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Redesigning the Patiayam Kudus Archaeological Museum with a Regionalism Architecture Approach

Muhammad Sulthon[1*]

[1]Architectural Engineering Study Program, Department of Civil Engineering, Faculty of Engineering, Universitas Negeri Semarang, Semarang, Indonesia

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***Corresponding author:**
Muhammad Sulthon

E-mail address:
msulton@gmail.com

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A B S T R A C T

Regionalism architecture is architecture that advocates the appearance of buildings that are the result of a compound of internationalism with modern cultural and technological patterns, values, and nuances of tradition that are still adhered to by the local community. This study aimed to describe the redesign of the Patiayam archaeological museum, which is better able to collect, accommodate, maintain, and exhibit as a whole the prehistoric relics found at the Patiayam Site. This research is descriptive research. This method describes, and explains the design requirements and design determinants of the planning and design of the Patiayam Archaeological Museum, Kudus, Central Java. The style of the house building *joglo* Kudus as a form of local architectural style will become the basic idea of regionalism architecture in the design of the Patiayam Kudus museum. The shape of the façade of the main museum building adopts the typical shape of the traditional *joglo* Kudus house but has undergone changes in the development of detailed forms due to the difference in the size scale of the *joglo* Kudus house and the museum building, which is larger in size. In conclusion, the architectural concept of regionalism increases the functionality of the Patiayam Kudus archaeological museum as a means of educating about ancient sites.

1. Introduction

Museum is an institution intended for the general public whose function is to collect, preserve, interpret, and display objects and artifacts of artistic, cultural, historical, or scientific significance for the benefit of the public.[1,2] Museums provide a means for people to explore and learn about different cultures, histories, and perspectives and to appreciate the richness and diversity of the world around them. In addition to preserving and showcasing objects of cultural and historical significance, museums also serve as centers for education and research.[3] They provide opportunities for scholars, researchers, and students to study and learn from their collections and for visitors to participate in a range of educational programs, workshops, and activities. Museums also serve as important civic institutions, contributing to the social, economic, and cultural development of their communities.[4] They can play a vital role in promoting tourism, generating revenue, and attracting investment, while also fostering a sense of civic pride and identity.[4,5]

Regionalism in architecture is an approach that emphasizes the use of local materials, construction techniques, and cultural traditions to create buildings that are suited to their specific regional context.[6] It rejects the universalizing tendencies of modernism and instead seeks to express a sense of place and identity through the design of buildings. Regionalist architects draw inspiration from the local climate, topography, and natural surroundings and use these elements to inform the design of buildings that are

adapted to the local context.[7] They may also incorporate elements of local cultural traditions, such as building forms or decorative motifs, into their designs. Regionalism emerged as a response to the perceived homogenization of architecture in the mid-20th century and has since become an influential movement in contemporary architecture. Some of the most notable examples of regionalist architecture include the work of architects such as Luis Barragán in Mexico, Alvar Aalto in Finland, and Geoffrey Bawa in Sri Lanka.[8-10]

The Patiayam site is part of Mount Muria. The area is 2,902.2 hectares covering the Kudus area and several sub-districts in Pati. The Patiayam site is one of the complete sites. This is evidenced by the discovery of early humans (*Homo erectus*), vertebrate fauna, and invertebrate fauna. There are also human stone tools from ancient human cultures found in a single unbroken area of subgrade dating back at least one million years. Morphologically, the Patiayam area is a dome with the highest peak being Patiayam Hill, 350 meters above sea level. In the Patiayam area, there are Pleistocene rocks containing fossils of vertebrates and early humans deposited in river and swamp environments. According to data obtained from the museum manager, currently, there are around 4000 fossils found at the Patiayam site.

Currently, a museum has been built to accommodate the collection of fossil finds in Patiayam. However, the condition of the museum is still very simple, namely the building with a total area of 64 m^2 which consists of exhibition space and fossil conservation workshop space. Only a few fossil collections are exhibited in the museum's exhibition hall due to insufficient space in the museum. This study aims to describe the redesign of the Patiayam archaeological museum, which is better able to collect, accommodate, maintain, and exhibit as a whole the prehistoric relics found at the Patiayam Site.

2. Methods

This research is descriptive research. This method describes, and explains the design requirements and design determinants of the planning and design of the Patiayam Archaeological Museum, Kudus, Central Java. Based on the design requirements and design determinants, the necessary data will be traced. The collected data will then be analyzed in more detail according to the criteria to be discussed. The results of the overall conclusion will be the basic concepts used in planning and designing the Archaeological Museum as a basis for architectural graphic design.

In data collection, data will be obtained, which will then be grouped into 2 categories, namely primary data and secondary data. Primary data is in the form of field observations and interviews with the manager. Secondary data in the form of literature studies and site selection. Discussion regarding the selection of locations and sites is carried out by first collecting the data needed to determine a location and site that is feasible for planning and designing the Archaeological Museum.

3. Results and Discussion

Regionalism architecture in this study has the mission of returning the common thread, a continuity of the past with the present and the present with the future through the uniqueness of the culture that is owned, and to compensate for cultural damage resulting from various kinds of forces in the production system, both rationalism, bureaucracy, large-scale and international development.[11,12] Kudus Regency, which is a blend of cultures from Javanese (Hindu), Persian (Islamic), China (Chinese), and European (Dutch) cultures. *Joglo* Kudus House is similar to *joglo* Jepara, but the most visible difference is the door. *Joglo* Kudus only has 1 door. Meanwhile, joglo Jepara has 3 doors.

The concept of the building of Java Kudus

The orientation of the Java Kudus building is south. Java Kudus traditional buildings are divided into five classifications according to the shape of the roof, namely: *panggang pe* roof, kampung roof, *limasan* roof, *joglo* roof, and *tajug* roof. From this classification, there is a hierarchy of excellence or

superiority in terms of the complexity of the structure, the workmanship technique, the number of building materials, costs, and labor used. Differences in the form of Javanese houses indicate social status, while similarities in spatial arrangement indicate a view of life that is manifested through rules in household life.[7,13]

Joglo pencu has four supporting pillars and one large pillar called *soko geder*, which symbolizes that Allah SWT is one. Kudus traditional house *joglo pencu* has 3 parts of a room called *jogo satru, gedongan, and pawon. Jogo satru* is the name for the front of the house. The meaning of word *jogo satru,* can be translated as *jogo* means guarding, and *satru* means enemy. But every day, this room is often used as a place to receive visiting guests. *gedongan* is part of the family room. This room is usually used as the bed of the head of the family. For *pawon* itself is located on the side and is used for cooking, studying, and watching television.[7,13]

As a complement to the traditional architectural style of the Kudus traditional house, there is *pakiwan* such as wells, bathrooms, and *padasan*/place of ablution. *Pakiwan* is usually located in front of the house to the left, parallel to *pawon*. In general, the Kudus traditional house always faces south for the following reasons; morning sunlight can enter the house so that the health of the occupants is guaranteed; during the dry season, the front of the house is not directly exposed to sunlight, so it stays cool; during the rainy season, the roof of the house is protected from rain so that the front of the house is not exposed to continuous rain and is safe from weathering.[7,13]

Patiayam museum morphology

Morphologically, the Patiayam area is a dome with the highest peak (Patiayam hill), 350 meters above sea level. In the Patiayam area, there are Pleistocene rocks containing fossils of vertebrates and early humans deposited in river and swamp environments. The Patiayam site is part of Mount Muria. The area is 2,902.2 hectares covering the Kudus area and several sub-districts in Pati. On this mountain, there are tombs and the Sunan Muria Mosque, waterfalls, motels, inns, a number of villas, and food stalls. The distance is only 18 kilometers from Kudus City.

Collection styling concept

The concept of structuring the museum collection is described as follows; more security for collectibles with a very high level of fragility so that more security is needed so that they are not touched by visitors freely, considering fossils have high fragility; Provision of information panels related to each collection item on display for the sole purpose of general knowledge for visitors. The diorama space is given a barrier to display the fossils that have been arranged and made replicas according to the nature of the life of the fossils on display. Provision of spotlights on each collection item to illuminate objects and also create an aesthetic visual image in the exhibition space. Fossil exhibition objects that have been made replicas so that they can be accessed by visitors without security in order to provide flexibility for visitors to take pictures or photos with the exhibition objects. Placement of objects by raising or lowering them to get the impression of lifting and lowering an exhibition object.[1,3]

Planning activities in the museum

Space requirements are based on the type of activity that occurs in the activity group of activity actors. The view of the site must give the impression of an interesting perspective for users and visitors to the museum. The placement of mass of the main museum building is placed in one direction, which is able to catch the first view of the museum when entering the regional plaza. Where in one direction from the main road, there must be sufficient gaps and made as attractive as possible to attract passing road users.[1,3]

Climatological analysis

The climatological analysis is useful for making alternative concepts regarding the placement of building masses, the direction facing the building, and

the placement of building windows in the hope of optimizing natural light and ventilation in buildings. Sunlight from east to west is quite hot. Buildings that are directly opposite those two directions are not good because they get too much direct light. For this reason, rotating the building's facing direction so that it is not facing the sun directly is an alternative choice for placing the mass of the building's position. Because in one area, there is more than one building mass, it is necessary to have a distance between one building mass and another so that natural lighting can enter each existing building.

Mass composition concept

The style of the house building *joglo* Kudus as a form of local architectural style will become the basic idea of regionalism architecture in the design of the Patiayam Kudus museum. The shape of the façade of the main museum building adopts the typical shape of the traditional *joglo* Kudus house but has undergone changes in the development of detailed forms due to the difference in the size scale of the *joglo* Kudus house and the museum building, which is larger in size. Typical building *joglo* Kudus is always divided into 3 parts, namely the foot part, which is the foundation, and the body part, which is the wall of the building which is the barrier between the outer and outer spaces. And the roof is the covering of the building.[13-15]

On the roof, there is a transformation of field reduction intended to be able to get natural light to enter the building. Because the dimensions of the building size are larger, it is necessary to improvise by providing a gap in the roof of the building so that there is a difference between the massive and transparent forms. To give a monumental impression as a museum building, the addition of a triangular shape area on the front is also meant to be a welcome or welcoming area for museum visitors. The reason why using a triangle shape is that the triangular shape on the *joglo* Kudus house symbolizes a close and interconnected relationship, namely between God, the universe, and humans.

Architecture concept

Regionalism has the main characteristic of combining traditional and modern architecture.[14,15] The museum building must look solid and monumental and adapt to the regionalism approach. Therefore the concept of building mass or detail is made by adapting monumental forms such as triangles, squares, and circles with the concept of regionalism, which characterizes the area, namely the Kudus Regency. In the redesign of this ancient museum, the concept of regionalism is brought from several contexts related to Kudus Regency: namely, the motif of the Kudus carving in the form of carvings of jasmine flowers arranged vertically and horizontally, which function as dividing partitions between exhibition rooms. The detail of the carved partition is in the form of a semi-transparent field with the lighting play from the lamp so that it will create a shadow in the form of carved jasmine flowers on the floor. In addition, the semi-transparent partition area will give visitors the impression of a wider view.

An adaptation of the smaller form of the Kudus Tower, which functions as a border for an outdoor exhibition in the form of stone replicas of historical artifacts that tell about the process of human development from time to time. Giving the shape of a mini tower also adds a natural impression and indicates a place. As for the symbolic concept as a visual image of the ancient museum, it is taken from the repetition of the forms of ancient elephant tusks and ribs, which are applied to several additional designs.

The concept of space in the museum

Display of collectibles with special safeguards is applied to collectibles that have a high level of fragility, so they need to be secured by providing a separate room or at a distance so that museum visitors cannot physically access them and avoid physical human touch. The concept of special spaces for displaying collectibles of a larger size, such as diorama rooms, adjusts the size of the collections to be exhibited. For this reason, the size and area of the room must be

larger than other rooms that only display simple displays. The use of spotlights is needed to add attractions in the room so that it can attract visitors. Other special rooms such as the curator's room, laboratory room, fossil conservation workshop room, fossil storage room, and loading dock are placed as close as possible so that the correlation between the functions of the room and in carrying out activities because of these spaces have a very close relationship with each other.[1-3]

Fire extinguishing system

The museum needs a security system from fire. Besides minimizing it, it can also prevent accidents at the museum. In museum buildings, not all of them use automatic fire extinguishers because it is feared that it will damage the collection items stored in the museum. The fire extinguishing system in the museum is in the form of a manual fire extinguisher and a warning alarm when a fire occurs. Sprinkler-type extinguishers are used in spaces where there are no collectibles. Meanwhile, the fire extinguishing system in the outdoor area uses a hydrant box.

Technical aspect concept

The building structure system is divided into three, sub-structure, super-structure, and upper structure.[16] The substructure (foundation) uses local deep foundation types, namely mini piles with pile caps and river stone lane foundations. For ancient museum buildings, steel-frame roof structures and reinforced concrete can be a good combination, and steel-frame roof structures are a complement to certain buildings (Figure 1). roof structure using a roof covering with a special structure for a particular room that needs traction.

Figure 1. The concept of the space frame roof structure.

4. Conclusion

The architectural concept of regionalism increases the functionality of the Patiayam Kudus archaeological museum as a means of educating about ancient sites.

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