as public space (profane/ munin) (see Figure 4 & 5).
3.1.2. Mass.
The total number of mass buildings in Tamkesi vernacular settlement compound is 6 units. In general, the mass building can be categorized into two based on its functions, namely occupancy mass and non-occupancy mass. Generally, the occupancy mass in Tamkesi consists of Sonaf Mnasi, Ume Mbubu, Ume Lopo and Ume Kbat. Sonaf Mnasi is Kaiser palace (the residence of Usboko tribe), Ume Mbubu (the house for mother/women tribe), Ume Lopo (the house for men tribe, which functions as a place to welcome guests, and barn), and Ume Kbat (the house to gather all members of the tribe as one family, either women tribe or men tribe, see Figure 6). However, the non-occupancy mass consists of sonaf nenobiboki, and hauteas/haumonef. It is the mass which is considered spiritual (sacred) [1].
From the above description, Tamkesi vernacular settlement complex as an environmental model accommodates various functions. The following is the identifiable functions of the vernacular complex of Tamkesi that is classified based on the theory of “task-building” functions by Christian Norberg Schulz:

a. Pragmatic Function

The spatial physical form of Tamkesi settlement shows pragmatic functions namely functional frame and physical control.

- Physical control
  (1) The pattern of complex arrangement of Tamkesi settlement in cluster form is an adaptation effort to the relatively flat topological condition. The hilly condition in the forms of footprints, however, stimulates the growth of mass organization. Surface land was made terraces in order to create suitable soil conditions for activities and the placement of building; (2) The circulation with stone pavement was made in ladder form in order to facilitate the access to the areas with different height. This is an adaptation to the typology; (3) Sonaf and Ume Mbubu (masses) are houses with limited open space. This is an adaptation to the South Biboke nature which is cold throughout the day.

- Functional frame
  (1) The open space in the form of the settlement courtyard has daily functions as a children’s playground, to drying up the harvest products, and the entrance and exit circulations of Tamkesi settlement; (2) The courtyard around naukel and haumonef is used to perform customary rituals asking blessings and protection from the Lord and the ancestors; (3) In everyday life, sonaf mmasi (Kaiser/king palace), ume mbubu and ume lopo function as the place to sleep, welcome the guests, cooking, while non-occupancy masses (sonaf nenobiboki and haumonef/hauteas) are the masses which are considered sacred (spiritual place and the place to keep heirloom items).

b. Symbolic Function

The spatial physical form of Tamkesi settlement also shows symbolic functions which cover social milieu and cultural symbolic.
• Social milieu
(1) Tombs (graves) were made with a unique shape and its existence indicates a hierarchy, which means that the tombs around Tamkesi settlement are the tombs of the ancestors and the tribal chief (amaf) while ordinary people were buried outside the Tamkesi settlement; (2) As a sacred site, sonaf nenobiboki can only be entered by Kaiser’s wife.

• Cultural symbolic
(1) The cluster pattern of Tamkesi vernacular complex symbolizes unity, leading to a single point, that is, Uis neno (the Lord) and the ancestors; (2) Sonaf mnasi as a palace, une mbubu as the symbol of women, while lopo as the symbol of men; (3) Ume mbubu symbolizes a woman (mother). The condition of a short dimension of the door symbolizes the respect of visitors or residents when entering the house in which they should bow down as an expression of honor to the figure of a woman (mother).

3.2. Second, the Building Task Analysis of the Building Scale (Mass)
In architecture, the building function is closely related to the form and space. If the discussion is about function, it is then certainly related to form and space. This happens because the function is a picture of an activity that requires form and space.

The building mass of sonaf mnasi (Kaiser’s palace) was used for the building task analysis of building scale because it is more representative for in depth analysis. Beside its function as Kaiser’s residence, sonaf mnasi also functions as a religious and sacred place in South Biboki area. In terms of form, sonaf mnasi is almost the same with other sonaf. The floor plan is quite oval and elliptical; the patterns of structures, construction, walls, roof, and other materials used are generally the same (Figure 7).

Figure 7. Floor plan of Tamkesi sonaf mnasi.
With in terms of the structure, *sonaf mnasi* is a building with the frame structure which relies on the pedestals of main poles (two main poles: *liurai* pole and *sonbai* pole) and supporting poles connected to each other by the main bars and supporting bars.

From the visualization analysis of Tamkesi *sonaf mnasi* (Kaiser’s palace), the function of that building can be identified based on the theory of building task function of Christian Norberg Schulz:

a. Pragmatic Function

The physical form of Tamkesi *sonaf mnasi* (Kaiser’s palace) shows pragmatic function including functional frame and physical control.

- Physical control
  
  (1) The roof of *sonaf mnasi* which almost touches the ground gives a wide space to the roof in order to avoid the heat of the sun and the rain. In addition, it decreases the circulation of cold air from outside to inside the building, so that the inner space becomes convenient for activities; (2) The elevation of wooden flooring (the concept of stage house) is a control effort to avoid flooding, rain, and soil surface humidity. It also facilitates the cleaning of the house and allows the air circulation through the slit of the floor; (3) The physical condition of *sonaf mnasi* which is completely closed and less open is used as a barrier to protect the inhabitants from cold weather and providing privacy for the residents. Although closed, the cracks of the plank walls and bamboo blades facilitate the air circulation; (4) The roof shape with a slope of more than 60° expedites the flow of rain water. The use of *alang-alang* materials provides a good protection against the local climate, creating thermal comfort and good insulation against noise. In addition, the relatively light *alang-alang* materials provide a relatively light construction loads which consequently reduce the risk of collapse during the earthquake (Figure 8 & 9).

- Functional frame
  
  (1) The terrace is made in the form of a veranda that can be used as a seat. It is located on the edge of *sonaf*, precisely in front of the side door and the front door to accommodate the reception of common guests (ordinary people); (2) The function of the living room (*buka nifa balna*) is used as a central sacred space, characterized by the presence of a pillar of *liurai* and *sonbai*. It is usually used just for customary rituals; (3) *Buka niufa/sulniufa* (the room for Kaiser/king’s seat) is the room for Kaiser and his family. It is a very sacred and private place. The room is also often used as a meeting place for the tribal chiefs (*amaf*); (4) In daily life, *sonaf mnasi* functions as kaiser’s palace, a place for living together with his immediate family, to rest and keep the valuable heirlooms of the king.
b. Symbolic function

The physical form of Tamkesi sonaf mnasi (the palace of Kaiser/king) reveals symbolic functions that include social milieu and cultural symbolic.

- Social milieu

(1) Sonaf mnasi is the residential palace of Kaiser/king Usboko (tribal king). On a cultural scale, it shows a hierarchical difference from ordinary houses. In terms of dimension, sonaf mnasi has a larger size than other houses, due to various activities. Sonaf mnasi is meant for the family activities (women and men tribes of the king’s descendants), and used also as the place to keep heirlooms, and a meeting place for the main tribal chiefs of Tamkesi. Thus, it requires a large circulation (space); (2) The spatial pattern of sonaf mnasi has strata (position) division. The outside terrace of sonaf is intended for ordinary people, buka niufa balna as a central sacred space for the Kaiser/king, buka niufa bahanai sulniufa as an assembly place for tribal chiefs and tetu (ceiling) as a place to keep sacred food tributes; (3) The door was constructed in a low level, so the visitors (guests) must bow down as a sign of respect to the kaiser/king; (4) The social value of gotong royong (working together) and musyawarah (dialogue) is expressed through the construction process of sonaf mnasi. For sonaf mnasi is a palace that is well respected by all people of South Biboki.

c. Cultural symbolic

(1) There are two sacred poles in sonaf mnasi namely liurai pole and sonbai pole as symbols for men and women (sun and moon). This symbol is an expression of the ancestor and the Creator; (2) The materials for the construction of sonaf mnasi should be taken from a customary forest. The gathering process was preceded by a traditional ritual in order to ask permission from the spirit who guards that place. It is a symbol to keep harmony between human beings and the nature; (3) the carvings in the poles and entrance door of sonaf mnasi in the form of nature motif become the identity of Tamkesi people.

4. Conclusion

Based on the analysis of building task concepts of Tamkesi vernacular settlement, some points can be taken as a conclusion: (1) The building task concept of Tamkesi settlement was formed based on the open space (open courtyard, circulation and grave), mass occupancy (sonaf mnasi, ume mbubu, lopo and ume kbat) and non-mass occupancy (sonaf nenobiboki and huateas/haumonef). In the occupancy scale, the building task was materialized through the environment of Tamkesi vernacular settlement. Both pragmatic function and symbolic function are interrelated and influence physical form of Tamkesi vernacular settlement. Physical control of Tamkesi vernacular settlement was influence by weather, tribal organization and topography. On the other hand, the functional frame is reflected on the existence of various masses with different functions accompanied by all supporting space equipments. Symbolic function is social milieu which is influenced by the viewpoint about social strata concept, while cultural symbolic is related to the belief concept (religion). (2) The bulding task concept of mass scale is materialized in the spatial physical form of sonaf mnasi. Both pragmatic and symbolic functions influence spatial physical form of the mass building. Physical control appears at the surface, either in the roof, wall, and floor in order to create a comfortable room to be occupied. Likewise, the functional frame is revealed at the division of rooms inside sonaf mnasi. Symbolic function is expressed in the form of social milieu, the division of room functions in sonaf mnasi based on different social strata, and the tasks of customary stakeholders. The dimension of the door was constructed in a small size so that the visitors need to bow down during the entry as a sign of respect to the hosts (residents). Likewise, the values of working together and dialogue during the construction process of sonaf mnasi are meant for the common ownership of sonaf mnasi by the people of South Biboki. The cultural symbol is closely related to the belief in the ancestors and the Creator.
5. Findings
The shape, space and pattern of Tamkesi vernacular settlement is influenced by physical and non-physical factors. The physical factors include climate, weather, and topography. The non-physical factors are social system, tribal organization, belief (spiritual factor) and daily activities.

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