

EXPLORING ARCHITECTURAL ATTRIBUTES OF JAVANESE DWELLINGS: A CASE STUDY OF MR. MARYANTO'S CENTURY-OLD HOUSE

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ABSTRACT

This paper examines the architectural characteristics of Javanese houses and investigates the factors that influence their development and evolution. The study focuses on Mr. Maryanto's house, a third-generation inhabitant of the house, which is estimated to be more than a century old. The research delves into the historical transformations of the house's structure and materials, particularly the "usuk" and "reng" replacements. Additionally, it explores the presence of unique ornamental features, such as the "naga" motifs on the "dhadha peksi", which is unusual for rural houses. The paper analyzes the spatial layout and function of the rooms within the house, revealing the significance of factors like cultural traditions, economic conditions, and environmental adaptations in shaping Javanese house architecture.

Keywords: *Javanese Dwellings; Architectural Attributes; Characteristic; Case Study; Sustainable*

INTRODUCTION

Traditional house architecture holds a prominent place in cultural heritage, representing the rich traditions and values of society. These houses go beyond structures. They carry profound cultural significance that reflects the philosophy, cosmology, and way of life of regional society. Sometimes, the spatial

configurations of traditional houses serve specific purposes and symbolize the social and spiritual aspects of culture. The incorporation of intricate ornamentation, symbolic motifs, and traditional building techniques distinguishes traditional houses from other architectural styles in many regions and nations.

Numerous academic articles delve extensively into exploring the cultural significance and symbolic meaning attributed to conventional dwellings. These papers interpret these structures as reflections of community identity, worldview, and heritage. Previous studies have delved into how the Minangkabau house serves as a representation of matriarchal principles, as well as a space for familial gatherings and ceremonial events (Bahauddin et al., 2012). Similarly, a study highlights the dual role of traditional Sundanese houses in Kampung Naga, West Java, as both shelters and potent symbols of cultural identity and the interconnectedness between the founder, beliefs, and nature spirits (Darmayanti, 2016). This interplay between function and symbolism is also evident in the case of long-roofed houses in northeastern Peninsular Malaysia, which acquire an architectural character unique to the region (Kamarudin, 2015). Furthermore, a consistent thread in these research articles revolves around the evolution of traditional houses over time, influenced by dynamics such as tourism, urbanization, and evolving cultural values. Some research highlights how traditional Balinese houses have undergone modifications to cater to tourism needs, leading to changes in their original designs (Putra, 2019). Similarly, studies delve into the evolution of contemporary Javanese houses in Laweyan, tracing shifts in materials and structural systems while preserving traditional spatial arrangements (Cahyono, Setioko and Murtini, 2017).

The intricate relationship between socio-cultural and economic factors and traditional architecture is another critical theme. Cultural shifts in Kauman Surakarta, for example, have left their imprint on the design and utilization of traditional Javanese houses, revealing the influence of changing cultural contexts (Sulistyono and Panuwun, 2018). Meanwhile, the diverse housing styles across Jambi Province are driven by localized customs and ethnic backgrounds, reflecting the dynamic interplay of societal elements (Kerlogue, 2008). Additionally, the preservation and challenges associated with maintaining these traditional houses as cultural heritage are recurring concerns. The researchers emphasized the importance of maintaining typical architecture of traditional houses on the north coast of Java such as in the Demak and Jepara areas, underlining the importance of these structures in preserving cultural heritage (Roesmanto, 2002). Similarly, the cultural significance of Javanese houses, particularly the *Joglo* house, emerges as a focal point for conservation efforts, considering their role in encapsulating Javanese mythology and cosmology (Gaffara, Sari and Saputra, 2021).

Collectively, these research articles underscore the pivotal role of vernacular architecture in Indonesia, exemplified by the use of local materials and traditional techniques. Some studies explore how Javanese houses align with the Vitruvian principles of *Firmitas* (strength), *Utilitas* (functionality), and *Venustas* (beauty), illustrating how local builders interpret these principles using appropriate technology (Pisei and Ikaputra, 2020). Conversely, the architectural attributes of the Kalang house in Kotagede, Yogyakarta, highlight the role of socio-economic status,

historical context, and site-specific conditions in shaping its structure (Pramudito, 2020). However, it's evident that these traditional houses, while culturally valuable and sustainable, face significant challenges due to external factors. The preservation of these architectural treasures necessitates a comprehensive understanding of their historical and local context, coupled with adaptive strategies to ensure their cultural legacy for future generations. Nonetheless, research gaps remain, particularly in understanding the nuanced impacts of factors like tourism and urbanization on traditional house transformation. Addressing these gaps would enhance preservation efforts in the context of evolving modern societies.

Throughout history, Javanese houses have undergone transformations driven by socio-economic shifts, urbanization, and globalization. Modernization has influenced aspects like materials, structures, and spatial arrangements, giving rise to modern Javanese houses. Despite these changes, concerted efforts have been made to uphold and honor the cultural values embedded in traditional Javanese architecture. A standout example is the Mr. Maryanto' house in Saradan, Wonogiri, which faithfully preserves the intricate spatial organization and cultural significance inherent in such houses. In the face of rapid change, the Mr. Maryanto' house stands as a testament to the preservation of Javanese traditions. This study seeks to examine this exemplary house to glean insights into the evolution of Javanese architecture and the challenges of maintaining cultural identity through architectural heritage. While existing research has illuminated transformations and cultural values in Javanese architecture, a research gap remains in comprehensively analyzing the socio-cultural factors influencing the evolution of modern Javanese houses in Saradan, Wonogiri. Addressing this gap would contribute to a deeper understanding of architectural progression in the context of evolving societal dynamics.

THEORY / RESEARCH METHODS

Javanese Traditional House Architecture

Javanese Traditional House Architecture has been the subject of numerous research studies, shedding light on various aspects of its design, cultural significance, and transformations. Several studies have explored the thermal comfort and environmental orientation of traditional Javanese houses. A study has brought attention to the fact that traditional Javanese architecture demonstrates a remarkable ability to offer thermal comfort in hot and humid climates, surpassing the performance of basic hip-roofed dwellings (Satwiko, 1999). The choice of materials, such as clay tile roof systems, plays a crucial role in enhancing ventilation, a vital aspect of thermal comfort.

In contrast, a 2021 study explored ecolinguistics classifications of the traditional house construction along Central Java's southern border, highlighting their collective emphasis on environmental concerns (Tiani and Suryadi, 2021). Additionally, the study explored the influence of spiritual and economic orientations on traditional house buildings. However, research gaps persist in understanding how these orientations are translated into architectural design and spatial organization.

Meanwhile, in 2020, a study concentrated on implementing ecological architectural principles in Javanese traditional houses, taking into account factors such as site conditions, geographical location, and climate (Handoko, 2020). This research provided valuable insights into the integration of ecological principles into the design process. Nonetheless, more in-depth research is required to pinpoint particular design elements that can be integrated into contemporary construction methods, thereby promoting sustainable architecture within the area. A study conducted in 2019 examined how house reconstruction influences the significance of traditional Javanese houses (Sumardiyanto, 2019). The findings revealed that renovations primarily affect the surface structure, preserving the core meaning of the house. However, further research is required to comprehend the cultural and symbolic significance of specific architectural elements and their resilience to renovation changes.

Methodology

The research adopted qualitative research methods to understand the characteristics of Javanese house architecture. Qualitative research is well-suited for exploring complex phenomena and gaining in-depth insights into the cultural and socio-spatial aspects of traditional Javanese house architecture. Through qualitative methods, we aimed to capture the rich and nuanced details of Javanese house design, including its historical context, cultural significance, and spatial organization.

The primary data collection method involved conducting on-site observations of traditional Javanese houses in Saradan, Wonogiri. The researchers visited Javanese houses, including Joglo and Limasan houses, to observe their architectural features, layout, and ornamentation. These observations helped in understanding the spatial arrangement, materials used, and design elements that characterize Javanese houses. Mr. Maryanto, a local historian and expert in Javanese architecture, was interviewed to gain valuable insights into the historical development and cultural significance of Javanese houses. His expertise and experience in the field provided valuable context and knowledge about the architectural evolution of traditional Javanese houses. Visual Documentation of Mr. Maryanto's house, a well-preserved traditional Javanese house in the selected region. Photographs were taken to capture the intricate architectural details, interior spaces, and design elements. This visual documentation aided in the analysis and illustration of the factors influencing Javanese house architecture.

The data collected was analyzed using an inductive approach. Inductive analysis involved identifying patterns, themes, and factors based on the data rather than using pre-existing theories or hypotheses. The researchers immersed themselves in the collected data, including field notes, interviews, and visual documentation, to gain a comprehensive understanding of Javanese house architecture. The researchers coded the data by identifying recurring themes and patterns related to the architectural characteristics of Javanese houses. The coding process involved categorizing the data into different themes, such as roof typologies, spatial organization, materials, and cultural symbolism. Based on the coded data, overarching themes and factors influencing Javanese house architecture were

identified. These themes included cultural traditions, environmental considerations, social values, and historical influences. The researchers interpreted the findings, drawing connections between the identified themes and factors to develop a comprehensive understanding of Javanese house architecture. By employing qualitative research design and conducting on-site observations, interviews, and visual documentation, this study aimed to uncover the multifaceted aspects of traditional Javanese house architecture. The inductive data analysis approach facilitated a deep exploration of the factors that shape the design and cultural significance of these architectural treasures.

RESULTS AND DISCUSSION

Architectural Characteristics of House Mr. Maryanto (House Form and Structure)

Mr. Maryanto is the third generation, residing in Mr. Maryanto's house, estimated to be over a hundred years old. Mr. Maryanto's ancestors were successful cattle traders, which contributed to the house's richness. The house is south-oriented as shown in Figure 1. The orientation of Javanese houses towards the south is influenced by various cultural, environmental, and religious factors. Saradan in Wonogiri, a regency located in the Southern Hemisphere, experiences a tropical climate with the sun typically rising in the east and setting in the west. By orienting the house towards the south, it can minimize direct exposure to the hot afternoon sun, providing better shading and ventilation during the hottest part of the day (Raychaudhuri, Ali and Garg, 1965). Moreover, in Saradan, prevailing winds often come from the south or southeast. By aligning the house with this direction, the Javanese can take advantage of natural ventilation, allowing cool breezes to flow through the house. In Javanese culture, there are spiritual and cosmological considerations when building a house. Some Javanese believe that facing the house towards the south is more harmonious with the natural elements and the cosmos (Wigati and Lukito, 2021). It may also be related to the belief in the importance of keeping certain parts of the house, like the main entrance, facing specific directions for auspicious reasons.

As Mr. Maryanto's house is more than a century old, it has undergone various material replacements, including the essential components of Javanese architecture, namely *usuk* and *reng*. Javanese houses rely on *usuk* as beams for the roof frame, and *reng* as thin bamboo or wooden elements installed horizontally to create open parts of the roof (Maghzaya, Prihatmaji and Pradipto, 2017; Setiohastorahmanto, Soetomo and Sardjono, 2018). The choice of using *usuk* and *reng*, especially crafted from teak wood, serves as a symbol of social status for the occupants compared to families using bamboo for these elements. The *usuk* acts as the backbone, supporting the roof's weight, while the *reng* fills the gaps between the *usuk*, forming the roof framework that supports roof tiles, provides wind protection, and allows natural ventilation. This architectural tradition deeply rooted in Javanese culture and wisdom, spanning centuries, underscores the cultural identity of Javanese society,

making Javanese houses of immense cultural significance and a vital part of Indonesia's cultural heritage.



Figure 1. The Front View of Mr. Maryanto's House

The main part of Mr. Maryanto's house is the *pendhapa* as shown in Figure 2 which serves as the central space and is crowned by a distinct *joglo* roof resembling a mountain, also known as *tajug* (Wiryomartono, 2009; Supriyadi *et al.*, 2023). This particular roof shape was chosen due to its sacred symbolism, as mountains are considered sacred. The term *joglo* itself emerged from the combination of *tajug* (mountain) and *loro* (two), indicating two *tajug* merged into one. The roof of the *joglo* house is suspended by four columns, known as *saka guru* representing four cardinal directions. As a result, the occupants are metaphorically situated in the center of these directions. The *pendhapa* is designed without walls intentionally to create a spacious ambiance, serving as a meeting space. On the east side of the *pendhapa*, there is a room called *jayengan* which was initially an extension of the *pawon* (kitchen) roof, but now Mr. Maryanto utilizes it as a garage for vehicles during house celebrations while also serving *wedang* (traditional drinks), drinks to guests.

The *joglo* features three layers of *tumpang sari* as shown in Figure 3 and is ornamented with *naga* motifs on *dhadha peksi*. The presence of these ornaments in rural houses requires further research as it is uncommon. The *tumpang sari* system in Javanese architecture is a traditional architectural concept used in designing the roofs of Javanese traditional houses (Setiohastorahmanto, Soetomo and Sardjono, 2018; Idham, 2019). The term *tumpang sari* consists of two words: "*tumpang*" which means stacked or layered, and "*sari*" which refers to the peak or roof. In this system, the roofs of Javanese traditional houses are designed with layered or stacked forms, creating a distinctive and beautiful silhouette. Each roof layer serves a different function, resulting in a unique and aesthetic appearance. In the case of the *joglo* house, a renowned Javanese traditional house, the *tumpang sari* system typically consists of three layers. The bottom layer, known as *tumpang nyono* or *tumpang udanare*, functions as protection from rain. The middle layer, called *tumpang tengen* or *tumpang suryanare*, acts as a shield against sunlight. The top layer is *tumpang sari* or *tumpang sekar*, which serves as roof decoration and

enhances the overall aesthetic appeal of the house. The *tumpang sari* system not only provides functional benefits in protecting the house from external weather elements but also imparts a unique and distinctive characteristic to Javanese traditional house architecture. The beauty and elegance of the *tumpang sari* roofs add to the allure of Javanese traditional buildings, making them an essential part of Indonesia's cultural heritage.



Figure 2. The Appearance of The *Pendhapa* (Pavilion) in Mr. Maryanto's House



Figure 3. The Arrangement of Wooden Roofs with The Concept of *Tumpang Sari*

The spatial arrangement of Mr. Maryanto's house comprises the *emperan* (veranda) in front of the *pendhapa*, extending towards the front of *jayengan* as illustrated in Figure 4. The west side of the *pendhapa* accommodates a room known as *senthong ngarep*, serving as a bedroom for his sons. Before entering the *ndalem*, the *pringgitan* acts as an intermediary space, allowing access from the *pendhapa* to the *pawon* without entering the *ndalem* area. This setup ensures that visiting guests can use the bathroom without entering the private *ndalem* area. Inside the *ndalem*, there is a communal gathering space with a TV where the family gathers on mats. On the sides, *senthong kiwa* and *senthong tengen* function as bedrooms for the

children. Mr. Maryanto and his wife occupy the *singgetan* area located behind the *ndalem*, known as *senthong mburi*. Adjacent to *senthong mburi* is the *singgetan* used for storing crops and food.



Figure 4. The Front Facade of Mr. Maryanto's House

Examination of the Replacement of *Usuk* and *Reng* in the House's Structure

The structure of Mr. Maryanto's house includes the use of traditional wooden components, such as *usuk* and *reng*, which play crucial roles in supporting the roof and maintaining structural integrity. The study reveals that some of the original *usuk* and *reng* have been replaced with modern materials due to factors like maintenance and availability shown in Figure 5. However, this replacement has been done in a manner that preserves the architectural aesthetics and heritage value of the house.



Figure 5. *Usuk* and *Reng* on the Roof Structure of the House

Ornamental Features: *Naga* and *Lintang* Motifs on *Dhadha Peksi*:

The investigation of the unique *naga* (dragon) and *lintang* (stars) motifs on *dhadha peksi* (wall carvings) reveals their cultural significance in Javanese mythology and cosmology shown in Figure 6. These *naga* motifs symbolize protection, prosperity,

and harmony in Javanese beliefs. On the other hand, an eighth star with a circle at its center can also be interpreted as *monca sembilan* (8+1). The *monca sembilan* symbolizes that a good leader must be able to maintain the nine holes within himself in order to become a good leader. The presence of such ornamental features showcases the deep-rooted cultural traditions and beliefs integrated into the architectural design of Mr. Maryanto's house. While the cultural significance of naga motifs is well-documented in Javanese mythology, further research is needed to understand the specific reasons for their inclusion in rural houses like Mr. Maryanto's house. Investigating the historical context and cultural practices can shed light on the preservation of these ornamental features and their continuity in contemporary rural architecture.

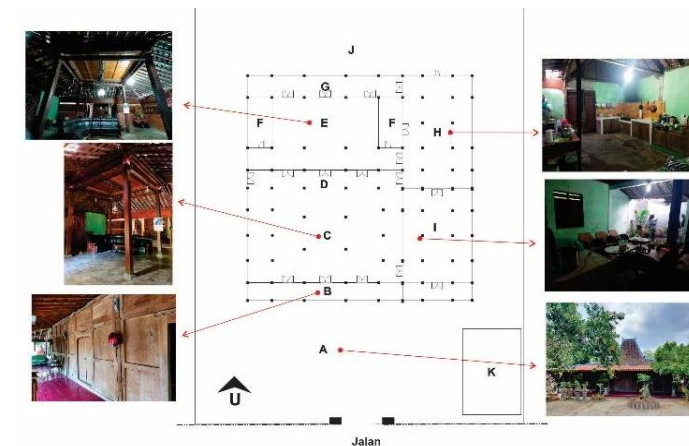


Figure 6. *Naga* Motifs on *Dhadha Peksi*

Spatial Layout and Function of Mr. Maryanto's House

The spatial layout of Mr. Maryanto's house demonstrates a well-thought-out organization to accommodate various functions and ceremonial events. The areas in front of *pendhapa* and *jayengan* serve as essential ceremonial spaces for hosting events and gatherings. The room between *pendhapa* and *pawon* acts as a transitional space, allowing guests to access the house without entering *ndalem*, the private living area. The central space in *ndalem* serves as the focal point for family gatherings and communal activities, while the bedrooms cater to specific family members' needs shown in Figure 7.

The living area for Mr. Maryanto's house reflects the cultural norms and values of Javanese family life, emphasizing communal living and close-knit relationships. The house also includes dedicated storage spaces for crops and food, reflecting the agricultural lifestyle and self-sufficiency of traditional Javanese communities.



Legend:
A. Latar Ngarep. B. Emperan. C. Pendhapa. D. Pringgitan. E. Ndalem. F. Senthong. G. Singgetan. H. Pawon. I. Jayengan. J. Britan. K. Kandang

Figure 7. Spatial Layout of Mr. Maryanto's House

Factors Influencing Javanese House

The analysis reveals that Javanese house design and layout are significantly influenced by cultural traditions, customs, and values. The continuous practice of these social norms, along with evolving societal trends, contributes to the evolution of Javanese house architecture over time. Additionally, economic factors play a pivotal role in determining the shapes and sizes of Javanese houses. Economic modernization has further led to transformations in traditional house architecture, accommodating the changing lifestyles and economic activities of the residents. Furthermore, Javanese houses demonstrate their adaptability to local environmental conditions, climate, and topography, emphasizing the sustainable and flexible nature of traditional architectural practices. However, the process of urbanization and environmental changes in urban areas has brought about modifications to Javanese house designs to suit the evolving urban context.

The integration of the findings highlights the intricate interplay of social, cultural, economic, and environmental factors in shaping Javanese house architecture. Preserving and conserving Javanese house architecture becomes essential to safeguard local cultural heritage and maintain a sense of identity amidst modernization. The implications of this research extend to contemporary contexts, emphasizing the importance of designing culturally relevant traditional houses that embody the essence of Javanese culture while adapting to present-day needs. Such designs can foster a sense of cultural continuity and pride, promoting sustainable architectural practices that celebrate the rich heritage of Javanese traditional houses.

CONCLUSIONS

This research highlights the distinctive architectural features of Javanese houses, with a particular focus on the philosophical significance of *joglo* styles in Mr. Maryanto's house. Thoughtful replacement of traditional wooden elements with modern materials has been carried out to preserve the house's heritage value. The design and layout of Javanese houses are deeply influenced by social, cultural, economic, and environmental factors. Cultural traditions and evolving social norms drive the evolution of Javanese architecture, while economic conditions prompt adaptations to suit modern living. The adaptability of Javanese houses to local environmental conditions exemplifies their sustainability and flexibility, although urbanization has led to modifications in urban areas. This study contributes valuable insights to the fields of architecture and cultural heritage preservation, underscoring the importance of conserving and safeguarding this architectural heritage as an integral part of the local cultural identity. For future research, further exploration into the preservation and conservation of Javanese house architecture is recommended. In-depth examination of ornamental features, such as the *naga* motifs in rural houses, can provide deeper cultural understanding. Moreover, investigating innovative design strategies that integrate cultural heritage while meeting contemporary needs is crucial to promote sustainable and culturally relevant architectural practices.

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REFERENCES

- Bahauddin, A. et al. (2012) 'The Minangkabau house: architectural and cultural elements', WIT Transactions on Ecology and the Environment, 165, pp. 15–25.
- Cahyono, U.J., Setioko, B. and Murtini, T.W. (2017) 'Transformation of form in the growth of modern Javanese house in Laweyan Surakarta', Journal of Architecture and Urbanism, 41(4), pp. 288–295.
- Darmayanti, T.E. (2016) 'The ancestral heritage: sundanese traditional houses of Kampung Naga, West Java, Indonesia', in MATEC Web of Conferences. EDP Sciences, p. 108.
- Gaffara, G.R., Sari, D.A.K. and Saputra, N. (2021) 'Javanese Cultural Heritage Building (Case Study: Joglo House)', Lakhomi Journal Scientific Journal of Culture, 2(4), pp. 148–153.

- Handoko, J.P.S. (2020) 'Comparative study on application of ecological architecture concept on Javanese traditional house in Central Jawa', in Eduarchsia & Senvar 2019 International conference (EduARCHsia 2019). Atlantis Press, pp. 166–170.
- Idham, N.C. (2019) 'Indonesian architecture and earthquake vulnerability: the development of building safety through the civilization', in MATEC Web of Conferences. EDP Sciences, p. 1004.
- Kamarudin, Z. (2015) 'Long-roofed houses of northeastern peninsular Malaysia: sustainability of its identity in the built environment', *Procedia Environmental Sciences*, 28, pp. 698–707.
- Kerlogue, F. (2008) 'House form and ethnic identity: Tradition and variation in house style in Jambi Province', in *Indonesian Houses*. Brill, pp. 343–362.
- Maghzaya, A.R., Prihatmaji, Y. and Pradipto, E. (2017) 'Structural Value Of Empyak', *Tesa Arsitektur*, 15(2), pp. 78–87.
- Pisei, M. and Ikaputra, I. (2020) 'Discussing Javanese House Using Vitruvius Theory', *Sinektika: Jurnal Arsitektur*, 17(2), pp. 105–112.
- Pramudito, S. (2020) 'Identification of architectural elements of kalang house in Kotagede Yogyakarta'.
- Putra, I.D.G.A.D. (2019) 'The Disproportional Arrangement of the House: The Biodiversity Spaces and the Transformation of the Traditional Balinese House in Tourism Economy', in *Tourism-Perspectives and Practices*. IntechOpen.
- Raychaudhuri, B.C., Ali, S. and Garg, D.P. (1965) 'Indoor climate of residential buildings in hot arid regions:-Effect of orientation', *Building science*, 1(1), pp. 79–88.
- Roesmanto, T. (2002) 'A Study of Traditional House of Northern Central Java: A Case Study of Demak and Jepara', *Journal of Asian Architecture and Building Engineering*, 1(2), pp. 219–226. doi:10.3130/jaabe.1.2_219.
- Satwiko, P. (1999) 'Traditional Javanese residential architecture designs and thermal comfort. A Study using a computational fluid dynamics program to explore, analyse, and learn from the traditional designs for thermal comfort'. Open Access Te Herenga Waka-Victoria University of Wellington.
- Setiohastorahmanto, P., Soetomo, S. and Sardjono, A.B. (2018) 'The Transcendent Meaning of Traditional Architecture (Traditional Ethnography of Kalang in Traditional Architecture Limasan in Kendal District-Central Java-Indonesia)', *Researchers World*, 9(4), pp. 11–21.
- Sulistiyono, I.F.B. and Panuwun, D. (2018) 'Transformation of Forms and Functions Of Javanese Traditional House In Kauman Surakarta', in 3rd International Conference on Creative Media, Design and Technology (REKA 2018). Atlantis Press, pp. 347–350.
- Sumardiyanto, B. (2019) 'Pengaruh renovasi terhadap makna rumah tradisional masyarakat Jawa, kasus studi: Kotagede Yogyakarta', *ARTEKS: Jurnal Teknik Arsitektur*, 3(2), pp. 99–114.
- Supriyadi, S. et al. (2023) 'Pragmatic-Semantic Analysis of the Demak Great Mosque and Acculturation of the Surrounding Communities'.

- Tiani, R. and Suryadi, M. (2021) 'Ecolinguistic Types of Traditional House Building at the Southern Border of Central Java as Javanese Sociocultural Equality', in E3S Web of Conferences. EDP Sciences, p. 1056.
- Wigati, K.D. and Lukito, Y.N. (2021) 'Javanese cosmology as the source of sustainability: Analyzing the harmony of spatial organization in Javanese Joglo house and shadow puppet performance', in AIP Conference Proceedings. AIP Publishing.
- Wirymartono, B. (2009) 'A Historical View of Mosque Architecture in Indonesia', *The Asia Pacific Journal of Anthropology*, 10(1), pp. 15–36.

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