DOI: 10.6936/NIJHSS.202012_2(2).0001
Nusantara: An International Journal of Humanities and Social Sciences
Vol. 2, No. 2 (2020) pp. 1–26
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Three Aspects of Stilt Houses in East Nusa Tenggara, Indonesia, and East Timor

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Abstract

Nusa Tenggara Timur (the Lesser Sunda Islands), an archipelago of more than 2,000,000 km², contains diverse ethnic groups and dwelling types. This paper reveals the findings of field visits to East Timor and Sumba, Indonesia (2012), West Timor and East Timor (2014), and Flores, Rote, and Savu (2019). Firstly, it finds that pairings of *uma lulik* (sacred houses) and *uma tidor* (ordinary houses) are common on Timor Island, with each of Timor's fourteen ethnic groups having its own innovative concepts and construction techniques. Secondly, it finds that the "round houses" of Timor Island and Flores Island are quite unique compared to other dwellings in the Indonesian archipelago; eight groups have adopted round or oval forms for their *uma lulik*. Thirdly, the center spaces of houses are attractive and interesting for survey and discussion. "Hearth-centered" houses can readily be seen in Sumba, Timor, Flores, Rote and Savu. Indeed, this archetype and its derived forms cover most of the house types in the Lesser Sunda Islands, an obvious regional feature that contrasts with the hearth-behind house type of the Bugis (Sulawesi) and Javanese (Java) and the multi-hearth-inside house type of the Batak Karo (Sumatra) and Iban (Kalimantan).

Keywords: house type, Nusa Tenggara Timur, Lesser Sunda Islands, uma lulik, round house, hearth-centered house, archetype, derived form

1 Introduction of East Nusa Tenggara

The archipelago at the southeast end of Southeast Asia is geographically called the Lesser Sunda Islands. To its north lie Sulawesi (also known as Celebes) and the Moluccas, while to its south lies Australia. In Indonesia, the Lesser Sundas are known as Nusa Tenggara (literally "southeast archipelago") and administratively divided into two provinces: West Nusa Tenggara and East Nusa Tenggara. This study focuses primarily on the eastern half of this archipelago, which ranges from 8° to 11°S in latitude and 120° to 126°E in longitude, spanning 1,250 km from east to west and 800 km from north and south. This archipelago consists of 566 islands, covering a total land area of 63,517 km². Its main islands include Flores, Lembata, and Alor in the north, Sumba in the southwest, Savu in the south, and Rote and Timor (the eastern half of which belongs to the independent Democratic Republic of Timor-Leste) in the southeast. The mountainous terrain of these islands complicates their geography and hinders transportation.

Figure 1. Location of East Nusa Tenggara, Indonesia

Note. Top from U.S. Central Intelligence Agency (2002); Bottom from College of Asia and the Pacific (2014).

Of the archipelago's numerous ethnic groups, the majority speak Austronesian languages; a few in Timor-Leste speak Papuan languages. About 89% of the population on East Nusa Tenggara is Catholic or Protestant; 9% are Muslim; and the remainder are Hindu or animist (Na'im & Syaputra, 2012). This study is based on research conducted in Timor-Leste and Sumba in 2012, Timor in 2014, and Flores, Rote, and Savu in 2019. Research focused on the stilt houses of these islands different ethnic groups, including their spatial layouts, construction systems, forms, and living arrangements.

2 *Uma Lulik* and *Uma Tidor*

In May 2012, I conducted a survey of houses in Timor-Leste with a field research team. The first study was in Vermasse, a sub-district of Baucau District. The Galoli residents there explained that they all had two houses, one called uma *tidor* and another called *uma lulik*; the former are 'sleeping houses' (*uma* = house; *tidor* = sleep), while the latter are 'sacred houses' (*lulik* = sacred). We were allowed to enter the uma tidor, where the guest and sleeping rooms were located. Meanwhile, admittance to the *uma lulik* was denied. Both types of houses were occupied.

In subsequent field surveys, we discovered that various other ethnic groups use similar paired houses. *Uma tidor* were usually rough, while *uma lulik* were more elaborate. Some owners granted us admittance to the *uma lulik* and allowed us to keep the mapping results (Chen et al., 2016).

1. Four combinations of *uma lulik* and *uma tidor*

From the numerous field research cases, four combinations of *uma lulik* and *uma tidor* were identified.

1.1 Paired house

In the paired-house type, each family owns two houses: a sacred house (*uma lulik*) and a sleeping house (*uma tidor*). The former contains an altar, a bed for elders, grain storage, and a stove for cooking food for the deity. The latter is sleeping space for the family, including a stove for cooking everyday food, dining space, social space, and a separate room for unmarried daughters.

1.2. Single house

This type contains a single house for a family. Sacred and living spaces are shared. Sacred areas are thus not entire houses but limited to specific sacred spaces or objects (for example, in the corner of a room).

1.3. Shared uma lulik

In this type, several families share one *uma lulik*. These families are either from the same village or share the same last name.

1.4. Remote uma lulik

As in the above-mentioned type, several families share the same *uma lulik*. This sacred house is located on a holy mountain, which is quite distant from the lowland *uma tidor*. Certain mountain ethnic groups consider highlands holier, and therefore build their *uma lulik* on such ground. The remote *uma lulik* is the family's holiest building.

The four combinations of *uma lulik* and *uma tidor* are shown below.

Table 1. Four combinations of *uma lulik* and *uma tidor* in East Nusa Tenggara

Islands and house types with ethnic group names		
Paired house	(Timor)	Atoni-west, Atoni-central, Tetun Terik-D, Mambai-A, Mambai-C, Weimua, Fataluku, Makassae, Naueti, Idate, Bunaq, Kemak, Bekais, Dadu'a, Galoli
Single house	(Timor)	Tetun Terik-A, Tetun Terik-B, Mambai-B
	(Flores)	Ende, Nagekeo, Ngada, Manggarai
	(Sumba)	Loli, Kodi, Wainukaka, Anakalang, Hiluhumba, Wejewa
	(Roti)	Roti
Shared *uma lulik*	(Timor)	Atoni-east, Tetun Terik-C
	(Flores)	Saga
Remote *uma lulik*	(Timor)	Roti, Waimaha
	(Sumba)	Savu
	(Savu)	Savu

Note. Data from Chen et al. (2016).

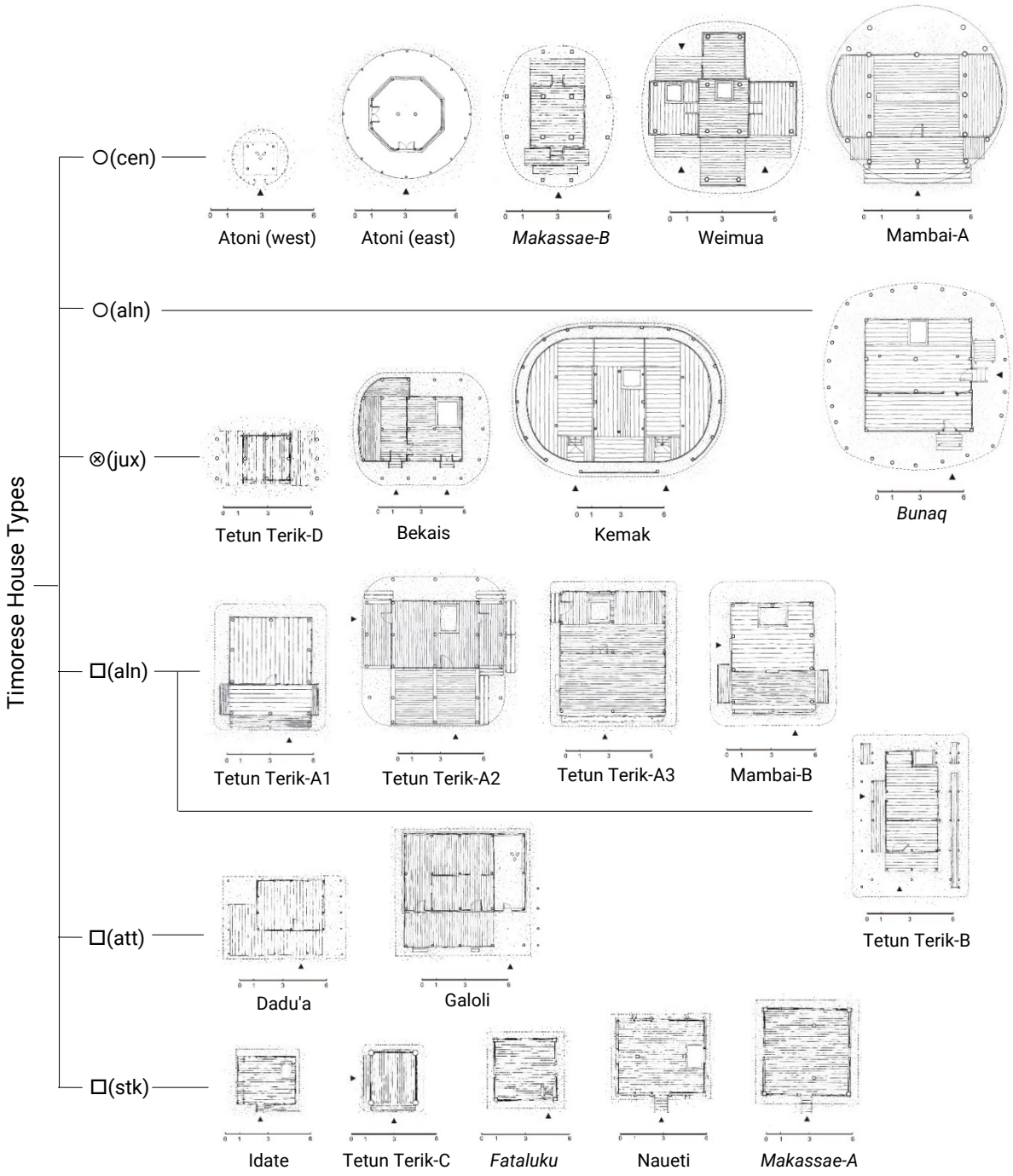
2. Timor Island

In terms of their spatial layout and roof style, the *uma lulik* on Timor can be categorized into six sub-types:

- ○ (cen): Under the round conical roof is the sacred space, surrounded by various spaces (cen: centered)
- ○ (aln): Under the round conical roof, the spaces are aligned from the front to the back (aln: aligned)
- ⊗ (jux): Under the oval conical roof, the spaces are juxtaposed from left to right. (jux: juxtaposed)
- □ (aln): Under the square hip roof, the spaces are aligned from the front to the back. (aln: aligned)
- □ (att): Under the square hip roof, platform spaces are attached to the sacred room. (att: attached)
- □ (stk): Under the square hip roof, spaces are stacked upwards. (stk: stacked)

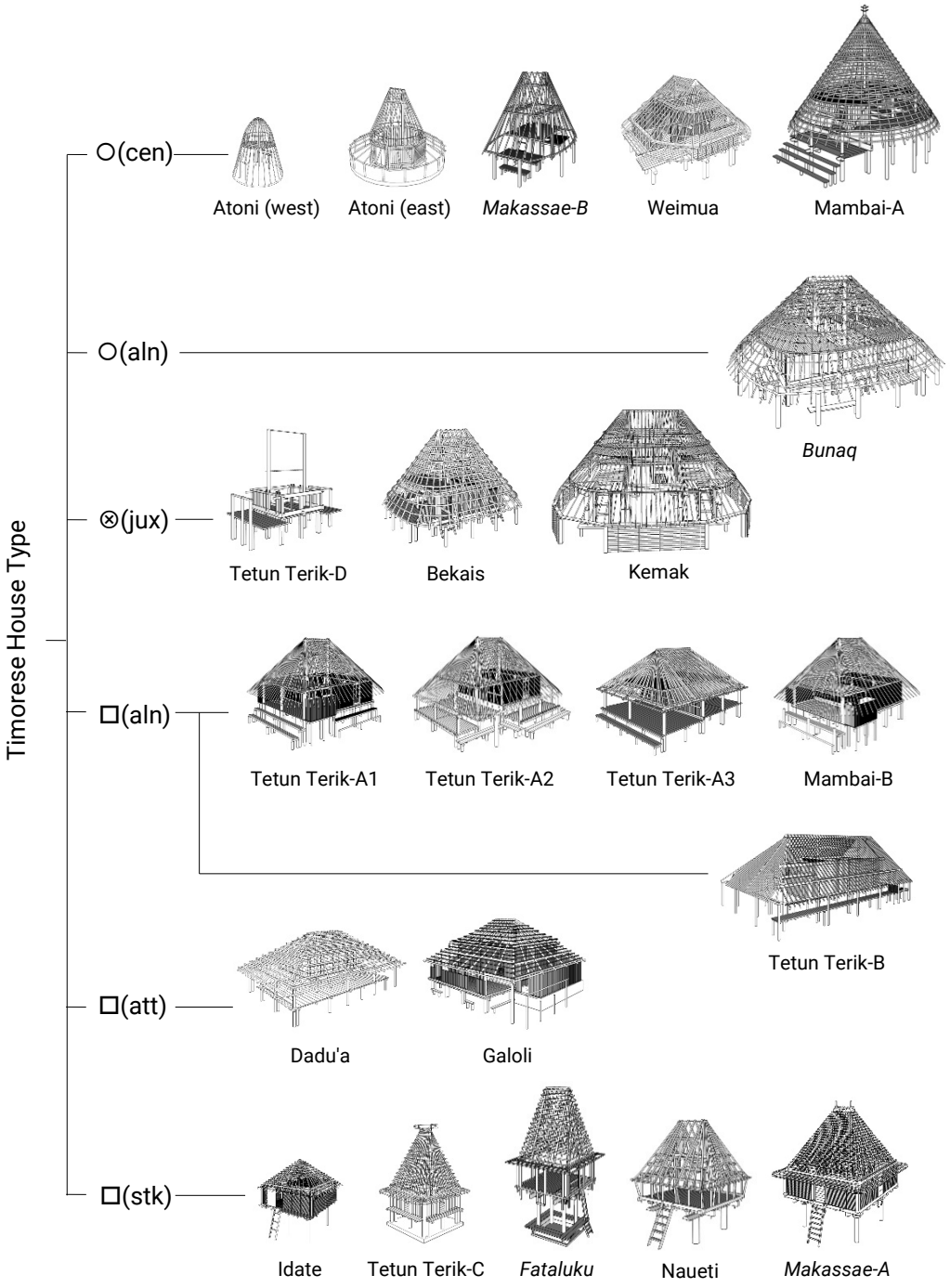
The spatial layouts of the above-mentioned sub-types are shown in Figure 2; the perspectives are shown in Figure 3.

Figure 2. Spatial Layout of *Uma Luliks* in Timor



Note. From Chen et al. (2016).

Figure 3. Perspectives of *Uma Luliks* in Timor



Note. From Chen et al. (2016).

3. Sumba Island

The houses on Sumba Island are single houses, wherein the *uma lulik* and *uma tidor* are combined. The ethnic groups in western and central Sumba (i.e. the Loli, Kodi, Wainukaka, Anakalang, etc.) build hip roofs with two slopes and an extraordinarily high middle, known as *uma mbatangu*; such houses were found in the villages of Waikabukak, Danakombuka, Barah, Haboghong, Mete, Paranabaroro, Latenkara, Waigalli, and Praigoli. The Hiluhumba people of eastern Sumba use a similar style, but their houses are larger (as seen in Pau Village). The Wejewa people in the west build lower houses amidst the high *uma mbatangu*, as seen in the villages Tambolaka, Pamulakadam, and Kalembu-uro.

Figure 4. Houses in Sumba

Note. Western *uma mbatangu* (top left), Wejewa house (top right), Eastern *uma mbatangu* (bottom). Pictures by the Author.

4. Flores Island

The people of Flores inhabit single houses that combine the *uma lulik* and *uma tidor*. Houses in Ende District feature high roofs and extreme holiness, with spatial layouts that may be used for family or several families; examples were found in the villages of Saga, Wologai, and Wolobetho. In Nagekeo District, similar houses were only located in Tutubanda Village; admittance was prohibited. Houses in Ngada had one small, closed sacred house with a soaring roof; these small houses were surrounded by encroached spaces, which were covered in flatter roofs made with half-cut bamboo. Such houses were found in Wogo, Luba, Bena, and Bela. In Manggarai, houses have giant conical roofs, without separation underneath; such houses were located in the villages of Todo and Wairebo.

Figure 5. Houses in Flores

Note. Clockwise from the top-left panel: (a) Ende house, Wolobetho; (b) Nagekeo house, Tutubanda; (c) Bena village, Ngada; and (d) Manggarai house, Todo. Pictures by the Author.

5. Rote Island

Rote Island is located at the southernmost tip of Indonesia and Asia. During our 2014 field survey, we visited a Rotinese village near Kupang, the capital of West Timor, where residents informed us that they had an *uma lulik* on Rote Island. In the January 2019 field survey of Rote, only four traditional houses were identified; of these, only three were inhabited. Indoor stilt space was available, while surrounding non-stilt ground was used for socialization, living, and dining. The lifted indoor space was meant to be sacred space, but due to poor maintenance its original appearance was difficult to ascertain. These were single houses, wherein the *uma lulik* and *uma tidor* were combined.

Figure 6. Houses in Rote

Note. Pictures by the Author.

6. Savu Island

In 2012, we visited a Savunese house in eastern Sumba; we visited Savu Island in 2019. The lack of transportation facilities has facilitated the retention of traditional houses, some over a century old and others newly constructed. Houses in Savu were small, with a central indoor space used as a living room. A few had central front and back doors, which provided a line of sight through the house. Savunese houses employ a "hollow center" model, without a sacred space or corner. Sacred houses were remote, being located on higher land.

Figure 7. Houses in Savu Island

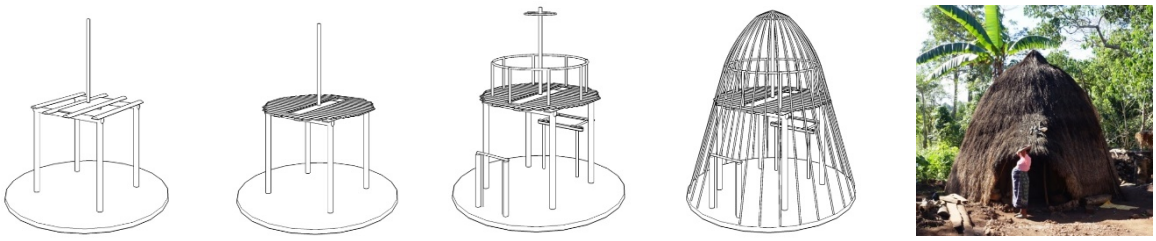
Note. Pictures by the Author.

3 Round and Oval Houses

1. Round house (*uma lulik*) in Western Atoni, West Timor

A platform is supported by four columns. On the platform, a central post and surrounding small posts support a peripheral purlin. Radius rafters are tightened between the top of central post, all levels of peripheral purlins, and the ground, creating a shape that resembles a conical mushroom growing out of the ground.

Figure 8. Construction system of an Atoni *uma lulik* in West Timor

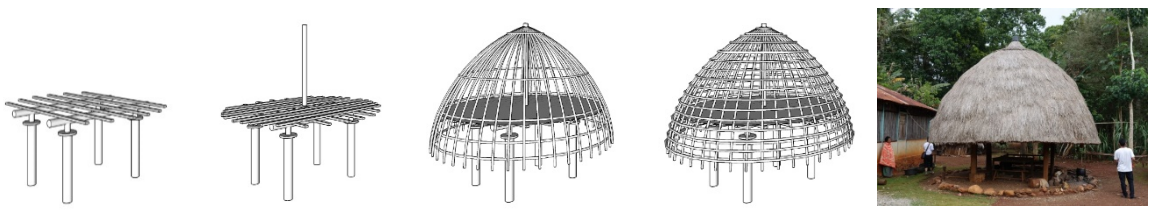


Note. From Chen et al. (2017).

2. Round house (*lopo lopo*) in Middle Atoni, West Timor

The *lopo lopo* (barn) resembles the *uma lulik*, with four longer columns on the ground forming a half-outdoor space for socializing. A closed floor on top of the four columns creates space for storing grain, which can only be accessed through one small opening.

Figure 9. Construction system of an Atoni *lopo lopo* (barn) in West Timor

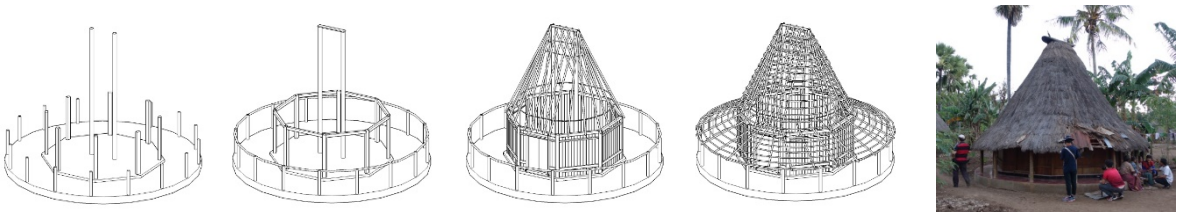


Note. From Chen et al. (2017).

3. Round house (communal *uma lulik*) in Eastern Atoni, West Timor

Several families share one communal uma lulik, which is constructed upon a foundation in which columns are embedded in concentric circles. The inner circle is walled with wood panels, while the outer circle forms a circular column group. Two high columns support the roof ridge, and two groups of rafters form double roof slopes.

Figure 10. Construction system of an Atoni communal *uma lulik* in West Timor

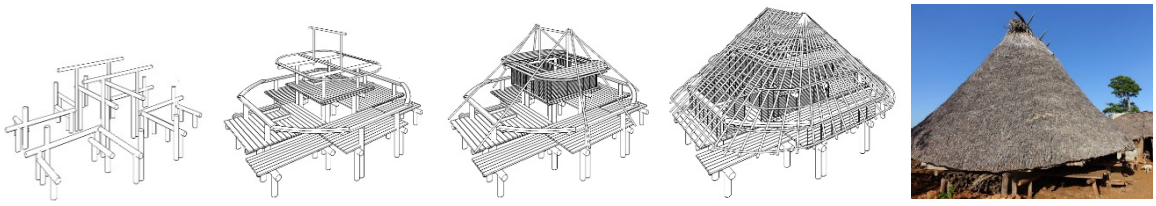


Note. From Chen et al. (2017).

4. Weimua round house in East Timor

The *uma lulik* of the Weimua people is covered by a large round roof, with a sacred room on the highest level and four platforms on the side levels. The platforms, sacred room, and roof are all supported by different groups of columns. The hearth and altar are located in the sacred room. On the four platforms is another hearth for residential use. The hind platform is usually walled, creating a room.

Figure 11. Construction system of a Weimua *uma lulik* in East Timor

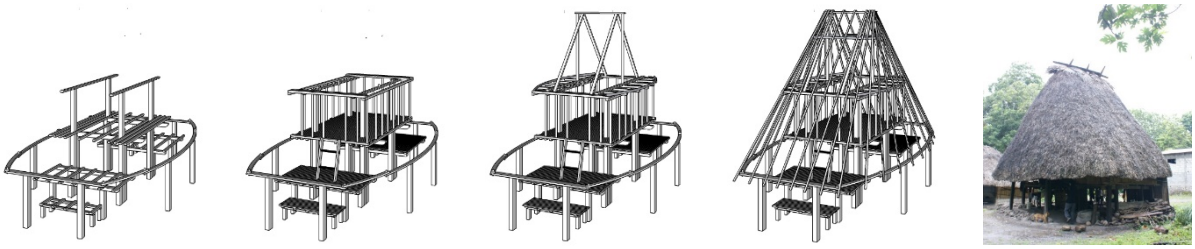


Note. From Chen et al. (2017).

5. Makassae round house in East Timor

In its construction, the *uma lulik* of the Makassae are similar to those of the Weimua, except with higher roofs and bare outer columns that allow users to enter the house without bending. The sacred room under the roof is located in the highest central spot, with an entrance and exit in the front and back.

Figure 12. Construction system of a Makassae round *uma lulik* in East Timor

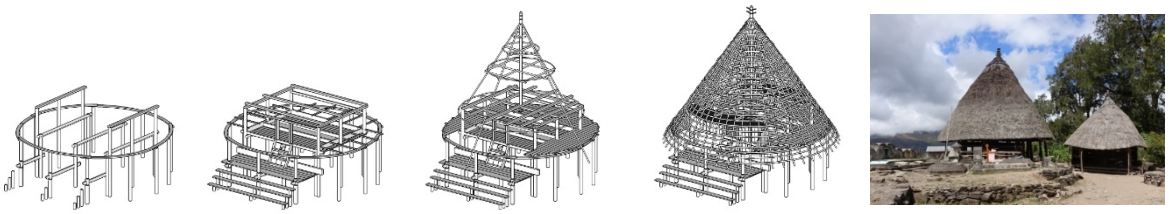


Note. From Chen et al. (2017).

6. Round house (*uma lulik*) in Western Atoni, West Timor

The Mambai *uma lulik*, which is high in the mountains, is the largest, and is found in two variations: round and squared-circle. Numerous column groups support the roof ridge, floors of various heights, and peripheral beams. The sacred area is set in the back, in an inner space, and decorated with numerous buffalo horns. In the center of the inner space is the rectangular hearth. Sleeping space is lifted on two sides, while a large platform in the front is used for entrance and socialization.

Figure 13. Construction system of a Mambai round *uma lulik* in East Timor



Note. From Chen et al. (2017).

7. Bunaq round house in East Timor

The *uma lulik* of the Bunaq is quite large, with different column groups supporting the roof ridge, roof, floor, and platforms. The inner square forms an indoor space, while the outer circle is half-outdoors. The first inner space, as accessed from the outer circle, is living space. The second inner space is a sacred space, which is equipped with a hearth. The third inner space is for resting and sleeping.

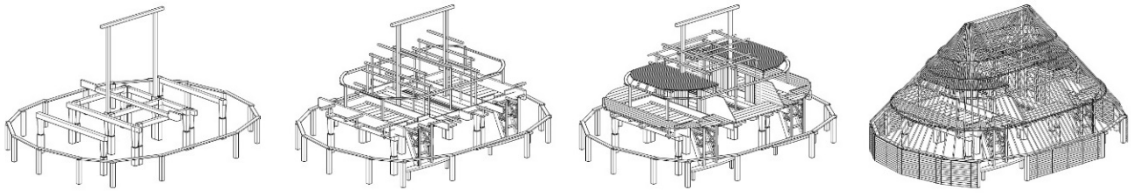
Figure 14. Construction system of a Bunaq oval *uma lulik* in East Timor

Note. From Chen et al. (2017).

8. Kemak oval house in East Timor

The *uma lulik* of the Kemak has roofs and floors of different heights, which are supported by different column groups. Underneath the high stilts floor are a kitchen, dining room, and living space. The space lifted by stilts is separated into three sections, each of which has its own shallow rectangular floor. The rule of entering upwards and exiting downwards must be strictly followed. In the middle is the sacred space, which is equipped with a hearth. Peripheral platforms are lifted around the three spaces, and used for rest, sleep, or storage (Figure 15).

Figure 15. Construction system of a Kemak oval *uma lulik* in East Timor



Note. From Chen et al. (2017).

9. Bekais oval house in East Timor

The Bekais, who live in the mountains of East Timor, have limited range and a small population. Their oval houses are similar to those of the Kemak, but smaller. The sacred space elevated by stilts is separated into two sections, which must be entered upwards and exited downwards from the two terminals. The sacred space, which is equipped with a hearth, is set in the center. The space underneath the floor is too low and too small to be used. The ridge, roof, and floors are supported by different groups of columns.

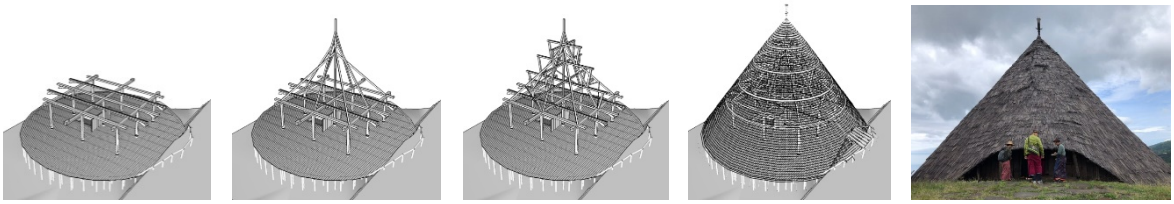
Figure 16. Construction system of a Bekais oval *uma lulik* in East Timor

Note. From Chen et al. (2017).

10. Manggarai round house in Flores

The round houses on Flores Island were constructed by Manggarai people, and complete examples are found in the lowland Todo Village and the highland Wai Rebo Village. Intensive short pillars form a great round platform. A thirteen-meter high pillar stands in the center of the quarterly-cut square. The 9m×9m square has eight oblique pillars at its corners, which support the central pillar, which lies at the center of a platform that measures 19.5 meters in diameter. Large rafters around the periphery obliquely connect the central pillar, forming a conical structure. Wrapped with palm leaves and bound fixed, the rafters present a large conical roof. Closely behind the central pillar is a hearth. Respected seniors recounted that there were once many families around the hearth, separated by a simple partition, but they have since moved away.

Figure 17. Construction system of a Manggarai round house in Flores

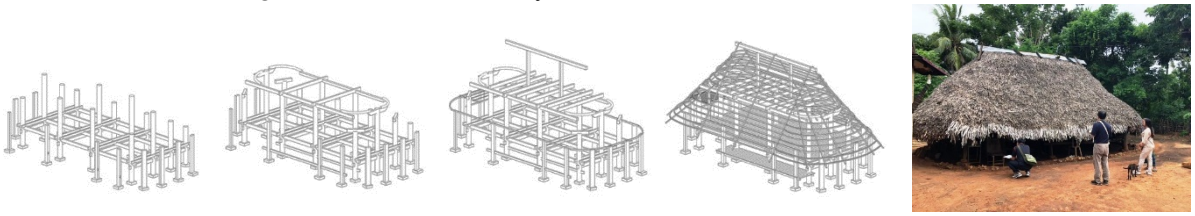


Note. From Chen et al. (2017).

11. Oval house in Savu

Savu is a small island, covering only 380 km², and its houses are likewise small. Savunese houses are all rectangular in their layout, with three frontal spans. Two types are identified, one rectangular and the other oval-shaped. As seen in Figure 18 below, the four corner pillars do not support beams; rather, arc beams are adapted to form the oval roof. The combination of the rectangular floor and oval roof is very scarce.

Figure 18. Construction system of a Savu oval house in Savu



Note. From Chen et al. (2017).

4 Hearth-centered House Types

Gottfried Semper (1803–1879) proposed that primitive houses include four architectural elements: hearth, mound, roof, and enclosure. These elements are inexorably linked to users' geographical environments, climates, construction materials, and living styles (Semper, 1951/1989). Elders often sat around hearths, forming the groups upon which social organizations were created. The hearth was thus recognized as a central place for family and social congregation; it also became the center of the house.

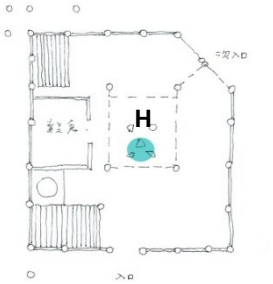
Such practices are common in houses in East Nusa Tenggara. How is the "heart of house" built? How does the hearth complement the "heart of house?" How are the functions of hearth divided and combined? These questions are interesting points to consider when investigating the houses of the archipelago.

1. Three-in-one hearths

All ethnic groups have hearth or other fire-harness facilities in their houses. These hearths satisfy various demands, including cooking, warmth, socialization, congregation, worship/interaction with God, light, and warding off evil/parasites. Of these, cooking, socialization, and interaction with God are the most represented (Chen & Chen, 2014).

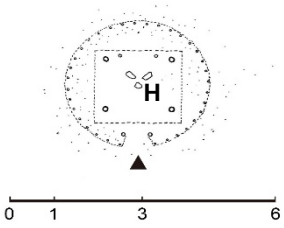
Figure 19 and Figure 20 show two examples of a "three-in-one" combination, wherein the hearth provides a means of cooking, socializing, and interacting with God. Figure 19 shows an example from the Tsou ethnic group in Taiwan, while Figure 20 shows the *uma lulik* of the Atoni ethnic group in Timor.

Figure 19. Tsou house in Taiwan



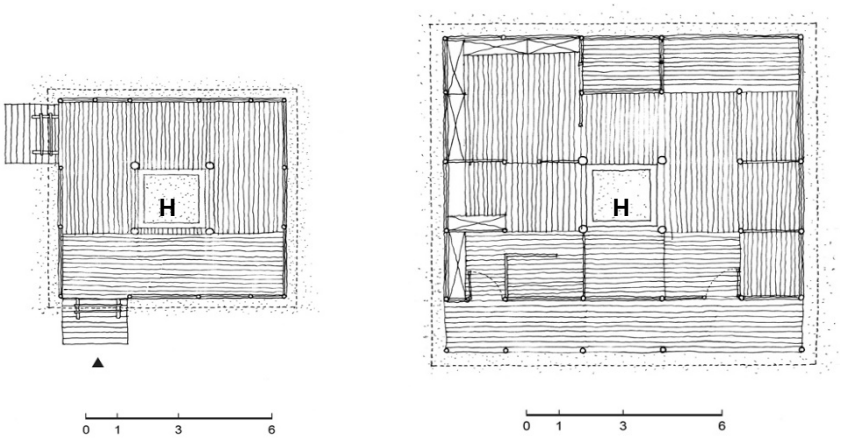
Note. From Chang (1999).

Figure 20. Atoni house in Timor



Note. From Chen et al. (2017)

Figure 21. *Uma mbatangu* in Sumba



Note. 'H' denotes a hearth. From Chen et al. (2017).

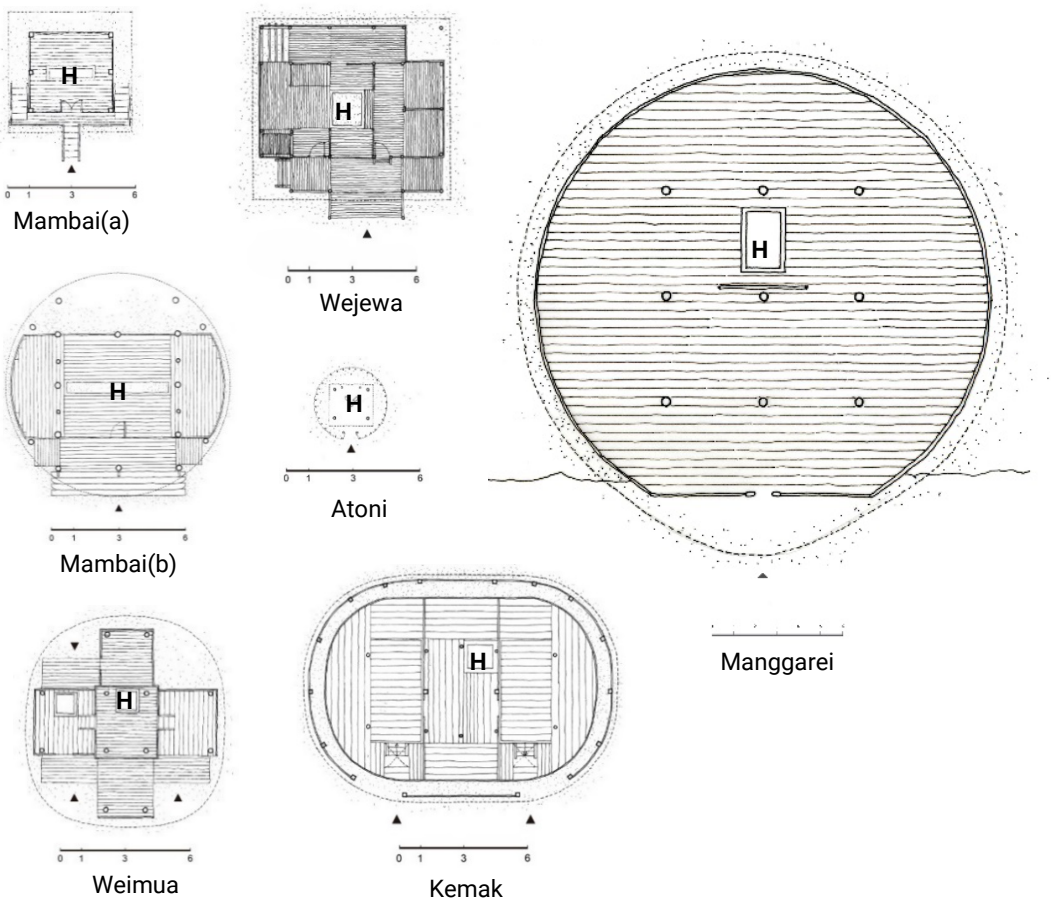
2. Houses constructed specifically for central hearths

The *uma mbatangu* model on Sumba has been widely adopted by the Loli, Kodi, and Hiluhumba peoples. Large round pillars stand at the four corners of the square hearth, on top of which is a platform with a steep hip roof. Faces with less of a slope extend from the four sides of the platform, providing living space. Other elements of the house are built around the hearth space. This hearth has the dual function of socialization and facilitating human–God interactions. Cooking, meanwhile, is done at a separate hearth set at the edge of the house (see Figure 4 and Figure 21).

3. Houses with center and centered hearth

The Atoni, Mambai (b), Weimua, and Makassae peoples of Timor Island, as well as the Manggarai of Flores, all construct conical houses. The Kemak and Bekais of Timor construct oval houses, while the Mambai (a) of Timor and the Wejewa of Sumba construct rectangular houses. All of these models feature a "center of the house", wherein the hearth used for socialization and human–God interactions is located. Upon observing the shape of the hearths, it was revealed that houses were not built around the hearths (compared with those above in section 4.2 above), but with the hearth being accommodated in a central location (see Figure 22). In Timor, the cooking hearth is located elsewhere (in the *uma tidor*), while in Sumba and Flores this hearth is found at the edge of the same house.

Figure 22. Houses with center and centered hearths

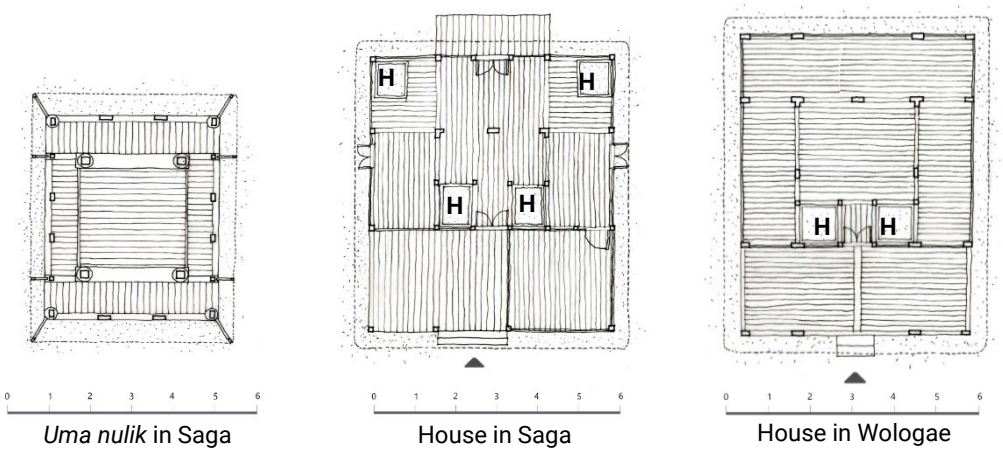


Note. 'H' denotes a hearth. Compiled by the Author.

4. Houses with center and twin-hearths

The villages of Saga, Wologai, and Wolobetho in Ende, Flores, are characterized by houses that follow a square layout. Each consists of two or three concentric squares, each of which is a projection of the roof structure system. Underneath the soaring roof is a centered square. Two hearths are placed at the sides of entrance, providing a venue for socialization and human–God interactions. Some residents also prepare coffee here for guests. The cooking hearth is located in the second or third outer square; each family uses one hearth.

Figure 23. Houses with center and twin-hearths

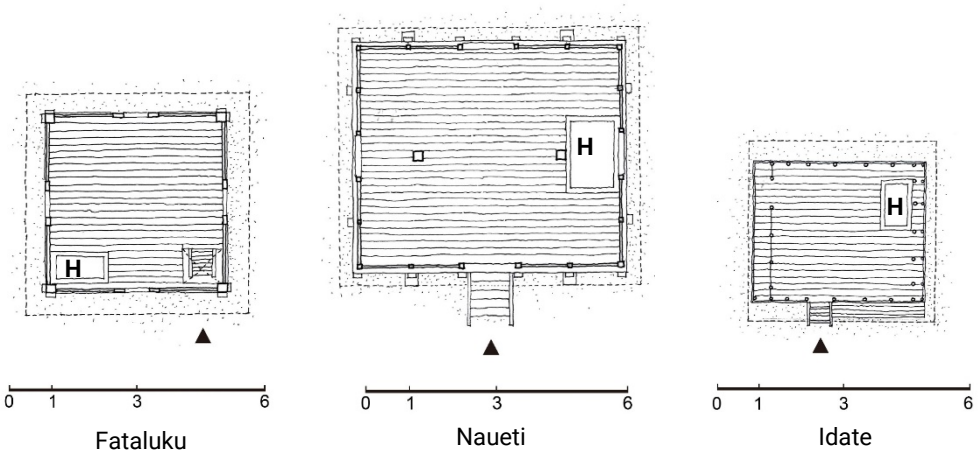


Note. 'H' denotes a hearth. Compiled by the Author.

5. Center-free house (decentralized hearth)

This type of house does not feature a center, and the hearth is relocated to the sides or corners. Although the functions of socialization, human–God interaction, and cooking remain, the second function seems to be reduced. Instead, a sense of holiness is created in certain places within the house (Figure 24). The houses of the Fataluku, Naueti, and Idate peoples on Timor are characterized by such properties.

Figure 24. Center-free house and decentralized hearth

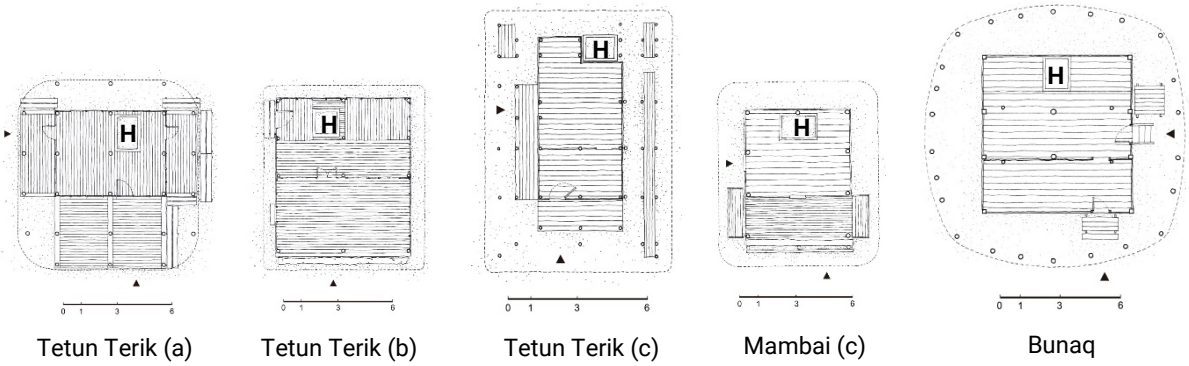


Note. 'H' denotes a hearth. Compiled by the Author.

6. Center-free house (back-located hearth)

This type of house does not feature a center. Its spaces are aligned from front to back, the latter of which is defined as a sacred space and hosts a hearth. This hearth serves the functions of socialization, human–God interaction, and cooking, with the second function reduced. A sense of holiness is instead created within a corner of the house. The houses of the Tetun, Mambai, and Bunaq peoples on Timor feature the said properties.

Figure 25. Center-free house and back-located hearth

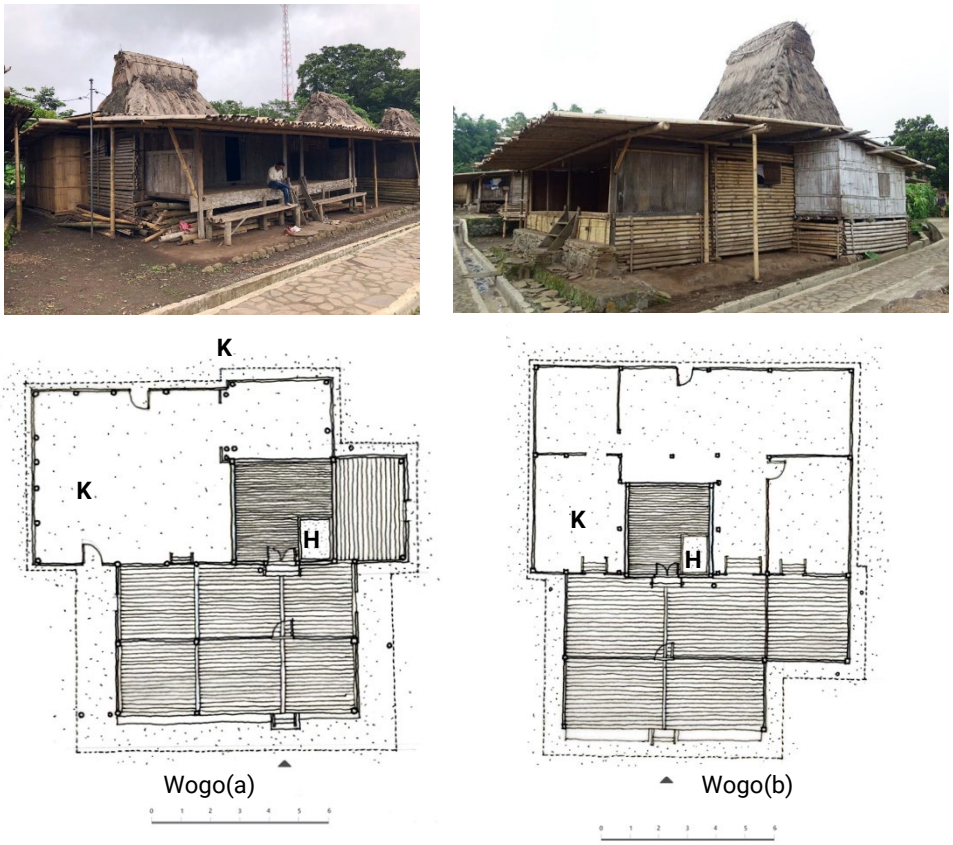


Note. 'H' denotes a hearth. Compiled by the Author.

7. Hearth-centered house with encroachments in four directions

Houses in Ngada District, on Flores Island, are constructed with thick wooden walls and soaring roofs. A hearth, which is used for sacred functions but not for socialization or cooking, is located within the house. Four additions are constructed, one on each side, and used for socialization, living, cooking, dining, working, and sleeping. The cooking hearth and holy hearth are separated.

Figure 26. Hearth-centered house with encroachments in four directions



Note. 'H' denotes a hearth; 'K' marks a kitchen. Compiled by the Author.

5 Conclusion

East Nusa Tenggara is distinct from other parts of Indonesia in several aspects: (1) there are numerous ethnic groups with relatively small populations, with the largest being the Atoni of Timor (population, 840,000) (Suryadinata et al., 2003); (2) although these ethnic groups may embrace Catholicism, Protestantism, or Islam, they maintain their traditional religious beliefs; (3) the islands have high mountains, and transportation is difficult; as such, ethnic groups' interactions are limited, and they have thus developed their own unique cultures and house types. Nonetheless, the peoples of East Nusa Tenggara have common architectural features and values. Each ethnic group builds 'vigorous' and 'spectacular' *uma lulik* that preserve a sense of holiness. Eleven derived types are identified, all of which incorporate the talents and brilliant construction systems of their builders (which are not found elsewhere). This phenomenon is worth further study.

Holiness is also evident in indoor spaces, where hearths are important architectural elements. In hearth-centered houses, the hearth is located in the geometrical center of the house, and is used for socialization and human–God interactions; the profane cooking hearth, meanwhile, is relegated to the edge of the house. Where all three functions are combined, the *uma lulik* is relocated to the side. Determining whether or not a house is hearth-centered requires more comparative research and further discussions, which could be elaborated upon in another thesis.

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