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Typology and Morphology of Traditional Sasak Settlement

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Abstract

The cultural richness that characterizes Sasak is reflected in the form of architecture, landscape patterns, and settlements. It is known that there are six traditional villages, each of which has a share in the enrichment of Sasak culture and beauty. The architectural objects taken are from traditional villages on Lombok Island inhabited by the Sasak Tribe by exploring the historical and socio-cultural significance to explain their unique characteristics and the influence of history and cultural beliefs on settlement patterns. This research focuses on physically grouping settlement patterns and relating them to culture and local regulations to find the typology and morphology of traditional Sasak settlements. These two classifications are influenced by history and the phenomenon of the 2018 earthquake in these settlements, highlighting the resilience and cultural significance of traditional Sasak structures. Key findings include the classification of two forms of Sasak architecture settlement patterns: hilly Sasak architecture and flat land Sasak architecture., each with distinct characteristics and orientations. The study provides valuable insights into the architectural, historical, and cultural aspects of traditional Sasak settlements, contributing to a deeper understanding of their significance and unique characteristics.

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1. Introduction

Indonesia is known for its natural beauty and cultural diversity. Indonesia is a country with hundreds of different traditional houses because its more than three hundred tribes are divided into several customs, each of which has its own house (Ronald, 2008). Traditional architecture in the archipelago varies in design due to natural conditions and traditional buildings that have been preserved over time (Wahyudi et al., 2021). The easternmost island of Indonesia, Lombok in West Nusa Tenggara, is no exception. Architecture, landscape patterns, and communities in Lombok reflect the island's culture. The form/pattern of settlement that is special or unique according to the traditional caste and its scalability can be used to identify settlement. (Rapoport, 1969) states traditional settlements represent socio-cultural values created by preparation based on community or traditional resident norms (Widisono, 2019).

The architecture of the past Object is an object that results from an architect's consideration of location and environmental conditions. Traditional villages on the island of Lombok, inhabited by the Sasak Tribe, were photographed as architectural objects. With various origins, each of these settlements has its promise and character. The Sasak Traditional Village consists of different traditional dwellings, break structures, rice/barn storage structures, livestock stables, and a supportive environment. The birth or foundation of this town began with people or a group of tribes forming a tiny community, which grew in size and perfection over time (Umar & Sukandi, 1987). A tourist village's inherent qualities, physical surroundings, cultural infrastructure, institutions and human resources, life order, and accessibility all contribute to its allure (Arida & Pujani, 2017; Mansilla & Milano, 2019; Sofield et al., 2017). The Sasak people's way of life on Lombok Island is influenced by their culture, which governs how they set up their homes and participate in various religious rituals.

Many studies using Sasak architectural items have been undertaken in the past, including one by Susilo & Umniati (2021), who looked at the mass structure of Sasak architecture in six traditional houses in six traditional communities. The debate focuses on traditional housing distribution, patterns of organization, and the process of altering traditional dwellings. This research aims to learn about and assess traditional Sasak settlements in Lombok, West Nusa Tenggara. This study is mainly concerned with physically grouping settlement patterns and comparing them to culture and local regulations to determine the typology and morphology of traditional Sasak towns. The typology and morphology of the Sasak settlement will be discovered by gathering data from the Lombok area as well as some supporting literature.

2. Materials and Methods

Typology

Typology is a science that analyzes things connected to type (Loekito, 1994). This notion describes a group of items based on the similarity of the character of their basic shapes (Moneo, 1976). According to experts, architectural types emerge from awareness and mutual agreement (Habraken, 1978). Another viewpoint exists regarding typology, a notion that categorizes collections of items according to fundamental traits and commonalities in an effort to classify and organize forms of variety and type similarity (Amiuza, 2006). As a result, typology can be defined as a systematic classification procedure based on object kinds and a study of groupings of things (Kasatkin, 2021; Mannan, 2019; Rahim et al., 2018). Typology can also refer to the spatial order and organization of physical space instead of a mathematically abstract space. The orientation of human activities in a specific site is discussed above.

The 1986 transit typology of 'finding lost space' could refer to various things, including the type of structure in a particular place in the city. In its broadest sense, typology studies grouping objects (models) based on structural similarities in physical geometry and current conditions ranging from social activities to settlement formation (Afdholy, 2017). All of the information presented above leads to the conclusion that typology is an act of thinking that categorizes and groups architectural objects according to similarities in fundamental forms, fundamental attributes, styles, social symbolism, and the process of form creation and evolution (Achmad, 2019).

Morphology

According to the KBBI, morphology is derived from the Greek word morphos, which means "understanding of shape." Architectural morphology lays a greater emphasis on addressing geometric forms so that the value of space is linked to the room's purpose. Morphology can also explain figural qualities in spatial system boundaries that can be connected via patterns, spatial hierarchies, and room relationships (Feng, 2014; Hao, 2018; Ischak et al., 2018; Putra, 2019). Furthermore, morphology is known to investigate the significance of an environmental form, from architecture to architectural formations, as a medium to show a formation's character.

Regarding the figures, the context of generating a space may be interpreted through a hierarchical pattern and interaction. The representation of space meaning must be coupled with particular spatial values, which is why morphology focuses more on studying geometric shapes. It is clear from this connection that spatial structure, spatial relations, spatial forms, and space values are all intertwined.

Traditional Settlement Pattern

Settlement patterns can be defined as a location (space) or an area where people congregate and live together, relying on the local environment to maintain, sustain, and develop their lifestyles. According to Burhan (2008):

a. Land use (elements forming rural regions, laying elements);
b. Cultural space (based on daily activities, based on rituals), and
c. Residential layout patterns all influence the spatial pattern of traditional communities (houses and yards, residential spatial structures, building layout patterns)

The settlement pattern is classified into three categories, according to (Jayadinata, 1992):

a. Centralized settlements, namely the houses, are clustered (agglomerated rural settlements), and hamlets consist of less than 40 houses. A village can take various forms in its development, depending on the physical and social conditions.
b. Scattered settlements, whose houses are dispersed separately (disseminated rural settlements), are found in Western European countries, the United States, Canada, and Australia.

(Trancik, 1991) mentions the following types of settlement patterns:

a. The pattern of settlements is elongated (linear on one side) along the road both on the left and the right side only;
b. The pattern of parallel settlements (linear two sides) is a settlement that extends along the road;
c. Pola permukiman curvalinier merupakan permukiman yang tumbuh di daerah sebelah kiri dan kanan jalan yang membentuk kurva;
d. The curvilinear settlement pattern is a settlement that grows in the area to the left and right of the road that forms a curve;
e. The bagging settlement pattern is a settlement that grows in areas such as pockets formed by roads that fence them off;
f. The circular settlement pattern is a settlement that grows around the open space of the city.

Traditional settlements express the community's socio-cultural values, are strongly linked to their people's socio-cultural values, and are prepared using

traditional norms. Traditional settlements are frequently shown as areas that retain traditional and cultural characteristics related to the value of ideas unique to a group and rooted in a specific location outside historical determination. Environmental patterns, built-environment structure, socio-cultural traits, and detailed economic activity contribute to regional identity. Traditional settlements feature patterns that describe the nature of settlement distribution as an arrangement of various properties in the interaction between the components that drive settlement distribution (Al-Mohannadi, 2019; Putri et al., 2017; Ramaiah et al., 2020). Traditional settlement patterns can be classified into numerous types based on their shape, including:

a. The pattern of elongated settlements consists of elongated rivers, roads, and coastlines;
b. Circular pattern of settlements;
c. Rectangular settlement pattern and
d. Cube-shaped settlement pattern.

Traditional settlement patterns are based on the following distribution pattern, according to (Wiriaatmadja, 1972):

a. The arrangement of settlements is dispersed, particularly in freshly developed areas. Due to the lack of a major route, the inhabitants have a plot of land that must be regularly cultivated for a specific time.
b. The arrangement of communities in a village/village that extends along a transportation road (land/river) while agricultural land is behind it;
c. Settlement patterns are gathered in a village/village, yet agricultural land is located outside the settlement, and
d. Settlements are grouped in a village/village and arranged around a circular road with arable land behind it.

Method

A proper strategy is required to comprehend the complexity of this traditional Sasak hamlet. A qualitative research method using a typology-morphology approach is the most appropriate strategy for this study. The typology aspect involves the systematic classification of settlement patterns based on their similarities, considering the spatial order and organization of physical space. This approach allows for the identification of different types of settlement patterns, such as centralized, scattered, and various other forms, based on physical and social conditions. Additionally, the morphology aspect focuses on the geometric forms and spatial values of the settlements, examining the figural qualities in spatial system boundaries and room relationships. The suitability of the typology-morphology approach lies in its ability to provide a comprehensive understanding of the typology and morphology of traditional Sasak settlements, considering their historical, cultural, and environmental significance. Furthermore, the research aims to gather data from the Lombok area and supporting literature to determine the typology and morphology of the Sasak settlement, emphasizing the importance of these aspects in understanding the cultural and architectural characteristics of the settlements. The types of settlement patterns and variables can be further explained to provide a more detailed understanding of the typology and morphology of traditional Sasak settlements, contributing to a comprehensive analysis of their cultural and historical significance. Typological and morphological methods focus on grouping data and are used to identify several objects using predetermined variables to make them units that are bound to each other due to

the similarity of certain characteristics or characteristics. This type of research includes qualitative research to gain an understanding of the complexity of the research object.

Sugiyono (2016) defines *qualitative research* as "an approach that prioritizes the natural condition of the item by positioning the researcher as a major instrument." The grouping of data on the research object will be identified using predetermined factors in this study, resulting in a unit that is related to each other due to the presence of a given characteristic or characteristic.

3. Result and Discussion

Geographical Location and Population

Lombok Island is one of Indonesia's islands. This island, located near Bali, is part of the West Nusa Tenggara region. The island is circular, with a 70-kilometer-long 'tail' on the southwest side. This island covers 5,435 km2 and is located at 115046'-11905' East Longitude and 8010'-905' South Latitude, making it one-third of the province of West Nusa Tenggara. Lombok Island is ranked 108th in the world based on its area because it is one-third the size of West Nusa Tenggara Province.

Lombok, Central Lombok Regency, East Lombok Regency, North Lombok Regency, and Mataram City are Lombok Island's five regencies/cities. The district with the most significant area is East Lombok Regency. Mataram City, the largest city on the island of Lombok, is home to a diverse range of natural and cultural attractions. The Sasak tribe accounts for approximately 80% of the people of Lombok Island.

Figure 1. Lombok Island Map
(Source: Kemendikbud, 2022)

Six Sasak Traditional Villages on Lombok Island are thought to have survived for hundreds of years and are still regarded as original. Beleq-Gumentar Traditional Village in North Lombok, Senaru Traditional Village in North Lombok, Beleq-Sembalun Traditional Village in East Lombok, West Limbungan Traditional Village in East Lombok, and Sade Traditional Village in Central Lombok are among the traditional villages. There are local architectural buildings with numerous building masses serving a variety of complex functions in these locations instead of modern

buildings in their traditional house complexes. A Hamlet Head is in charge of overseeing and managing each Hamlet. Customs pertaining to house construction, for example, are strictly enforced in every object location. It is also forbidden for locals to construct new homes there other than on a designated plot map. This is a result of the traditional house complex's maintaining of its traditional house count.

History of Sasak Traditional Settlements

According to (Arief & Subadyo, 2017), traditional Sasak settlements on Lombok Island are formed by a group of people living together and developing small villages. This village's existence spreads from the mountain's foothills to the hills. This form is defined by battles between tribes, beliefs, and other factors. Settlements must expand to difficult-to-reach locations to avoid clashes.

Traditional dwellings, berugak buildings, rice storage buildings (barns), livestock pens, and the yard/surrounding environment make up the villages (Arief & Subadyo, 2017). In organizing the region, structuring settlements, and structuring buildings, including houses, the concept of seniority in settlement patterns and building spatial structures based on cultural rites is still quite strong. The philosophical ideas of the sun's trajectory, Mount Rinjani, the direction toward and arrangement in the topography of tiered terraces, and the concept of a uniform house shape (suteran) constitute the foundation for the construction of the spatial organization of ancient Sasak villages (Sabrina et al., 2010).

The shape pattern of the buildings as a whole is facing/oriented towards Mount Rinjani. It manifests an imaginary cosmic line based on a community belief system leading to the abode of ancestral spirits and as a symbol of community interaction with its cosmological environment in the mass configuration.

Spread of Sasak Traditional Settlements

Due to fights between tribes, the existence of these traditional villages tends to expand to the hills or even at the foot of the mountain, forcing them to seek out difficult-to-reach locations to escape being pursued by the adversary (Subadyo, 2003). Traditional Sasak dwellings, Berugak buildings, rice storage buildings (barns), cow pens, and the surrounding landscape make up the traditional Sasak hamlet on Lombok Island. The Sasak village's spatial plan is essentially a miniature of a more extensive structure, namely the regional spatial layout. There are numerous purposes of space and buildings in the traditional Sasak communities on the island of Lombok. This function distinction applies to the layout of the land, the design of towns, and the layout of structures, including residences. In traditional Sasak communities on the island of Lombok, the creation of buildings is also recognized for the demarcation of personal, societal, and sacred regions and structures (Subadyo, 2003). The pattern and shape of the building as a whole are oriented towards Mount Rinjani, which is a manifestation of people's belief in ancestral spirits' abode and as a symbol of community interaction with their cosmological environment, meaning their life through their traditional house, based on the mass configuration (Pramitasari & Harjanto, 2022).

Socio-Cultural Identification of the Sasak Tribe

Most Sasaks speak the local language, which is the Sasak language. This language is the native language of the island of Lombok. They do, however, use Indonesian in formal settings daily. The native language of Lombok is known to be

similar in writing to the Javanese and Balinese scripts, both of which employ the "*ha, na, ca, ra, ka*" script and have a pronunciation similar to Bali. Ethnologists classify the Sasak language as part of the Austronesian Malayo-Polynesian family.

The Sasak people have a cultural system that is documented in the *Nagara Kartha Garna* Book by Empu Nala from Majapahit, where the Sasak people are referred to as '*Lomboq Mirah Sak-Sak Adhi.*' Suppose the Sasak tribe already had a well-established cultural system when writing the book. In that case, their ability to remain until now is proof that they can retain and preserve their traditions, one of which is the shape of the traditional house building. The community's aesthetic value and local wisdom were used to construct the traditional dwelling.

The Sasak people are also noted for being extremely picky about where they build their houses. Furthermore, Sasak people will not construct dwellings in the opposite direction of a different size than those that existed previously, as this is considered a violation of taboos, or what is known as *maliq-lenget*. The nuclear family, also known as *kuren,* is the smallest kinship group in the Sasak society. Although adat allows polygamous nuclear families, these households are reported to be primarily monogamous.

Sasak Settlement Pattern

a. Sade Traditional Village

Sade is a traditional Sasak house that has been converted into a tourist village. The Sade traditional home is in a strategic location, halfway between the Lombok International Airport and the Mandalika unique region, making it one of the most popular tourist sites on the island of Lombok. Rembitan village, Pujut sub-district, Central Lombok district, NTB is where the Sade traditional home is located. Sade Village's population is considered relatively dense in its geographical area. Therefore, the communities appear to be close to one another. The Sade traditional house and the Sade village property are on a contoured site.

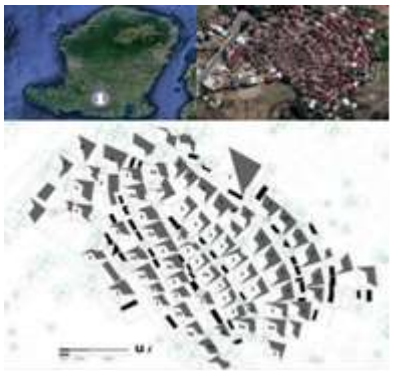

Figure 2. Sade Traditional House Siteplan
(Source: Susilo et al., 2019)

The building mass is ultimately (macro) parallel to the contour of the Sade traditional house. The trading bale determines Sade's path to each bale (micro). Alternatively, it can be stated how the supporting structures (*bale-dagang, panteq, and pa'on*) are placed in front of the *bele*. The orientation of other buildings in Sade, such as *berugaq, bale-alang, and bale-dagang*, is parallel to the *bale*. Macro-looking exposure for the entire *bale* in Sade, circling the hill in all directions. As a result, the building mass

orientation in Sade follows the direction of its curves rather than the cardinal directions.

Bale and mosque are the two types of structures in the Sade traditional house. Bale stands on contoured land, especially for bale-tani, while the other bale types are in the same position because there is no difference in soil height in the bele. In laying the building, relatively uncontoured land is needed. Contour is used in the cutting process, and adding soil makes the soil surface even in the bale.

b. West Limbungan Traditional Village

Limbungan Barat is a traditional house in the settlement of Prigi on Mount Rinjani's southeastern slope. This traditional house serves as a domicile for the Sasak people, the majority of whom are farmers. The traditional house of Limbungan Barat is not well-known in the tourism world, as evidenced by the lack of visitors. The Limbungan Barat traditional home is situated on rocky ground and has a somewhat sharp contour and a temporal layout. The looking direction is always facing downwards, and there is always a *panteq* or *paon* in front of it. Bale-tani positions are on sloped land, whereas panteq or paon positions are on flat land. The house will be built at a site high in the hills that is unsuitable for farming. The traditional Limbungan house and the land of the Limbungan hamlet are in a contoured area with a severe slope and rocky contour.

Figure 3. West Limbungan House Siteplan
(Source: Susilo et al., 2019)

Due to its placement in a contoured terrain, the orientation of the building mass for the Limbungan traditional home can be stated to be totally (macro) parallel to the contour. A panteq or pa'on determines the Limbungan bale's direction towards each bale (micro). Alternatively, it can be stated how the supporting structures *(bale-dagang, panteq,* and *pa'on)* are placed in front of the bele. Because the contour runs east-west, the macro-facing direction for Limbungan Barat is to the south. The building mass's orientation in Limbungan follows its shape's path rather than the cardinal directions.

c. East Limbungan Traditional Village

The East Limbungan traditional house is about a kilometer east of the West Limbungan traditional home in Prigi Village, Suela sub-district, East Lombok Regency. The environmental conditions and management practices are nearly identical to those of Limbungan Barat's traditional dwellings. The traditional house of East Limbungan is likewise situated on the ground with a pretty steep and rocky slope. This demonstrates

that East Limbungan has a higher density of total building mass than the land area of West Limbungan. The traditional Limbungan home and the terrain of the West Limbungan village have a sharp contour slope as well, notably in East Limbungan, where the area is not only contoured but also full of rocks.

Figure 4. East Limbungan House Siteplan
(Source: Susilo et al., 2019)

Due to its placement in a contoured terrain, the orientation of the building mass for the Limbungan traditional home can be stated to be totally (macro) parallel to the contour. The direction in each bale is linked to the Limbungan with panteq or pa'on. The supporting structures *(bale-dagang, panteq,* and *pa'on)* should be placed before the *bele*. For the construction phase in Limbungan, specifically the panteq or parallel to the bale orientation. Because the contour runs northwest-northeast, East Limbungan is to the southeast when viewed from the cardinal points of the compass. The building mass orientation in Limbungan follows the direction of its contour rather than the cardinal directions. *Bale-tani, panteq,* and *pa'on* are the construction periods for Limbungan traditional houses. The entire house consists of a *bale-tani, panteq,* and *pa'on*. *Bale-tani* is on the land's contours, while panteq is on the land's very flat surface. The space between the *bale-tani* and the *panteq* or *pa'on* is considered part of the dwelling. Because the *panteq* is an open structure with a roof, the inner space will blend with the exterior area between it and the *bale-tani*, resulting in an open space with no roof and a roof. This space is used as a communal room, whereas the *bale-tani* is a secure place with a great degree of individualism.

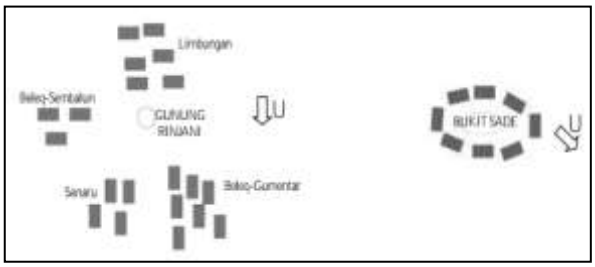

Figure 5. The orientation of the construction period in the traditional houses of Limbungan, Beleq-Sembalun, Senaru, and Beleq-Gumentar towards Mount Rinjani, and the Sade traditional houses towards the Sade hills
(Source: Susilo et al., 2019)

d. Beleq-Sembalun Traditional Village

In the highlands of Mount Rinjani, the traditional house of Beleq Village, Sembalun Lawang Village, Sembalun District, East Lombok Regency, is located. The traditional house in Beleq Sembalun village is currently empty. However, it is cared for by a caretaker. The historic Beleq-Sembalun village house was once home to multiple families who descended from the same lineage, but it is no longer in use. In Sembalun village, it has now become one of the most popular tourist places for recreation. Selong hills with views of Beleq-Selang traditional houses and a stretch of rice fields can also be found in Sembalun, in addition to the traditional houses of Beleq-Sembalun village.

Figure 6. Siteplan of Beleq Village, Sembalun, East Lombok (1) bale-tani, (2) geleng
(Source: Susilo et al., 2019)

Although this traditional Hamlet is in mountainous terrain, this cluster of traditional dwellings is situated on level land, unlike Sade and Limbungan's traditional buildings. Only seven bale-tani units and two shank units make up the overall duration of the structure. The bale-tani are organized in two rows facing south, with relatively large spacing between rows. Meanwhile, the two waves' positions are at the east and west extremities of the mass, forming a space due to the mass's composition. The Baletani on the rear row use this space as their orientation center.

Figure 7. The condition of the Traditional House of Sembalun Village during an Earthquake of seven on the Richter scale
(Source: Susilo et al., 2019)

Two units collapsed, one team was significantly damaged, and many other bale-tani in various parts of the dalem-bale sector was damaged but did not collapse after an earthquake with a magnitude of 7 on the Richter scale from seven bale-tani. During the shaking period, the building on the east and west ends was not harmed, did not

change, and remained in their original position. As a result, it is no longer a place to live.

e. Senaru Traditional Village

Senaru Traditional Village is a traditional dwelling in Senaru village, Bayan subdistrict, North Lombok district, Indonesia. Mount Rinjani is located to the north of the exact location. Because of its strategic location near the gate for ascending Mount Rinjani, Senaru traditional house has become one of the most popular tourist destinations. Even though it is a tourist stopover, there is no location to sell goods, unlike the Sade traditional house. However, this Senaru traditional house is also a stepping stone to Rinjani's summit. The epicenter of the Lombok 7 earthquake on the Richter scale was in this location, and it turned out that none of the buildings in this traditional housing complex collapsed.

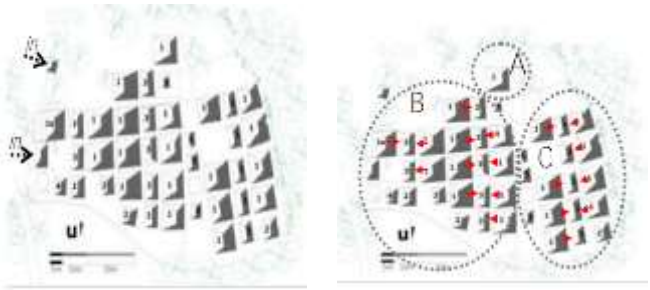

Figure 8. Senaru Traditional Village Core Zoning
(Source: Susilo et al., 2019)

Figure 8 depicts A as the main home, which was the first to be erected and is still in its exact shape today, serving as a residence among the others. In terms of A, it is known as bale. The zones in the two nuclear families are B and C, and these two nuclear families are the progeny of A (parent house). Zones B and C show how the arrangement creates a pattern that connects them in one zone. The bale-menina faces east or west, while the orientation of the building mass is north-south. The cardinal directions are not an aid in arranging the time when viewed from a non-straight approach. The presence of Berugaq serves as a binder between two Nale-Mengina, with the Bale-Mengina always facing the Berugaq and one Berugaq usually associated with two Bale-Mengina. The Guling, Sambi, and Sondo-Sondo structures are stretched out to occupy the vacant area of the zoning or on the outer side of the zoning.

f. Beleq-Gumentar Traditional Village

The traditional house of Beleq-Gumentar village is located in Gumantar village, Kayangan District, North Lombok Regency. Few visitors visit this traditional house because of its location, which is to the north of Mount Rinjani. This could be because it is not on a tourist route. The epicenter of the Lombok 7 earthquake was in this area, and it turned out that all of the buildings in the Beleq-Gumentar village traditional house complex did not collapse. In contrast, buildings constructed using modern methods, such as residential houses, mosques, schools, and offices, collapsed. This shows that the earthquake resistance aspect was included in the design of the traditional home in the Beleq-Gumentar hamlet. The management, led by a village chief, follows the customary rules passed down in life and architecture. Even though some people are well educated but live in a traditional house, their way of life is

founded on their traditions. Electricity is not allowed in the lighting system of traditional Beleq Gumentar village homes; instead, there is only one point of electricity that is utilized to power the coconut grater machine.

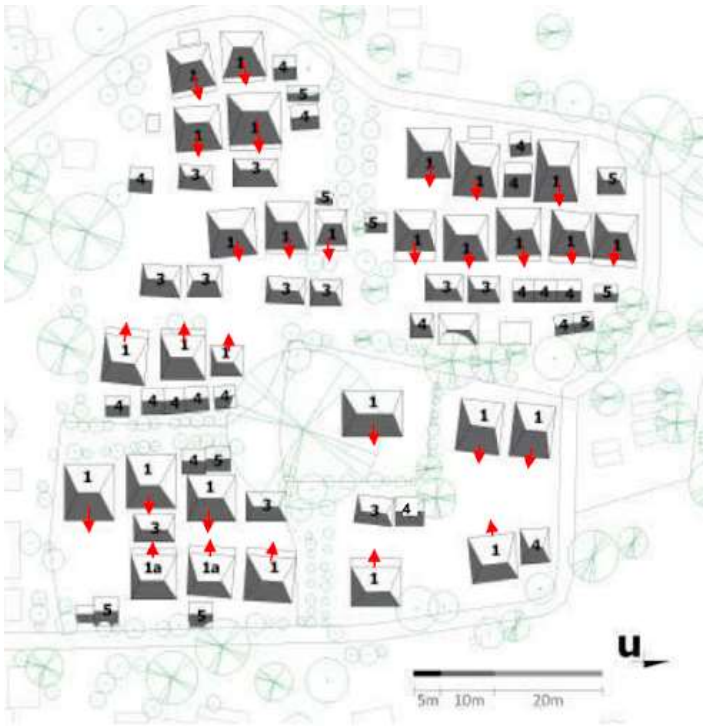

Figure 9. Siteplan Beleq-Gumentar traditional house
(Source: Susilo et al., 2019)

Analysis and Concept of Sasak Traditional Settlement
Identification of The Sasak Settlement Pattern Typology
Environmental Aspect

This application divides the six villages in the Sasak Tribe's settlements into two (two) placement plains. Hills and flat ground make up the two plains. The location of each of these six communities indicates this. Sade Village, West Limbungan Village, and East Limbungan Village are all located on the hilly plains. The curved ground, drained by rivers, and steep roadways are the distinguishing features of this hill. Bale-Gumentar Village, Senaru Village, and Baleq-Sembalun Village are all flat land. This flat area has a sloping character, and the soil is easily moved (prone).

Figure 10. Framework for Environmental Aspects
(Source: Personal Identification, 2022)

Building Mass Orientation

The building mass's orientation, in this case, illustrates the building's longitudinal direction, not the direction it faces. Environmental factors and attitudes impact the direction of the building masses in these six settlements, as in the hilly environmental aspect group, which has diverse facing rules and is oriented parallel to the contour. The assembly of the buildings in Sade Traditional Village is oriented around Mount Rinjani, with the bale facing the peak and its back to the mountain. The direction of facing the bale with its back to Mount Rinjani is East and West in Limbungan Barat Village, which is located on the slopes of the hills. The East Limbungan Village is nearly identical to the West Limbungan Village, except for the building orientation, which is Northeast or Southwest.

The orientation of the building mass is perpendicular to Mount Rinjani in the flat land group, which is precisely positioned on the slopes of Mount Rinjani, and the direction of facing is neither facing nor back to Mount Rinjani. East and west are the directions to the building in Baleq-Gumentar Village. Then, in Senaru Village, the building is approached from the north and south. Furthermore, the direction towards the North and South structures is the same as in the Baleq-Sembalun Village and the Baleq-Gumentar Village.

Figure 11. Building Mass Orientation Framework
(Source: Personal Identifiication, 2022)

Typological Analysis of Sasak Settlement Patterns

The Influence of History on the Environmental and Bale Tani

Historical research aims to discover the origins of design character formation (Moneo, 1976). The Sasak tribe's traditional settlements are mainly on hills and mountain slopes. The circumstances surrounding Sunan Prapen's desire to promote Islam affected his decision to choose a spot in the mountains. Sunan Prapen extended the spread of Islam to Sumbawa, Dompu, and Bima after Islamizing the other kingdoms on the island of Lombok. The state of Islam in Lombok was very sorrowful after the death of Sunan Perapen because the women refused to accept the new religion. This is highly reasonable because the previous religion's influence is still strong, as is Karangasem's dominance in Bali as a powerful and fearsome monarchy. Sunan Prapen returned to Lombok and arrived via Sugian to attack the remaining unbelievers. The inhabitants of Lombok were separated into three groups during the attack:

1). The Boda, who fled to the highlands and later entered the jungle
2). The Time of Five, who submitted and converted to Islam
3). The Wetu Telu followers, who were only conquered under the authority of Sunan Prapen
4). As a result of this issue, we will have to deal with it later.

The Effect of Trust on Building Orientation

Boda devotees are a small population living in the northern half of Mount Rinjani (Bayan and Tanjung sub-districts) and many villages south of Mount Rinjani in the early twentieth century. The center portion of the island of Lombok fled to the mountains to avoid Islamization.

Some members of the Sasak Tribe community believe that the spatial development pattern of the Sasak community is geared towards cosmo/cosmological principles based on the group's belief system and cultural-based traditions. Because the population believed in supernatural/supernatural abilities, particular areas have been designated sacred. There are tombs of the Limbungan inhabitants' ancestors, which range in level from low to high, such as the tomb of Rujuq, Maliq stone, Pepadang, mountain Bentar, and Samak Borok, just as there are graves of the Limbungan residents' ancestors in the Limbungan Hamlet. The following are the functions of each tomb according to its level:

1. Rujuq tomb can be used as a hermitage, a place to look for heirlooms or a place to learn about mystical sciences;
2. Eating the Maliq stone and Pepadang serves as a place for people to ask for prayer whenever they perform cultural ceremonies such as weddings, births, rejecting reinforcements, asking for rain, and religious holidays such as Eid al-Fitr and Eid al-Adha; and it also serves as a place for people to ask for prayer when they perform cultural ceremonies such as weddings, births, rejecting reinforcements, asking for rain, and religious holidays such as Eid Al-Fitr
3. Mountain tombs and tannic ulcers serve as a request to cure disease.

(Habraken, 1978) classified aspects of spatial pattern, direction, and hierarchy in a settlement's spatial system. The effect of the Balinese kingdom in the era 1740-1838 can be seen in the orientation of the Sasak Tribe building, which is affected by the presence of Mount Rinjani. It is consistent with the sight of Mount Batur, which serves as the focal point of the Bali Aga Traditional Settlement's spatial design in Sekardadi

Village, Kintamani. To manage the layout of the direction facing the house, the Sasak community in Lombok orientation toward macro and microcosm beliefs. The primary orientation, Mount Rinjani, is thought to symbolize the upper realm or the highest (north) space hierarchy.

4. Conclusion

Several conclusions on the typology-morphology in the traditional Sasak towns were reached based on the preceding theoretical study and analysis, namely:

1. On the island of Lombok, two forms of Sasak architecture settlement patterns were discovered: hilly Sasak architecture and flat land Sasak architecture. Sade, West Limbungan, and East Limbungan have hilly architecture, but Beleq-Sembalun Village, Senaru Village, and Beleq-Gumentar Village have flat land architecture.
2. Furthermore, in hilly architecture, the orientation of the building mass is parallel to the contour direction, with the bale facing down/valley. In contrast, in flat land architecture, the orientation of the building mass is perpendicular to Mount Rinjani. The process of obtaining ideas and recommendations based on the findings of the analysis, as mentioned above, is outlined in the following points:
3. The first argument concerns bale tani in Beleq-Sembalun hamlet, whose location on flat terrain is not advised because practically all of the bale tani collapsed when the earthquake struck in 2018. As a result, bale tani can be described as a hillside Sasak architecture. The bale ina is a Sasak flat-land structure.
4. Regarding long-term viability, the Sasak traditional home is still a residence due to two considerations. The first is a strong desire to preserve traditional values, particularly architectural traditions, in a traditional setting. The second is to exploit traditional dwellings as a tourist attraction to boost a village's economy.
5. The magnitude seven earthquakes in 2018 are intended to show the resilience of traditional structures. It has become an excellent lesson to better "recognize" traditional architecture demonstrated to be earthquake-resistant.

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