IDENTIFICATION OF BUILDING RELIEFS AT PENATARAN TEMPLE, EAST JAVA

[1]IGAGA WIDIANA KEPAKISAN, [2]SYAMSUL ALAM PATURUSI, [3]NGAKAN KETUT ACWIN DWIJENDRA, [4]I DEWA GEDE AGUNG DIASANA PUTRA

Doctoral Program of Engineering Science, Universitas Udayana, Denpasar, Indonesia
E-mail: [1]widianakepakisanigaga@student.unud.ac.id, [2]syamsul@unud.ac.id, [3]acwin@unud.ac.id, [4]diasanaputra@unud.ac.id

Abstract - The purpose of this study is to identify the architectural forms of buildings that existed during the Majapahit Kingdom based on the reliefs found in Penataran Temple. By carefully observing each building relief and the surrounding reliefs, the authors have identified three possible functions for these buildings. These functions include their use as places of worship, public spaces, and private spaces. Each of these building functions exhibits distinct roof structures, architectural designs, and building foundations.

Keywords - Building, Function, Majapahit Kingdom, Penataran Temple, Relief.

I. INTRODUCTION

The Majapahit Empire, one of the most significant events in Indonesian history, was a vast kingdom that left a lasting impact. The Trowulan site in Mojokerto Regency, along with other sites in the surrounding area up to Jombang Regency, has always been closely associated with the majesty of the Majapahit Empire. The grandeur of this kingdom continues to captivate the current generation, leading to various efforts to remember and represent it in modern forms, such as multimedia designs [1], virtual reality displays [2,3], and games [4].

The Trowulan cultural heritage site, a significant relic from the Majapahit Kingdom, stands as a testament to the urban life of the royal era in Indonesia. The area of Trowulan, including the Trowulan and Sooko sub-districts, is rich with archaeological remains both on the surface and buried underground. This abundance of remnants strengthens the belief that Trowulan was indeed a royal city of the Majapahit Kingdom. Furthermore, the expanse of the former Majapahit city extends to the Mojoagung and Mojowarno areas in Jombang Regency.

In recognition of its cultural importance, the Trowulan Area has been designated as a National Cultural Conservation site by the Decree of the Minister of Education and Culture of the Republic of Indonesia No. 260/M/2013. In line with the implementation of cultural heritage conservation as stipulated in Law No. 11/2010, the government has undertaken the reconstruction of the Kotaraja Majapahit site. This includes efforts to recreate the settlement patterns and restore houses to their former glory during the peak of the Majapahit kingdom.

In 1998, archaeologist Osriful Oesman conducted research that led to the construction of a replica house from the Majapahit era. This replica was based on archaeological findings from the Majapahit Information Center, which serves as a museum dedicated to preserving artifacts of Majapahit heritage. The research findings of Osriful Oesman, supported by [5], describe the characteristics of houses during the Majapahit era.

According to the research, houses during the Majapahit era took the form of profane buildings. These buildings were enclosed structures with permanently closed walls. The base of the building featured a platform with steps located in the center of the front part. The main body of the building was supported by pillars that rested directly on the batur floor. The roof of the house took the shape of a pyramid, adorned with ukel ornaments at the ends and a pinnacle at the top. The roof itself was constructed using alternating terracotta tiles, resembling the arrangement of shingles.It is worth noting that this house design is considered a precursor to the existing house designs found in the Kampung Majapahit Program in Trowulan, thus reflecting the continuity of architectural traditions from the Majapahit era to the present day.

Other researchers have presented different viewpoints regarding the houses in the Kampung Majapahit program. Their research suggests that these houses were more of a project-based nature, where construction had to be completed promptly, within budget, and according to specific requirements [6]. Consequently, it is believed that these houses may not accurately reflect the architectural style of the Majapahit era.

Furthermore, another research perspective proposes that houses during the Majapahit era took the form of joglo houses [7]. These joglo houses were characterized by their small and slender structure, with taller or more upright roofs. They differed from houses found in other regions, which lacked certain

elements such as senthong, pendhapa, pringgitan, and dalem.

Additionally, the depiction of houses in one form does not align with observations of miniature terracotta artifacts at the Majapahit Information Center (PIM). These artifacts showcase a diverse range of house forms, indicating variations in the architectural styles of Majapahit heritage houses. Similarly, the house reliefs found in various temples attributed to the Majapahit Kingdom exhibit a wide array of house shapes. Subsequent research has further corroborated the notion of this architectural diversity.

According to [8], the houses that existed during the Majapahit Kingdom were not uniform, and their diversity was influenced by the social status of the homeowners. These houses were characterized by sturdy pillars and adorned with colorful and intricate carvings. The foot of the house was made of red stone and featured carvings resembling paintings. The roof tiles used during the Majapahit era were described as exceptionally beautiful. In terms of materials, red stone (brick) dominated the construction of these houses. However, the study [8] primarily presented its findings in written form and did not provide visual depictions of the house shapes during the Majapahit period.

Further research conducted by [9] utilized the Kakawin Negarakartagama, a historical text, as a heritage source. According to [9], the shape of houses during the Majapahit era varied. The Kakawin mentions an urban planning system in the Majapahit Kingdom, encompassing layouts and various buildings. This system included red stone forts, city gates, village halls, pendapa (ceremonial pavilions), fields, the residences of the King, the King's family, the Patih (prime minister), the Patih's family, palace officials, as well as residences for Shiva and Buddhist religious leaders, and settlements for the general population. Notably, there were distinctions between people's houses and the residences of officials and the royal family. The residential complexes within the city of Majapahit were described as well-organized and diverse, reflecting different levels of social status. Generally, people's houses featured roofs made of palm fiber or shingles, supported by wooden pillars with red stone bases.

The search for Majapahit-era architectural heritage extends to the diffusion of Majapahit influences to other regions. One such example is the migration of Majapahit people to Bali, which resulted in the legacy of the Kaba-kaba Kingdom in Tabanan Regency, specifically the Puri Kaba-kaba. This castle exhibits architectural influences from the Majapahit era [10]. Research on this site revealed that the Puri Kaba-Kaba building incorporates the Sanga Mandala concept, although it has been modified to suit the needs of its inhabitants. Majapahit influences can be seen in features such as the arches of the Bentar and Paduraksa temples. Internally, the castle houses statues in tantric style, as well as depictions of turtles, dragons, and figures with foreign facial features. These findings align with research conducted [11], which indicates that the Kingdoms in Bali shared the same religious foundation as Majapahit, namely Shiva Buddha. Based on the concept of cultural diffusion, similarities between the Majapahit Kingdom and the kingdoms in Bali can be observed, particularly in their utilization of the Sanga Mandala concept.

Given the differences in previous research findings regarding the shape of houses during the Majapahit Kingdom, further investigations focused on the actual architectural remnants from the Majapahit Empire. Temples offer valuable insights into the architectural forms of that era. Temples established during the Majapahit kingdom are believed to reflect the cultural practices of that period. This aligns with the findings of research [12], which identified the characteristics of traditional Javanese architecture by examining the pictorial data depicted in the reliefs of the Lara Jonggrang Temple. While some temples feature building reliefs inherited from Majapahit heritage, it is important to note that many of these temples were constructed during previous kingdoms, such as the Singosari Kingdom, including Candi Jawi and Candi Jago, for example.

The Penataran Temple is one of the temples built during the Majapahit Kingdom that features relief buildings, particularly in the backyard or the three temple areas[13]. This temple was constructed under the reign of King Jayanagara (1309-1328), followed by Queen Tribhuwanotunggadewī (1328-1350), Rājasawarddhana Dyah Hayam Wuruk (1350-1389), and Suhitā (1400-1477). By studying the reliefs found in the buildings of Penataran Temple, researchers have explored the meaning and significance of these structures. The relief depictions of house buildings offer insights into the architectural forms of the period and the daily lives of people in the past[14].

The examination of historical evidence reveals the presence of diverse building forms, particularly houses, during the Majapahit Kingdom. While previous research has examined buildings from the Majapahit era using sources like Kakawin Nagarakertagama and artifacts, the current study focuses on building reliefs found in temples that were erected during the Majapahit Kingdom. These temple reliefs serve as valuable sources for understanding the architectural characteristics of that time.

The purpose of this study is to identify and analyze the forms of buildings that were present during the

Majapahit Kingdom by examining the reliefs found in the buildings of Penataran Temple. This study serves as an initial stage for further research that aims to interpret and understand the significance of each architectural shape and composition depicted in the temple's reliefs. By analyzing these reliefs, researchers can gain valuable insights into the architectural styles, structures, and functions of buildings during the Majapahit Kingdom.

II. METHOD

The focus of efforts to identify the form and function of buildings based on reliefs is primarily limited to the Penataran Temple due to historical evidence confirming its construction during the Majapahit Kingdom. The Majapahit Empire was known to have ruled from 1293 AD to 1520 or 1550 AD. The Penataran Temple itself bears year numbers on its back, indicating 1269 Saka or 1347 AD (Fig. 1).

It is worth noting that several other temples, such as Jago Temple and Jawi Temple, which also feature numerous relief buildings, were constructed during the Singasari Kingdom that preceded the Majapahit Kingdom.In this study, the researchers have undertaken the reconstruction of the meanings behind all the relief buildings in the Penataran Temple. The objective is to gain insights into the functions of these buildings, whether they served as houses or places of worship. The examination of building function is one of the key aspects explored in this study.



Figure 1Year Numbers at the Penataran Temple

This study employs a qualitative approach to fulfill its purpose of interpreting the building reliefs found at Penataran Temple, which is situated in Penataran Village, Nglegok District, Blitar Regency, East Java (Fig. 2).The conclusions drawn from this study are not intended to be generalized but rather focus on the specific meanings derived from the reliefs, which may not necessarily be applicable to other contexts, such as other temples [15].

A qualitative approach is chosen because it allows for the exploration of the natural setting or complete context in which the research takes place [16]. The researcher's observations are influenced by the context and, therefore, understanding the subject requires considering the broader context. The qualitative approach recognizes that truth or reality is not singular but rather multifaceted.

The objective of qualitative research is to describe complex phenomena by incorporating diverse perspectives and identifying factors within specific situations. This approach aims to provide a broader understanding of life by presenting a more comprehensive depiction of the subject matter [15].

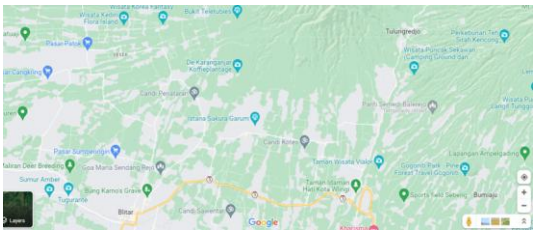


Figure 2Location of Penataran Temple

III. RESULTS

Through the observation of the building reliefs carved on the walls of Penataran Temple, it is apparent that there are three distinct types of building functions. The first function is that of a sacred place for worship and religious ceremonies. Within this function, there are two forms of buildings: temple structures used as dedicated places of worship (Fig. 3) and regular buildings.

The temple structures are specifically constructed using natural stone and designed as dedicated spaces for worship, accommodating various religious rituals and sacred objects related to the beliefs of Shiva Buddha. On the other hand, the regular buildings, conforming to the Shiva-Buddhist beliefs that were the official religion of the Majapahit Kingdom during that era, exhibit different characteristics. They are situated on a bebaturan, a raised platform, and are supported by columns and pillars serving as the structural framework. These buildings feature an open design with a terraced roof (an example is shown in Fig. 4).



Figure 3Temple Building



Figure 4Worship Building

Secondly, the buildings serve as public spaces, serving various purposes such as meeting places, venues for daily activities, and locations for family gatherings. These buildings are situated in expansive areas, featuring spacious floor plans and an open design without walls. The intention behind this design is to facilitate public activities and encourage interaction with the surrounding environment (Fig. 5). However, it is also believed that these public buildings could serve as support structures for religious processions. These buildings exhibit a columnar structure with a greater number of columns.



Figure 5Public Building

The third function is as private residences, which can be classified into two types. The first is the Gedong building (Fig. 6), serving as a family residence, and accommodating various family activities. The second is the Klumpu building (Fig. 7), which functions as a storage space for agricultural produce.



Figure 6 Private Building (Gedong)



Figure 7Klumpu

Each of these building functions is characterized by distinctive roof typologies. Firstly, public buildings with public functions are characterized by rectangular pyramid roofs in a single position. Secondly, buildings with a religious concept feature square pyramid roofs with overlapping positions, symbolizing the connection between the profane world and the divine. Thirdly, temple buildings, constructed specifically for worship, are made of natural stone, red brick, and temple stone (mountain stone). They exhibit symmetrical and geometric shapes with terraced roofs.

In terms of building types, there are three categories: open, closed, and temple buildings. Open buildings consist of structural pillars without walls, serving as enclosures. Closed buildings, which are used as private residences, have windows and doors as access points for entry and exit. The walls of closed buildings also serve as part of the structural framework. Temple buildings, constructed with natural stone, feature tiered roofs with decreasing sizes towards the top, and they typically have an odd number of roof levels.

The buildings depicted in the reliefs of Penataran Temple exhibit a three-part structure constructed with wooden materials. The foundation of the building, located directly on the ground, is supported by joints and pillars. Such ground-level buildings are typically used for public activities, providing easy access to meeting halls and worship temples that feature stairs leading to the main worship areas. Additionally, there are buildings with foundations in bebaturan, situated above rocks to serve as load dividers for each pillar. These buildings function as structural columns and are not directly connected to the ground. They are primarily used for religious processions and private purposes.

The building structures are enclosed using various materials depending on their function. Private residences for families are closed with natural stone, red brick, or terracotta soil, featuring door openings and windows for light and air circulation. Public buildings, which serve multiple purposes, may be temporarily closed using materials such as bamboo and coconut leaves, allowing for easy opening when

needed. Buildings dedicated to religious activities typically have a single pillar that serves as a structural column, along with a terraced roof. Temple buildings have permanent wall coverings made of natural stone and serve as places of worship. They typically feature only one door for entry and exit, specifically for placing offerings. The walls of temple buildings contribute to the overall structural support of the construction. From the relief depictions, it is evident that there are variations in the roof structures or tops of the buildings. Public and private buildings feature three types of roofs: terracotta tiles, wooden coverings, and bamboo. The roof construction utilizes an open structure, incorporating load sharing in each construction. This construction technique combines lait (rafter) and tie joints to ensure stability and support.

On the other hand, the roofs of worship buildings, particularly in the temple form, are constructed using natural stone in a stepped formation. This creates a cascading effect. Some buildings designed for religious processions feature terraced roofs with repeating smaller constructions placed on top, emphasizing the layered and tiered appearance.

IV. CONCLUSION

Buildings depicted in the reliefs of Penataran Temple, representing the Majapahit Empire, appear to be characterized by simplicity and the use of natural materials. These buildings typically consist of a single room that serves multiple functions, including as a place of worship, public space, and private space. It's important to note that this study is an initial exploration, and the proposed functions and structures of the buildings are based solely on observations.

To gain a more comprehensive understanding, future studies should delve into expert opinions and historical sources to further interpret the specific forms and functions of these buildings depicted in the temple reliefs. By incorporating a wider range of perspectives and additional research, a more nuanced understanding of the architecture and purpose of these buildings during the Majapahit Empire can be achieved.

REFERENCES

[1] S. Rostianingsih, M. Chang, Liliana, Multimedia design for learning media of majapahit, in: Commun. Comput. Inf. Sci., Springer Verlag, 2015: pp. 363–371. https://doi.org/10.1007/978-3-662-46742-8_33.

[2] D. Kusuma, R. Adipranata, Erandaru, Simulation of atmosphere in trowulan during the golden era of majapahit using virtual reality, in: Proc. - 2017 Int. Conf. Soft Comput. Intell. Syst. Inf. Technol. Build. Intell. Through IOT Big Data, ICSIIT 2017, Institute of Electrical and Electronics Engineers Inc., 2017: pp. 263–269. https://doi.org/10.1109/ICSIIT.2017.61.

[3] W. Wibawanto, Visualisasi Kerajaan Majapahit Melalui Virtual Reality, J. Imajin. X (2016) 31–38.

[4] M.F. Syahputra, M.K. Widhianto, R.F. Rahmat, Historical Game of Majapahit Kingdom based on Tactical Role-playing Game, in: Proc. 12th Int. Jt. Conf. Comput. Vision, Imaging Comput. Graph. Theory Appl., SCITEPRESS - Science and Technology Publications, 2017: pp. 327–332. https://doi.org/10.5220/0006283303270332.

[5] S. Sasongko, Y. Winarto, Menelusuri Proporsi Bangunan Rumah Tinggal Penduduk pada Jaman Kerajaan Majapahit (Dalam rangka rekonstruksi bangunan situs arkeologi untuk Kawasan Wisata Budaya Majapahit di Trowulan), 2020. http://umpopress.umpo.ac.id/index.php/PUBLIS/article/download/1391/894.

[6] C.P. Kubontubuh, W. Martokusumo, Meeting the past in the present: authenticity and cultural values in heritage conservation at the fourteenth-century Majapahit heritage site in Trowulan, Indonesia, Int. J. Herit. Stud. 26 (2020) 469–479. https://doi.org/10.1080/13527258.2019.1652923.

[7] D.A. Wijaya, Kearifan Lokal Joglo Majapahit di Lingkungan Masyarakat Agraris dalam Arus Modernisasi, in: Pros. Semin. Nas. Sej. Lokal Tantangan Dan Masa Depan, Fakultas Ilmu Sosial Universitas Negeri Malang, Malang, 2017: pp. 47–52.

[8] R.A. Sani, Arsitektur Rumah Di Kawasan Cagar Budaya Trowulan (Studi Pemukiman Majapahit Abad ke-14 M), Avatara, e-Journal Pendidik. Sej. 5 (2017) 965–980.

[9] T.F. Rozi, M. Munir, D. Maulidia, Telaah Sistem Tata Kota Kerajaan Majapahit dalam Kakawin Nāgarakṛtāgama, Suluk J. Bahasa, Sastra, Dan Budaya. 1 (2019) 77–86. file:///C:/Users/H4RD4/AppData/Local/Temp/248-Article Text-630-1-10-20200226.pdf.

[10] S. Susetyo, Pengaruh Majapahit Pada Bangunan Puri Gede Kaba-Kaba, Tabanan., Amerta. 34 (2016) 139–152. https://doi.org/10.24832/amt.v34i2.181.

[11] T. Tribinuka, Rekonstruksi Arsitektur Kerajaan Majapahit dari Relief, Artefak dan Situs Bersejarah, Pros. Temu Ilm. IPLBI. (2014) 19–24.

[12] M.D. Nugroho, Ikonografi Arsitektur Tradisional Jawa Pada Relief Candi Lara Jonggrang di Prambanan, Literasi. 2 (2012) 80–87.

[13] H. Santiko, Candi Panataran: Candi Kerajaan Masa Majapahit, Kalpataru Maj. Arkeol. 21 (2012) 20–29.

[14] D.H. Rahmi, Bangunan Rumah pada Relief Candi Borobudur, Arsit. Dan Lingkung. (2015). http://arsitekturdanlingkungan.wg.ugm.ac.id/2015/11/21/bangunan-rumah-pada-relief-candi-borobudur/.

[15] S.A. Paturusi, Pendahuluan: Penelitian Kualitatif pada Tesis dan Disertasi Arsitektur, in: Widiastuti (Ed.), Penelit. Kualitatif Dalam Arsit. Penemuan Jati Diri Melalui Karya Tesis/Disertasi, Udayana University Press, Denpasar, 2015: pp. 1–21.

[16] L.J. Moleong, Metodologi Penelitian Kualitatif, PT. Remaja Rosdakarya, Bandung, 2002.

★★★