

ADAPTING THE CULTURAL FORMS IN ARCHITECTURAL DESIGN CONCEPT OF TOURISM CENTRE ON MULES ISLAND, MANGGARAI

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ADAPTING THE CULTURAL FORMS IN ARCHITECTURAL DESIGN CONCEPT OF TOURISM CENTRE ON MULES ISLAND, MANGGARAI

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ABSTRACT

Mules Island, a small island in the Flores archipelago, possesses a diverse array of tourist attractions. Unfortunately, the island, which falls within the settlement area of the Manggarai ethnic group, lacks facilities to support the development of tourism activities. Thus, designing a tourism centre to address these needs is necessary. At the same time, the local community faces challenges related to cultural identity. Mules Island is home to a multi-ethnic population, with no single dominant ethnic group, a condition that raises the risk of cultural assimilation potentially eroding all existing ethnic identities. Preliminary studies indicate that the residents of Mules identify themselves as part of the Manggarai community. Consequently, Manggarai culture is an apt source of inspiration for the architectural design of the proposed tourism center. The design draws inspiration from two Manggarai cultural elements: the traditional Manggarai house known as Mbaru Niang and the distinctive Manggarai rice field pattern referred to as Sawah Lodok. These cultural forms are adapted into the design through a process of form transformation, employing both traditional and borrowing methods. The proposed facilities include a Tourist Information Center, cottages, gazebos, an observation tower, a plaza with food stalls, a plaza with souvenir kiosks, an amphitheater, a prayer room, and public restrooms. All structures incorporate plan and roof forms derived from the transformation of Mbaru Niang, while the site layout reflects the transformed pattern of Sawah Lodok. The architectural design of the tourism center on Mules Island has promoted the identity and the beauty of Manggarai culture while fulfilling its functional role in supporting tourism development activities.

INTRODUCTION

The Manggarai Region, Manggarai Regency, and Mules Island

Manggarai is a region situated in the western part of the island of Flores, the homeland of the Manggarai ethnic group. The region is administratively part of the East Nusa Tenggara Province in Indonesia. The area covers a territory of 7,136.4 km² (Adi Gunawan, 2021). The Manggarai region is divided into three regencies: Manggarai Regency, with its capital in Ruteng; Western Manggarai Regency, with its capital in Labuan Bajo; and Eastern Manggarai Regency, with its capital in Borong. Manggarai Regency is the original regency astronomically located between 08°14'27.32"-08°54'57.17" South Latitude and 120°13'41.34" - 120°32'47.22" East Longitude. It was later developed into three separate regencies. Western Manggarai and Eastern Manggarai are the two new regencies resulting from this development.

The Manggarai region encompasses several small islands, including Komodo, Rinca, and Padar, which are recognised as world-class tourist destinations due to their status as habitats for the

prehistoric Komodo dragon. Approximately 40 other small islands are scattered throughout the seas of Manggarai, including Mules Island. It is located in the Sawu Sea, specifically north of Flores Island. Covering an area of 28 km², Mules Island is administratively classified as a village called Nuca Molas (BPS-Statistics of Manggarai Regency, 2024). This village is among the 12 villages within the Satar Mese Barat sub-district.

Mules Island, or Nuca Molas Village, has three hamlets: Konggang, Peji, and Labuan Taur. Konggang is the largest, located in the east of the island; Peji is the smallest, situated in the centre; and Labuan Taur is in the west of Nuca Molas Village. Nuca Molas Village has been inhabited since the colonial era. It was a stopover for fishermen and sailors for logistical purposes (such as water stock) or shelter from bad weather. The inhabitants of Nuca Molas Village come from various regions, including Savu, Ende, Sumba, and other areas around Mules Island, as well as the indigenous Manggarai people. These diverse communities still resided on Mules Island. Below is the map of Mules Island, which shows the island and its location.

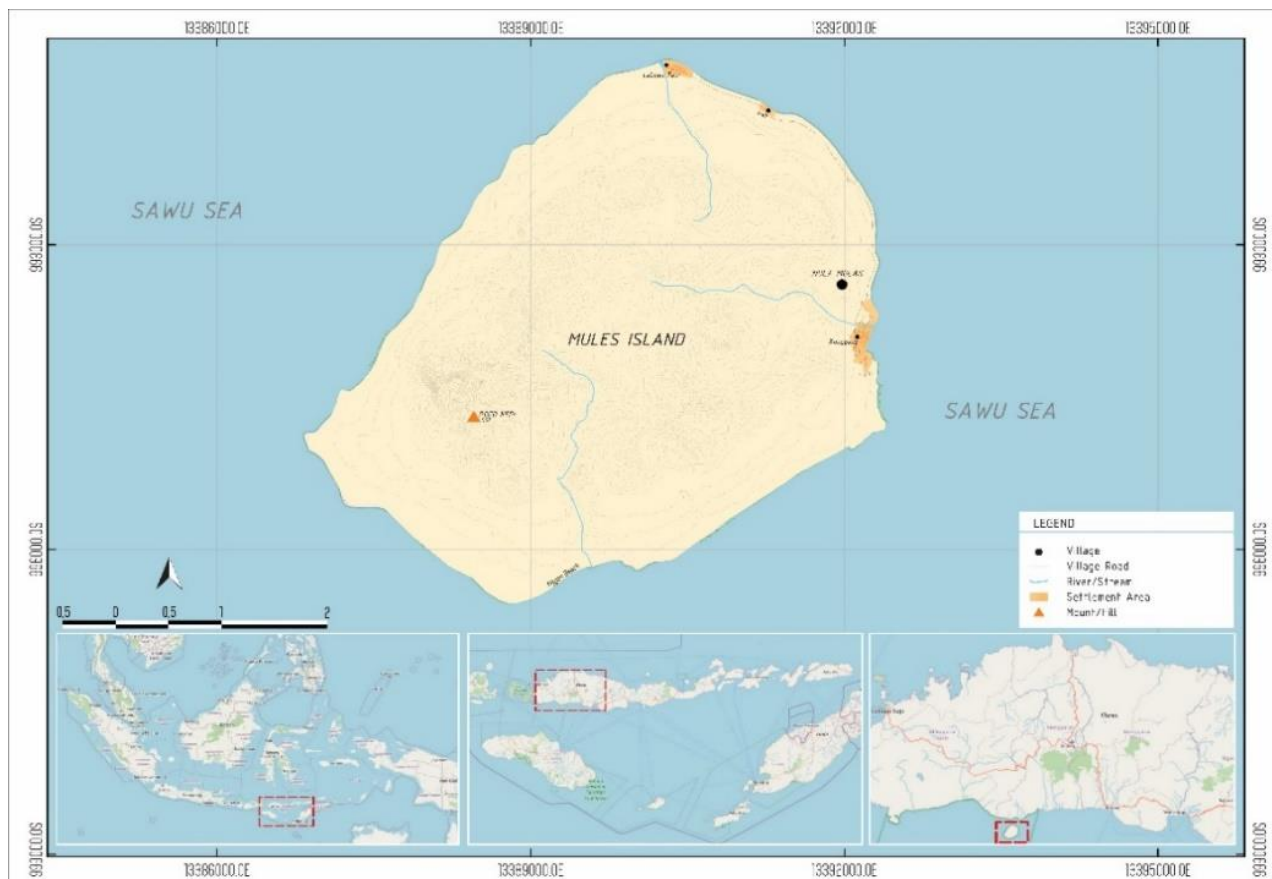


Figure 1. The Map of Mules Island

Source: Drawing from multiple resources, 2024

The geological conditions of Mules Island are particularly intriguing because they differ from those of its more oversized neighbouring island, Flores. Geologically, Flores Island was formed during the Neogene periodⁱ (in the northern part) and the Quaternary periodⁱⁱ (in the southern part), whereas

Mules Island dates back to the Jurassic eraⁱⁱⁱ. This geological condition makes Mules Island geologically older than Flores Island (The Ministry of Tourism and Creative Economy Republic of Indonesia, 2023).

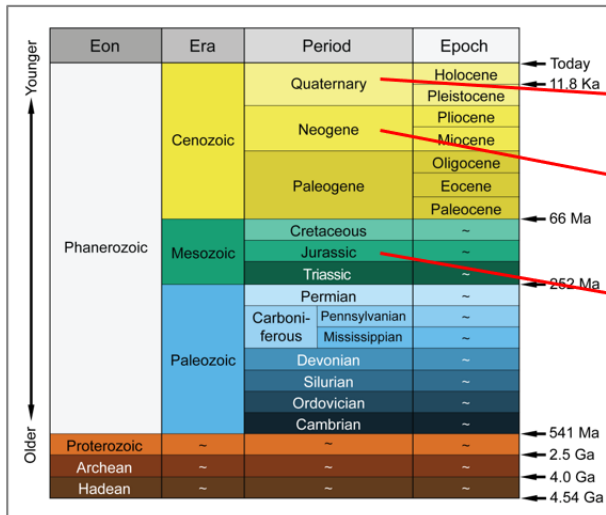


Figure 2. Geologic-Time Scale and The Formation Period of Flores and Mules Island (Source: <https://earthathome.org/geologic-time-scale/>, adapted by author)

Note:

Ka : "kilo anum," 1000 years. Kya = 1000 years ago.
 Ma : "mega anum," 1 million years. Mya = million years ago.
 Ga : "giga anum," 1 billion years. Bya = billion years ago.



Figure 3. Land Surface Morphology of Mules Island (Source: Streaming Google Earth May 3rd 2023)

These geological conditions result in a distinct geostructure between Mules Island and other small East Nusa Tenggara region islands. While other islands are relatively flat, Mules Island has a hilly topography, with elevations reaching 400 meters above sea level. A three-dimensional image capture of the Mules Island area reveals its undulating surface morphology (see Figure 3). This physical feature presents a valuable potential for tourism on Mules Island.

Mules Island: A Multifaceted Tourist Attraction

The world is familiar with Labuan Bajo, Komodo Island, Rinca Island, and Padar Island—just a few of the many world-class tourist attractions in the Manggarai area. The Indonesian government, through Presidential Regulation Number 18 of 2020 concerning the National Medium Term Development Plan 2020–2024, has designated Labuan Bajo as one of the top 10 super-priority tourism destinations (<https://koran.tempo.co/read/ekonomi-danbisnis/484952/10-destinasi-wisata-prioritas-di-indonesia>). Alongside four other relatively underdeveloped tourist destinations, the government has allocated substantial funds to develop tourism infrastructure in Labuan Bajo and its surroundings. Labuan Bajo is the regency's capital and serves as

the gateway to Komodo, Rinca, and Padar Islands, the natural habitat of the ancient Komodo dragon.

Another globally recognised tourist attraction in this area is Wae Rebo, a traditional settlement located in the mountains, approximately 1,200 meters above sea level. Wae Rebo is renowned for its stunning natural beauty and the rich cultural heritage and traditions meticulously preserved by the local community. The village has gained international recognition for preserving traditional culture and architecture. In 2012, Wae Rebo was awarded the UNESCO Asia-Pacific Award of Excellence for Cultural Heritage Conservation for its success in maintaining its cultural and natural heritage (unesco.org 2024).



Figure 4. Traditional Village Wae Rebo at Manggarai (Source: <https://id.pinterest.com/pin/754071531364873274/>; accessed date: July, 21st 2024)

Several tourist attractions mentioned above are located in the same area as Mules Island, within the Manggarai region. These attractions have developed into popular tourist destinations that generate significant income for the government and the local community. Mules Island, the only small island in the Manggarai area, also possesses diverse tourism potential. This island covers 180.29

km² and is home to 1,340 residents (BPS-Statistics of Manggarai Regency, 2024), possessing distinct and outstanding natural features. Untouched white sandy beaches and scenic hills characterise it. The island and its surrounding waters are also home to several rare species.

Some tourism products that can be developed on Mules Island include water sports tourism, sports tourism, edu-tourism, cultural tourism, culinary tourism, and relaxing tourism (The Ministry of Tourism and Creative Economy Republic of Indonesia, 2023). Water sports tourism offers activities in the waters of the Savu Sea surrounding Mules Island, such as snorkelling, swimming, kayaking, fishing, and diving. Sports tourism can include land-based activities on Mules Island, such as cycling and trekking up its hills to enjoy the natural beauty. Edu tourism focuses on educational activities in nature, such as observing turtle conservation efforts, deer breeding, and wildlife watching of multicoloured cattle herds and rare bird species found on the island. Cultural tourism provides experiences centred on visitor interaction with the local community of Mules Island, including opportunities to participate in traditional games (such as *engklek*^{iv}), engage in mat weaving, and observe the building of fishing boats. Culinary tourism offers visitors the chance to enjoy local cuisine made from fresh seafood. Finally, relaxing tourism allows visitors to appreciate the island's scenic beauty, such as watching sunsets on the beaches of Mules Island. Several activities can be combined in a single tour package; for example, trekking or cycling can be paired with wildlife watching and concluded with relaxing while enjoying the sunset over the Savu Sea from the hills of Mules Island.



Figure 5. Beach View, Cycling Activity, and Herd of Cattle with Various Skin Colours in Mules Island
(Source: Survey, 2023)

The previous description highlights the multifaceted appeal of tourist attractions on Mules Island, which in turn can draw tourists and boost the local economy and community welfare. The tourism

allure of Mules Island is as captivating as the globally renowned attractions nearby, such as Komodo Island and Wae Rebo. The abundant tourism potential on Mules Island needs to be developed with supporting infrastructure to ensure substantial economic gains for the local and neighbouring communities. Unfortunately, tourism development on this island has not progressed as rapidly as other attractions nearby due to limited infrastructure and facilities. Due to this situation, the government, through the Ministry of Tourism and Creative Economy, facilitated the authors' design of a tourism centre. The design must create a tourism facility that meets the necessary requirements while also showcasing the local cultural identity as a distinctive feature that differentiates it from similar facilities in other regions.

METHOD

This study practised two types of methods: the research method and the design method. The research method was applied to gather data about the design object and the project site, including the physical and socio-cultural conditions surrounding the site. Meanwhile, the design method was used to incorporate forms derived from Manggarai culture into the architectural design. These forms were adapted by taking their basic shapes and transforming them to create designs that were able to reflect Manggarai culture while supporting their functional purposes.

The collection of physical site data was conducted through the gathering and analysis of relevant documents, such as spatial planning regulations, location maps, and similar materials, as well as through direct field observations guided by pre-prepared instruments. In addition to physical data, socio-cultural data was also collected, focusing on the background and socio-cultural conditions of the inhabitants of Mules Island and the surrounding areas. This data was gathered through the review of related literature and other sources, such as social media, and was supplemented by interviews with community leaders from Mules Island and Manggarai. The research findings were used as the basis for developing the design concept.

The method used to develop the design in accordance with the established concept involves applying transformation techniques to forms found in the local culture, in this case, Manggarai culture. Form transformation or shape alteration can be achieved through various approaches, such as modifying the dimensions of the form, subtracting certain elements from the original form, and adding new components to the form (Najoan & Mandey, 2011). This approach aims to ensure that the final design aligns with its intended function while preserving Manggarai cultural themes as the identity of the area. According to (Antoniades (1990), there are three major transformational strategies: 1. The

traditional strategy: progressive evolution of form through step-by-step adjustability to "constraints" such as external (site, view, orientation, prevailing winds, environmental criteria), internal (functional, programmatic, structural criteria), and artistic (the ability, will, and attitude of the architect to manipulate form, along with the attitude toward budgets and other pragmatic criteria); 2. The borrowing strategy: the license of borrowing formal departures from painting, sculpture, objects, and other artefacts and learning from their two- or three-dimensional properties while constantly probing interpretations with regard to their applicability and validity; 3. The De-construction or De-composition strategy suggests a process whereby one takes a given whole apart in order to find new ways to combine the parts and to evolve possibilities of new wholes and new orders under different structural and compositional strategies.

In this design, the transformation strategies applied are traditional and borrowing transformation strategies. The traditional transformation strategy is implemented due to the changes in space programs and building functions, as well as the need for several structural adjustments. The borrowing transformation strategy establishes a strong cultural identity for the area, whereby the design "borrows" forms from cultural artefacts, namely traditional houses and the rice field's pattern. The whole research and design process is abstracting in the bellow diagram.

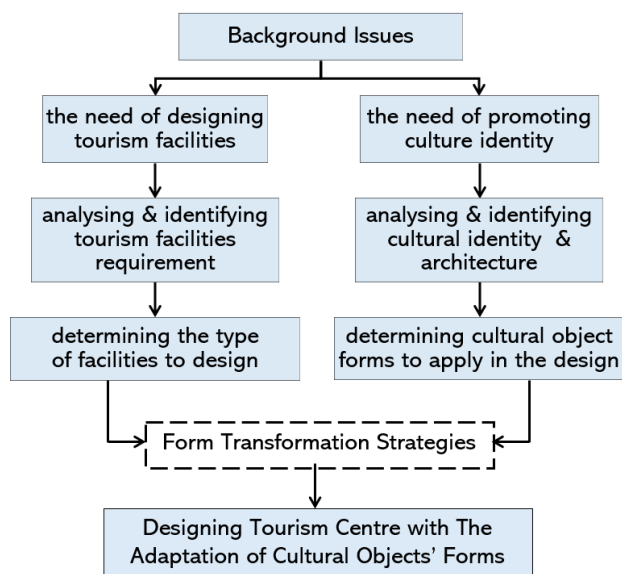


Figure 6. The Diagram of Research and Design Process
 (Source: Author, 2024)

RESULT AND DISSCUSION

Manggarai Culture in Mules Island

The term "culture" was first used by the pioneer English Anthropologist Edward B. Tylor in his book *Primitive Culture*, published in 1871. Tylor said that culture is "that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society." (https://www.palomar.edu/anthro/culture/culture_1.htm). O'Neil defines culture as: "All of the knowledge, attitudes, and patterns of behaviour that are habits owned and inherited by members of a particular society" (O'Neil, 2006 in (Okpalike, 2015)). Culture is "a set of attitudes, values, beliefs, and behaviours shared by a group of people communicated from one generation to the next via language or some other means of communication" (Tanaka-Matsumi, 2001 in Fisher, 2024).

The culture of an ethnic group is an inseparable part of that group; indeed, an ethnic group is defined by its culture. Culture not only influences the community level but is also deeply ingrained in the lives of individuals. Culture is one of the prominent features identifying a people as members of an ethnic group and, at the same time, differentiating them from those of other ethnic groups (Koentjaraningrat, 2004 in Bustan, Semiun, and Bire, 2020). Humans and culture are inseparable, and the proponents of culture are humans themselves. Culture creates distinctions between people as it symbolises identity (Chandra et al., 2024). Even when humans are deceased, their culture will be passed on to the next generation (Taneo & Madu, 2023).

Each ethnic-cultural group typically has a specific geographical area where their culture is formed and developed. This area is often referred to as the homeland, the native habitat of the ethnic group, where their culture finds fertile ground for growth. Manggarai has been the homeland of the people of Manggarai ethnicity. The term "Manggarai" encompasses not only the territory but also the entire social, cultural, and moral concepts (known as *adat*) of the people who live there (Adi Gunawan, 2021). Manggarai culture is well-known for its various manifestations, which attract many local and international tourists. These include traditional dance, architecture, ceremonial rituals, and other cultural expressions. Additionally, the natural resources of Manggarai offer around 225 distinct tourist attractions (BPS-Statistics of East Nusa Tenggara Province 2023), bringing in thousands of tourists annually.

As mentioned above, Mules Island is located within the Manggarai ethnic region. Although the island is inhabited by people from various ethnic groups, such as those from Sumba and Ende, as well as migrants from Sulawesi, particularly the Bajo people (1,200 km north of Flores Island), the

residents of Mules Island still identify themselves as Manggarai people. They highly regard the indigenous Manggarai culture, having lived in the Manggarai region for generations. Even the significant religious difference between the inhabitants of Mules Island and other Manggarai regions does not prevent them from identifying as Manggarai. The majority of the 858,282 people in Manggarai, or 96.3%, are Catholic (Adi Gunawan, 2021), whereas 99% of the Mules Island population is Muslim. Despite this, they prefer to be identified as Muslim Manggarai rather than migrants. The absence of a dominant ethnic group on the island results in a lack of distinct cultural characteristics from any particular ethnic group. This condition likely contributes to the residents' inclination to identify as Manggarai people, a unifying cultural identity.

Infrastructure Requirement and Cultural-based Design Concepts

The facilities and infrastructure provided within the planned site area are intended to support tourism activities and their related functions. While tourism activities will not be limited to this area alone, the majority taking place outside the site, this location is expected to serve as the central hub for tourists to gather information and access supporting facilities before they disperse to various tourist attractions. Similarly, after visiting Mules Island, tourists can return to this area to rest before heading home or continuing their journey. In response to these requirements, the facilities and infrastructure planned are as follows:

- Culinary plaza & building
- Amphitheater Plaza and its supporting building
- Gazebo building
- Souvenir kiosk building
- Worship building (prayer room)
- Watchtower building
- Cottage building
- Public toilet building
- Tourist pier
- Circulation path (promenade and boardwalk)

As previously mentioned, Mules Island is situated within the Manggarai ethnic region. However, it is a multi-ethnic area where no single ethnic group, including the Manggarai, dominates. Theoretically, such conditions can lead to processes of acculturation and assimilation. Acculturation can result in the emergence of a new culture that blends elements from existing cultures without erasing the distinct identities of each. On the other hand, assimilation is characterised by efforts to minimise differences between individuals or groups, aiming to strengthen unity in actions, attitudes, and feelings while considering common interests and goals.

Whether acculturation or assimilation should not eliminate the unique cultural characteristics of each region, including the local traditions, customs, and ethnic identities that define its people (Arsyad &

Adam, 2023). However, assimilation often becomes the final stage of acculturation, where all cultural groups involved in the process merge into an entirely new form, no longer displaying their original cultural identities. A study conducted by Razakova, (2024) demonstrates that in the process of cultural assimilation, it is crucial to ensure that the culture brought by immigrants is well integrated while also preserving the cultural identity of the indigenous population. The loss of cultural identity, specifically the native culture, must be avoided in any area, specifically in tourism development areas, such as Mules Island.

The tourism centre facility will serve as the "face" of tourism on Mules Island and function as a "gateway." Visitors coming to the island will first be directed to this facility. Therefore, ensuring that the facility clearly and strongly represents the island's cultural identity is crucial. Visitors are expected to experience the cultural atmosphere of Manggarai upon entering the facility. Furthermore, the presence of this centre is expected to support the preservation of a healthy acculturation process in the area and prevent the loss of cultural identity.

The behaviour of Mules Island inhabitants, who identify themselves as Manggarai people, also serves as a strong foundation for making Manggarai culture the primary source of inspiration in the creative design process. According to Koentjaraningrat (1985), the existence of culture can be categorised into three forms: (1) a complex of ideas, values, norms, regulations, and legal systems, called cultural systems. (2) a complex of activities and actions of humans and society, which is called a social system. (3) a result of human physical activities called material culture or artefacts. The source of architectural design inspiration for this tourism centre is material culture, or the embodiments of culture that can be seen and observed.

As previously explained, Manggarai culture encompasses rich embodiments that can serve as sources of inspiration for developing architectural design concepts. The architectural design concepts discussed here include the building architecture concept, which forms the basis for the building's shape and appearance, and the site pattern concept, derived from the site's circulation pattern. The architecture of Manggarai traditional houses inspires the building architecture concept for the proposed structure, while the site pattern concept is based on the *lodok* rice field pattern, a layout traditionally used by the Manggarai people in their rice farming areas. The use of embodiments of Manggarai culture in the architectural design of the tourism centre is expected to serve as a mental approach that, according to Fanggihda et al., (2020), could enhance the sense of ownership among the residents of Mules Island, thereby ensuring greater sustainability of the facility.

Mbaru niang and Sawah lodok

The research conducted by Fanggidae et al. (2019) proved the importance of traditional houses as the display of an ethnic culture. The traditional Manggarai house is known as *Mbaru niang*. The term "*Mbaru niang*" is derived from two words: "*mbaru*," meaning house, and "*niang*," meaning tall and round; hence, it refers to a conical house. This type of house is characterised by its conical shape, where the roof and body are seamlessly integrated. The walls are constructed using a bamboo frame, then covered with layers of dry grass and palm fibres to shield the occupants from the cold mountain climate (Dominikus et al., 2023). In addition to its conical shape, *Mbaru niang* features a circular, tiered arrangement of spaces, each with distinct spatial functions.

According to Pradipto & Tristanto (2021), each house (*Mbaru Niang*) has a head of the household who is the leader within that single dwelling. However, in each village, there is a traditional leader who, along with his family, has lived for generations in a particular house known as *mbaru niang gendang* or simply *mbaru gendang*. The term "*gendang*" refers to a traditional drum made from wood and goat skin. *Mbaru gendang* is a large communal house where a sacred *gendang* is hung and used during special rituals and village ceremonies. Ordinary *gendang* can be owned by anyone and placed anywhere, but the sacred one cannot be moved outside the house and can only be played during special ceremonies in the communal house. Apart from being sacred, this particular *gendang* is also an iconic village symbol. Widyawati et al., (2022) indicated that *mbaru gendang* is another name for *mbaru niang*. In fact, *mbaru gendang* is a *mbaru niang* with a sacred drum (*gendang*) hanging inside. *Mbaru gendang* is a *Mbaru niang* designated explicitly for the traditional leader's family. Hence, *mbaru gendang* is a *mbaru niang* with cultural significance, marked by the placement of the sacred drum, the use of the house as a location for traditional ceremonies, and the specific type of occupants who are the traditional leader's family.

Traditional Manggarai houses consist of two types of floor plans shape: circular and octagonal. The *mbaru niang* and *mbaru Gendang* are elevated structures with a conical roof made from materials such as reeds and palm fibres, while the body of the building is constructed from wood. In specific locations, like at Wae Rebo, the *mbaru niang* features a roof that extends downwards, almost touching the ground, thereby concealing the main structure of the building. Pradipto & Tristanto (2021) further explain that the *mbaru niang* or *mbaru gendang* buildings are vertically divided into three parts: the lower, middle, and upper sections. The lower section consists of the space beneath the house, where livestock are kept, and women often weave during the day. The middle section serves as the main living area, housing bedrooms for each

family, a shared kitchen, and a communal living room. This middle section is divided into private and public areas, separated by a hearth in the centre of the space. Women typically engage in activities around the kitchen or near the hearth, while men gather in the front section near the entrance. The middle section is supported by nine main pillars, which form the primary structural framework of the *mbaru niang*.



Figure 7 *Mbaru niang* at Wae Rebo Village, Manggarai

(Source: <https://eastjourneymagz.com/2019/04/rumah-adat-manggarai/>; Pradipto & Tristanto, 2021)

In greater detail, (Tunggadewi and Dwiputri (2023) describe the space within the *mbaru niang* as circular in shape and consisting of five levels. The first level, called *lutur* or *tenda*, functions as the space for daily activities. The second level, the *Lobo*, is a storage area for everyday food supplies. The third level, *lentar*, is used for storing crop seeds. The fourth level, *lempa rae*, is designated for storing food reserves for the dry season; the fifth level, *he kang kode*, stores offerings for the ancestors.

The site plan concept in this design is based on the lodok rice field pattern, a distinctive feature of the Manggarai region. *Lodok* refers to a land division system known as *lingko*^v, where farmland is partitioned in a way that resembles a spiderweb pattern (<https://pariwisata.manggaraikab.go.id/>). The central point of this pattern is called *lodok*, which serves as the starting point for dividing the *lingko* land. Each *lingko* has only one *lodok*, which must remain empty and unworked, as it is designated for ritual offerings (Bayna & Prasakti, 2023). Surrounding the *lodok* are segments of land known as *juring*, referred to as *cicing* in the Manggarai language. *Cicing* denotes the boundary or outermost part of the land, bordered by privately owned or communal lands. The *cicing* must be enclosed by fences or water channels to prevent boundary disputes and protect the land from animals that might damage crops (Bayna & Prasakti, 2023).



Figure 8. Sawah Lodok at Manggarai (Source: <https://www.inews.id/travel/destinasi/pemandangan-memukau-sawah-berbentuk-jaring-laba-laba-raksasa-di-flores>)

The Adaptation of *Mbaru Niang's* Form in The Buildings Design

The shape of the *mbaru niang* serves as the conceptual foundation for designing the buildings in the tourist centre on Mules Island. The original design must undergo several stages of transformation to create the shape of buildings with modern functionality while drawing from the traditional form of the *mbaru niang*, which is deeply rooted in its traditional functions. The following image illustrates the transformation process of the *mbaru niang* shape into the final form of the Mules Island Tourist Information Center (TIC) building. Initially, the transformation process is applied by borrowing the form of *mbaru niang*, both the form of floor plan and roof.

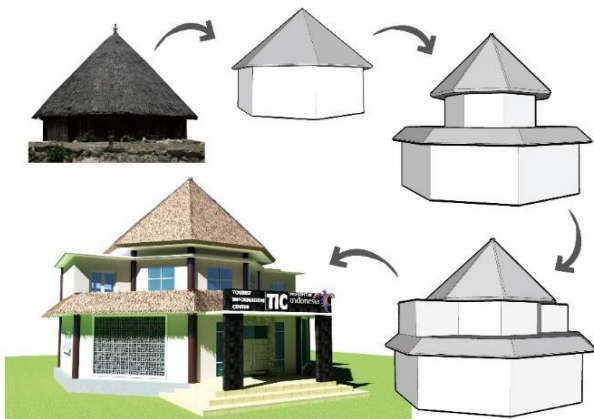


Figure 9. The Transformation of the *Mbaru Niang's* Form to TIC Building's Form (Source: Author, 2024)

As explained in the previous section, there are two basic floor plan shapes of the *mbaru niang*: circular and octagonal. In this design, the octagonal floor plan is applied. The Tourist Information Centre (TIC) is designed as a two-story building, in accordance with the results of the activity analysis and space program, while maintaining an octagonal shape. Both the first and second floors have identical shapes. However, the roof of the second floor differs in shape and area from that of the first floor. The second-floor area is designed to surround

a central void. Half of the second floor consists of an open, unroofed balcony, while the other half is an enclosed multi-purpose room. The placement of the central void is intended to maintain the proportions of the *mbaru niang* in the design of the TIC. The *mbaru niang* is conical in shape, tapering towards the top, and the TIC building reflects this form (see Figure 10).

Another structure that draws inspiration from the *mbaru niang* is the cottage. Like the *mbaru niang*, the cottage features an octagonal floor plan. However, its roof has been reinterpreted in an octagonal shape, a transformation from the circular roof of the original *mbaru niang* (see Figure 11).

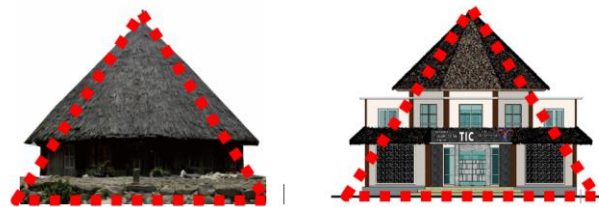


Figure 10. Maintaining The Shape and Proportion of *Mbaru Niang* in the TIC Building Design (Source: Author, 2023)

Besides the TIC and cottages, several other buildings in the area also incorporate the shape of *mbaru niang* in their designs, using various technical adaptations that evolve from transformations of the traditional house's floor plan and roof plan.

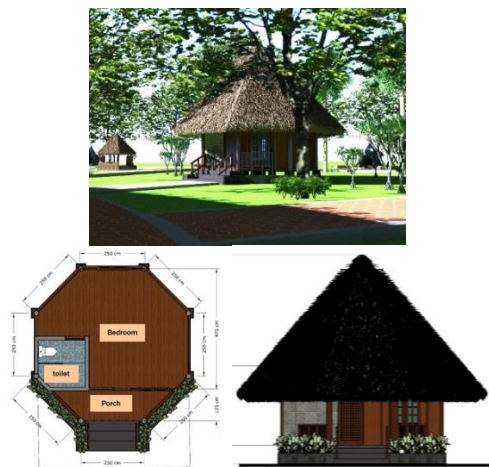
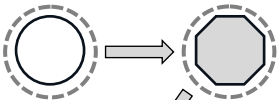

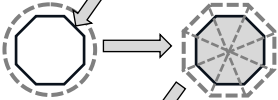

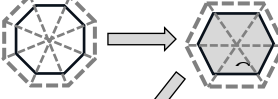
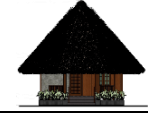




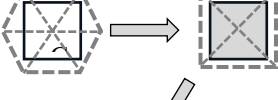

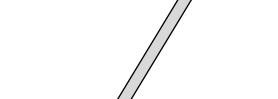

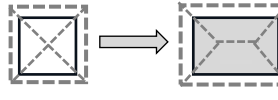

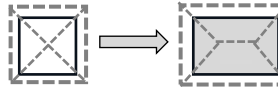

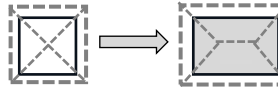



Figure 11. The Design of Cottage that Adapted The *Mbaru Niang's* Shape (Source: Author, 2023)

The following is a matrix illustrating the application of the traditional strategy to transform the *Mbaru niang* form in the architectural design of buildings within the Mules Island Tourist Attraction area subsequent to the application of the borrowing strategy.

Table 1. The Forms Transformation Processes in Building Design

Building Name	Form Transformation Applied (Floor Plan & Roof Plan)	Building Visual	Description
Mbaru Niang			The <i>Mbaru Niang</i> , as a source of ideas for the basic form, consists of two types of floor plan shapes: circular and octagonal.
Tourist Information Centre			Adaptation of the octagonal floor plan shape and transformation of the roof plan shape from circular to octagonal
Cottage			Transformation of the floor plan and roof plan shape from octagonal to hexagonal
Gazebo			Transformation of the floor plan shape from hexagonal to square while keeping the hexagonal shape of the roof plan
Culinary Kiosk			Transformation of the floor plan shape from hexagonal to square while keeping the hexagonal shape of the roof plan
Souvenir Kiosk			Transformation of the roof plan shape from hexagonal to square while keeping the square shape of the floor plan
Prayer room/mushola			Transformation of the roof plan shape from hexagonal to square while keeping the square shape of the floor plan
Watchtower			Transformation of the floor plan and roof plan shape from square to rectangular
Amphitheatre Supporting Building			Transformation of the floor plan and roof plan shape from square to rectangular
Public Toilet			Transformation of the floor plan and roof plan shape from square to rectangular

Source: Author, 2024

The Adaptation of The Form of *Sawah Lodok's* Pattern in The Site Plan

The site design fundamentally involves planning the circulation pattern that shapes the site's layout. As previously mentioned, the layout pattern of the Mules Island tourism centre facilities is adapted from the *sawah lodok* form, which resembles the shape of a spider's web. Adapting

this form undergoes several stages of transformation to achieve a functional design. The following diagram illustrates the application of the borrowing strategy and traditional strategy in the transformational process from *sawah lodok* form into the site plan layout of the tourism centre on Mules Island (see Figure 12).

Similar to the *sawah lodok* pattern, the site design incorporates a central area resembling a *lodok* encircled by wedge-shaped segments that

mimic the *cincing*. The *lodok*-like section in the site plan is designed as an amphitheatre plaza. Thus, this area shares the same characteristics as the *lodok* in the *sawah lodok* system, which is an open communal space, and when utilised, it serves collective activities. The amphitheatre area will be used for events such as cultural performances or exhibitions, similar to how the actual *lodok* is used for traditional ceremonies related to agricultural activities, such as offering rituals to ancestors to ensure a bountiful harvest. In the segments resembling *cincing* on the site, various facilities such as cottages, gazebos, culinary kiosks, and souvenir shops are positioned. In addition, the *sawah lodok* pattern is not only applied to the overall site layout but also to the design of the material patterns on the amphitheatre plaza floor.

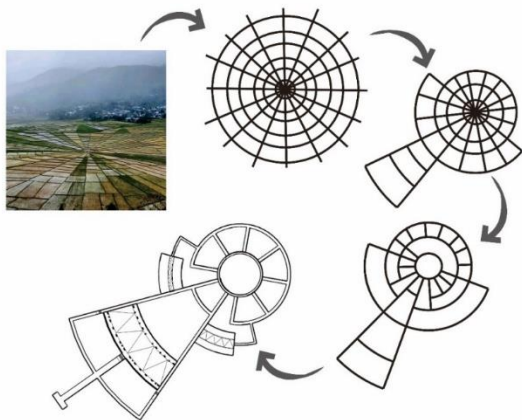


Figure 12. The Transformation of *Sawah Lodok's* Form to The Site Plan Pattern (Source: Author, 2024)

Similar to the *sawah lodok* pattern, the site design incorporates a central area resembling a *lodok* encircled by wedge-shaped segments that mimic the *cincing*. The *lodok*-like section in the site plan is designed as an amphitheatre plaza. Thus, this area shares the same characteristics as the *lodok* in the *sawah lodok* system, which is an open communal space, and when utilised, it serves collective activities. The amphitheatre area will be used for events such as cultural performances or exhibitions, similar to how the actual *lodok* is used for traditional ceremonies related to agricultural activities, such as offering rituals to ancestors to ensure a bountiful harvest. In the segments resembling *cincing* on the site, various facilities such as cottages, gazebos, culinary kiosks, and souvenir shops are positioned. In addition, the *sawah lodok* pattern is not only applied to the overall site layout but also to the design of the material patterns on the amphitheatre plaza floor, as depicted in the following picture.



Figure 13: Application of *Sawah Lodok's* Pattern Shape in The Design of Amphitheatre Plaza (Source: Author, 2023)

CONCLUSION AND RECOMMENDATIONS

The design of an architectural object must be preceded by sufficient research on the surrounding environment, including its physical and non-physical aspects. The study of the physical environment on Mules Island reveals that the island possesses unique physical characteristics. The island is a "hidden gem" often overlooked by tourists visiting nearby attractions. Otherwise, further research on the island's non-physical or socio-cultural conditions shows the presence of an acculturation process that could potentially lead to assimilation, where cultural identity may be lost. This loss of identity is due to the island's demographic composition, as it is inhabited by a multi-ethnic population with an even distribution, where no single ethnic group is dominant in quantity or quality.

The status of being an anonymous "hidden gem" presents a significant challenge in designing tourism facilities on Mules Island. The design must address the issue of the area's untapped tourism potential while also tackling the question of cultural identity. Without a clear identity, it is impossible to introduce and promote the excellence of the area. The design will lack direction if the region's cultural identity is not defined yet. Therefore, a thorough analysis of socio-cultural data was conducted prior to the design process. This analysis led to the first key finding: the region's cultural identity is rooted in the traditions of the Manggarai ethnic group.

Based on the first finding, a study was conducted on Manggarai cultural embodiments that could serve as the basic idea for the design. This study identified two embodiments of Manggarai culture: the traditional house, *Mbaru Niang*, and the distinctive rice field pattern, *sawah lodok*. The form of the *mbaru niang* was adapted into the architectural design of the buildings in this facility, while the *sawah lodok* pattern inspired the site's circulation layout. Before these cultural forms were adapted into the design, they underwent a process of traditional transformation and borrowing transformation. By adapting these forms drawn from Manggarai culture, the aim is to ensure that the region's cultural identity is visibly represented at the project site. The transformation of these forms is

intended to produce facility and building designs that both accommodate the planned functional requirements and showcase the Manggarai cultural identity.

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REFERENCES

- Adi Gunawan, V. (2021). The Manggarai Region on the Flores, Island Indonesia. Historical and Cultural Circumstances. *Roczniki Teologiczne*, 68(9), 151–168. <https://doi.org/10.18290/rt.21689.10>
- Antoniades, A. C. (1990). *Poetics of Architecture*. Van Nostrand Reinhold.
- Arsyad, L., & Adam, S. (2023). Study on the Assimilation of Huyula and Pogogutat Culture in the Gorontalo and Bolaang Mongondow Border Areas. *Journal La Sociale*, 4(6), 541–549. <https://doi.org/10.37899/journal-la-sociale.v4i6.1198>
- Bayna, I. M., & Prasakti, A. (2023). Sistem Pembagian Tanah Lingko Lodok ditinjau dari Hukum Adat dan Hukum Agraris. *MANTAP: Journal of Management Accounting, Tax and Production*, 1(1), 35–42.
- BPS-Statistics of Manggarai Regency. (2024). *Manggarai Regency in Figures 2023*.
- Chandra, A. W., Hantono, D., Purwantiasning, A. W., Prayogi, L., Sari, Y., & Yandri, S. (2024). The Identification of Ethnic Architecture Application on the Beringharjo Market Building in Yogyakarta. *International Journal of Architecture and Urbanism*, 8(1), 131–141. <https://doi.org/10.32734/ijau.v8i1.14322>
- Fanggidae, L. W., Subroto, T. Y. W., & Nareswari, A. (2019). The Persistence of The Traditional House's Spatial System in The Migrant Street Vendor's Stalls. *International Journal of Scientific and Technology Research*, 8(9), 586–594.
- Fanggidae, L. W., Subroto, T. Y. W., & Nareswari, A. (2020). Defining and Defending Territory in Urban Space Environment. *The International Journal of Interdisciplinary Environmental Studies, On Press*, 1–16.
- Fisher, J. F. (2024). The Culture of Hate. *Open Journal of Social Sciences*, 12(07), 1–10. <https://doi.org/10.4236/jss.2024.127001>
- Koentjaraningrat. (1985). *Kebudayaan, Mentalitas, dan Pembangunan*. PT Gramedia.

- Najoan, S. J., & Mandey, J. (2011). Transformasi sebagai Strategi Desain. *Media Matrasain*, 8(2), 117–130.
- Neser, L. (2022). *Introduction to Earth Science*. Virginia Tech Publishing. <https://doi.org/10.21061/introearthscience>
- Okpalike, C. J. B. G. (2015). Ethnic Diversity as Tool of Good Governance in Nigerian Political Dialectics. *Open Journal of Social Sciences*, 03(06), 142–151. <https://doi.org/10.4236/jss.2015.36021>
- Pradipto, E., & Tristanto, K. (2021). *Ketahanan Sistem Struktur Bangunan terhadap Angin, studi kasus: Mbaru Niang di Desa Wae Rebo, Kabupaten Manggarai, NTT*.
- Razakova, B. (2024). Analysis of the problems caused by the assimilation of cultures on the European continent. *EUROPEAN CHRONICLE*, 9(2), 5–16. <https://doi.org/10.59430/euch/2.2024.05>
- Taneo, M., & Madu, A. (2023). Implementation of Cultural Values of Traditional Houses in Learning. *Journal of Intercultural Communication*, 23(3), 14–27. <https://doi.org/10.36923/jicc.v23i3.157>
- The Ministry of Tourism and Creative Economy Republic of Indonesia. (2023). *The Master Plan of The Development of Tourist Attraction Mules Island, Regency of Manggarai*.
- Tunggadewi, M., & Dwiputri, J. (2023). Transformasi Bentuk dan Rupa Rumah Niang Mengkini dengan Konsep Ikonik dan Pendekatan Arsitektur Nusantara. *UNDAGI: Jurnal Ilmiah Arsitektur Universitas Warmadewa*, 11(2), 304–314. <https://ejournal.warmadewa.ac.id/index.php/undagi/index>
- unesco.org. (2024, July 27). <https://unesdoc.unesco.org/ark:/48223/>
<https://unesdoc.unesco.org/ark:/48223/Pf0000219449#:~:Text=URL%3A%20https%3A%2F%2Funesdoc.unesco.org%2Fark%3A%2F48223%2Fpf0000219449%0AVisible%3A%200%25%20>
- Widyawati, F., Lon, Y. S., Ungkang, M., Moon, O. J., & Jaya, P. R. (2022). Home Inside-Garden Outside: Five Sacred Living Spaces in The Manggarai, Eastern Indonesia. *GAP BODHI TARU A GLOBAL JOURNAL OF HUMANITIES*, V(IV), 125–132. <https://www.gapbodhitaru.org/>

ⁱ The Neogene period lasted for approximately 20.45 million years, extending from the end of the Paleogene period 23.03 million years ago to the beginning of the Quaternary period 2.58 million years ago (Neser, 2022)

ⁱⁱ The Quaternary Period is the most recent geological period, spanning the last 2.6 million years and continuing to the present day (Neser, 2022)

ⁱⁱⁱ The Jurassic period lasted from approximately 201 to 145 million years ago (Neser, 2022)

^{iv} *Engklek*, also known as hopscotch in English, is a traditional game that is popular among children in Indonesia. *Engklek* is typically played by drawing a series of rectangular shapes on the ground, arranged in a specific pattern, usually with chalk or a stick if playing on dirt. The patterns may vary, but a common one involves several squares in a vertical sequence, often with additional squares to the sides.

^v *Lingko* refers to communal land owned by a tribe that inhabits a village, often referred to as *tanah ulayat* or customary land