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Identification of Re-Interpreting Traditional Javanese Architecture for Design Concepts of Balai RW 7 Dusun Genting, Kelurahan Merjosari, Malang City

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Abstract—The identification of traditional architectural elements in the design plan of Balai RW 7 tries to apply a study of reinterpretation of traditional architecture in order, to know the architectural elements that can be applied to the design concept. The purpose of this study is to find architectural elements of Javanese houses that can be used as the basis for transformation in the contemporary design of Balai RW 7. This study was written using a qualitative descriptive analysis method to analyze data compiled from literature sources in national journals that discuss elements of traditional Javanese architecture. The elements of traditional Javanese architecture are then reinterpreted descriptively based on the functions and facilities contained in the Balai RW plan. The results found elements of Javanese architecture that could be applied to the design concept, namely the display focused on the transformation of the 5 typologies of the roof of the Javanese house, the spatial pattern adapted to the functions and facilities of the Balai RW, the transformation of ornamentation of flora, fauna, nature, and belief, the orientation is directed to face north or south but still adapts to the existing conditions of the site and the environment, some materials use more modern substitute materials, as well as the transformation of the roof construction of empyak raguman and the construction of umpak, soko guru and tumpang sari in the receiving area with materials using several substitute materials.

Keywords: Tradition; re-interpreting; architecture; concept; Javanese house.

I. Introduction

This activity is part of the community service program at RW 7 Dusun Genting, Kelurahan Merjosari, Malang City, in the form of assisting the process of programming, analysis, and drafting of Balai RW 7 Dusun Genting Malang City. Balai RW 7 Dusun Genting is designed to fulfill the social and political activities of the community and as a communal space for residents in the area, of RW 7 Dusun Genting, Kelurahan Merjosari, Malang City. This RW center is designed to support socio-cultural activities, politics, economy, and improvement of the surrounding environment. The study of reinterpreting traditional architecture in the design of Balai RW 7 is a manifestation of the implementation of socio-cultural aspects, namely the application of identity to the architectural design of the Balai RW which will be designed through a contemporary architectural approach. On the other hand, this cultural approach through traditional architecture needs to be done as a form of sustainability of traditional architecture itself, because traditional architectural objects in various regions in Indonesia have been increasingly eroded

by the development of the era and technology and modern architecture that is currently popular. One of the steps that can be taken in the context of architectural design is to reinterpret a tradition into a modern form and appearance in accordance with current conditions, technology and needs so that the tradition can continue even with a different form from the original.

The purpose of this study is to analyze the traditional Javanese architectural aspects that can be applied to design elements and according to the function of the object to be designed, so that the resulting design has characteristics and characters that interpret the socio-culture of the local community. By conducting a study of all elements of traditional architecture first, it is hoped that the resulting design concept will not only vandalize the appearance of the facade or one architectural element, but from all physical and non-physical aspects that considered to be still relevant to current developments. The social condition of the community in RW 7 Dusun Genting shows that majority of residents are Javanese and work as farmers cultivating fruit and vegetable crops. Thus, the object of traditional architecture that will be studied is Javanese architecture which represents majority of residents in RW 7 Dusun Genting. Javanese vernacular architectural elements such as patterns of space and settlements, shapes and appearances, symbols and ornaments, openings, constructions, orientations, and others are analyzed to suit the object's function, needs, and current technology. In addition, non-physical aspects in the form of values, philosophies, norms, traditions, which are appropriate and relevant to current conditions will be studied to be applied to design aspects.

Traditional architecture

Traditional architecture is architecture that has been passed down from generation to generation, both in terms of tradition and the process of building it as well as from the physical aspect of its architecture, located in a certain area and made by community groups which in Indonesia are generally tribal in nature. Traditional architecture is associated with vernacular architecture because both come from the same root, namely the same original folk architecture in a place, if vernacular architecture can be repeated from generation to generation, it will become traditional architecture (Suharjanto, 2011). The position of traditional architecture as a cultural product is the work of tribal communities that grew up in Indonesia, closely related to non-physical aspects in the form of values, habits, rules and customs of the local community which are passed down from generation to generation and architectural physical aspects in the form of space, appearance and decoration (Octavia & Hematang, 2017). Traditional architecture is the result of community culture such as the Toba Batak tribe in Samosir, when viewed from an architectural point of view, has a related rules to the function of space, has a building structure, and ornamentation or symbols that have meaning (Rambe, 2017). Traditional architecture is a cultural embodiment based on the concept of religion, customs and art through philosophy as a form of balance between humans and the universe and the natural physical environment (Santi & Syukur, 2018). Based on this understanding of traditional architecture, this study will discuss the physical and non-physical aspects that exist in traditional Javanese architecture, to be adapted to the function of the object and the site of the Balai RW to be designed.

Re-interpreting traditional architecture

Theories of the design approach with traditional, vernacular or archipelago architectural themes are often used in a design process, but they are still partial as they generally only apply display elements in the form of roof formations, materials or carving ornaments. The term design approach that is often heard is neo vernacular. This neo vernacular architecture is one part of postmodern architecture which historically wanted to include cultural elements in architectural design. The concept also reinterprets cultural elements in architectural design but is not based on a thorough study of architectural elements.

In this discussion, we will examine the reinterpretation of tradition based on the approach of contemporary vernacular theory according to the contemporary vernacular book (Lim & Beng, 1998), there are four ways or contemporary vernacular concepts, such as reinvigorating tradition, re-inventing tradition, extending tradition, and re-interpreting tradition. Re-interpreting tradition or reinterpreting tradition is using contemporary idioms to change the formal set of traditions in a way that is more refreshing, modern, or contemporary. The formal tools of the tradition are in the form of treads, roofs, space dividers, frames/ construction, appearance (ornaments/symbols), and environmental responses. Contemporary interpretation of traditional architectural elements can be done by examining the elements of settlement patterns, orientation, design philosophy, building materials, building components in the form of openings, walls and roofs, natural ventilation, shading, and passive cooling (Ajaj & Pugnaloni, 2014).

These architectural elements are studied based on the original traditional architecture to be transformed with a contemporary approach. The term contemporary in architecture is generally used to mean design work in terms of appearance, materials and technology are innovative, flexible, varied, and advanced with variable use of materials, application of new technologies, expressive and dynamic compositions, concept of space with an open impression, harmonization of indoor and outdoor spaces. outdoor space, essential comfort and exploration of landscape elements (Dunggio & Yunisya, 2021).

II. Method

The method used in this study is a qualitative descriptive analysis method, based on a literature study related to the elements of traditional Javanese architecture which are used as the basis for the design concept. The data obtained from the literature study will be analyzed and transformed in the context of contemporary traditional architecture according to current conditions, technology, and needs.

Data collection is done by studying the literature of architectural journals that discuss elements of traditional Javanese architecture such as Javanese house orientation, shape and appearance, spatial patterns, openings, construction, symbols, and orientations. Looking for the meaning and philosophical values contained in each architectural element. The results are summarized in a statement description for each element studied.

The data analysis method used is a qualitative method to analyze the architectural elements that exist in traditional Javanese architecture, so that the order of elements that have the most influence on traditional Javanese architecture is found. The results of the analysis are then reviewed based on the activities that will be accommodated, so that it is found what elements can be applied according to the function of the design object. The elements of traditional Javanese architecture can later be maintained, transformed, or not used in the design concept if it is not in accordance with the needs and functions of the design object.

III. Results and Discussion

A. Identify the elements of traditional Javanese architecture

The following are the results of the identification of traditional Javanese architectural elements based on research results that have been published in national journals.

Roof

The characteristics of Javanese architecture in Central Java area consist of 3 types based on their social status, namely gable roofs or village roofs for the general public, pyramid roofs for merchant houses, and joglo roofs for noble houses, (Jannah & Priyatmono, 2020). There are 5 basic forms of Javanese houses, namely *Panggang Pe* (for a farmer's rest house in the fields), *Kampung, Limasan, Joglo* and *Tajug*, (Kartono, 2005). There are 5 (five) basic forms of the roof of a Javanese house, namely *Panggang-Pe* (a simple house consisting of four pillars), *Kampung* (generally used by the village community), *Tajug* (mosque) generally used as a house of worship, *Limasan* (designated for religious groups). upper middle class) and *Joglo (tikelan)* for the nobility or the kingdom, (Trisulowati, 2003).

Space

The arrangement of traditional Javanese houses is divided into 2 components, namely the private part/*petanen/dalem* which is represented by and the public part/courtyard/*njaba* which is represented by *pendapa* and the courtyard. The space structure of the joglo house consists of the main building (*kuncungan, pendapa, pringgitan* and *dalem ageng*). *Dalem ageng* consists of several rooms, namely *senthong tengen,* senthong *tengah* and senthong kiwo. The additional building consists of *gandok kiwo* (for sleeping men), *gandok tengen* (for sleeping women), *gadri* (dining room), kitchen and *pekiwan*, (Budiwiyanto, 2013). Javanese residential houses have at least one basic house, *omah* which consists of 2 parts, namely the inside consisting of the middle, left, and right *sentongs* and the open space in front of *sentong* row which is called *dalem*. The outer part of the terrace is called overhang. More complete, on the outside there is a platform and a pavilion, and there are complementary buildings for *gandok*, kitchens, *pekiwans*, barns and animal cages, but these complementary buildings depend on the social strata of the owner, (Kartono, 2005).

Ornament

Ornaments as a symbol of religion or belief, decorations in Javanese houses consist of constructional decoration (attached directly to building elements) and non-constructive (detachable decorations from the building). The meaning of decoration consists of decorations that have a sacred meaning and decorations that only function as aesthetic elements, (Budiwiyanto, 2013). The decoration of traditional Javanese buildings includes decorative flora, fauna, nature, and religion, each of which has a decorative meaning and belief, and has a different placement layout, (Cahyandari, 2007).

Orientation

The orientation of Javanese houses generally faces south which is associated with myths on the southern coast of Java, but there are also those that are determined based on the calculation of the market primbon and the birth of the owner of the house, (Kartono, 2005). The orientation of the house in a Javanese house has its own meaning which is associated with belief, and in general a Javanese house faces north and south, (Trisulowati, 2003).

Material

The materials used are wood for building frames, roofs and walls, bamboo, natural stone for pillars, and bricks used for house walls, (Trisulowati, 2003).

Construction

The roof construction on a traditional Javanese house has traditional and aesthetic values in the form of *empyak raguman* which functions as a ceiling covering in the form of a series of bamboo which is assembled lengthwise, (Vitasurya & Hadi,

2019). The construction of the most famous traditional Javanese house and is considered a masterpiece is *rong-rongan* structure in the form of an *umpak* arrangement, *soko guru* and *tumpang sari*, (Prihatmaji, 2007).

Traditional Javanese architecture has philosophies related to beliefs related to mythology and cosmology in each of its architectural elements. The higher the social stratification of the homeowner, the higher the value of the traditions applied. Functionally, this traditional Javanese house functions as a private residence, while the object of the RW hall to be designed is a building with a public function, so there is a need for adjustments through the transformation of architectural elements in accordance with the RW hall function.

B. Identification of Balai RW. functions, activities and facilities

Based on the results of discussions with the Head of RW 7 Dusun Genting, the purpose of the design of Balai RW 7 was to provide a social forum for RW 7 residents from socio-political aspects, art and culture development, economy and commercial, education, recreation, and to improve quality. surrounding environment with a sustainable architectural approach on vacant land which has an area of about 2950m2. The descriptions of the functions, activities, and facilities to be designed are as follows:

Socio-political services

This socio-political service serves to accommodate the activities of community harmony in developing the environment. Activities that can be carried out are in the form of discussions or meetings between RT or residents. Room facilities provided include meeting rooms for a limited number of people and multipurpose rooms for larger capacity requirements

Art and culture

Art and culture serve to accommodate the development of the interests and talents of the residents, especially youth groups. The activities are in the form of art performances held open or closed and a room for practice. These activities can take advantage of the multipurpose room or provide an open stage in the garden area, but still provide space for art practice.

Economy

This economic function aims to provide a commercial platform for residents who want to sell either for MSME activities or for street vendors by providing stalls and areas for selling.

Education

The educational function is in the form of educating children in the form of playgrounds or early childhood education and educating residents. The education of the residents in question is related to the cultivation of vegetable or fruit crops because the background of the residents mostly a farmers can provide more knowledge related to farming.

Recreation

Recreational facilities are needed in the form of recreation to relax and exercise, by providing a green open area in the form of a garden and a multifunctional field that can be used by residents for sports such as volleyball and futsal, as well as badminton which can be combined in a multipurpose room.

Supporting facilities

In the form of supporting other facilities such as parking areas, post kamling, toilets, places of worship / prayer rooms, gazebos, and others. All the facilities accommodated are public activities so that if it is associated with site zoning or space in traditional Javanese architecture and other elements, it is necessary to adjust every architectural element found, especially in the layout of the space through pattern transformation. space according to design requirements. Facilities are arranged based on a space hierarchy which is divided into indoor and outdoor functions.

C. Re-interpretation of tradition

The most influential aspect of traditional Javanese houses is the aspect of belief or myth and the social strata of the homeowner. Javanese traditional houses also have certain philosophical meanings in each of their architectural elements, whether they are sacred or decorative, so this non-physical aspect also needs to be considered to analyze the extent of its application to the design. The reinterpretation of the traditions contained in each architectural element that has been found through the journal's literature sources is then transformed into the context of contemporary architecture from the aspects of current needs, materials, and technology. The resulting design will not bring back the same tradition as the original but will be brought back in a fresher appearance through the transformation of architectural elements idioms that are in accordance with the function of the building to be designed. The following is a description of the reinterpretation of traditional Javanese architectural elements into a contemporary context.

Roof

The interpretation of the appearance of the building will focus on the roof of the building because the roof of the building is the most attractive side of the form of Javanese architecture. The roof of the building will apply the shape of the five types of roofs of Javanese houses, namely *panggang pe*, *kampung*, *limasan*, *joglo* and *tajug* through a combination of the five which are transformed so that they can be united aesthetically, either in different masses or incorporated in one

building mass, adjusting to the results of the analysis of the shape of the building mass.

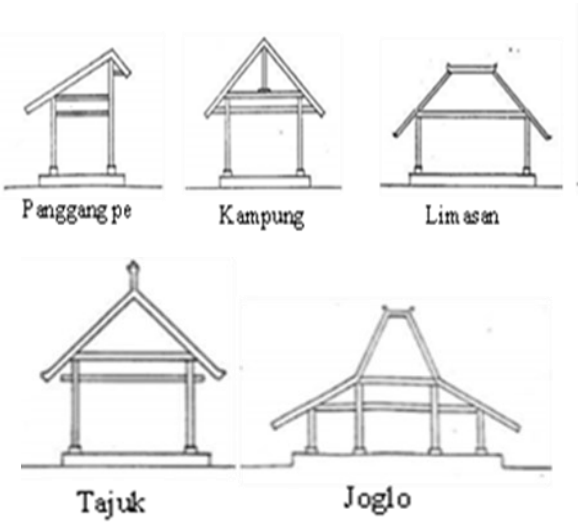
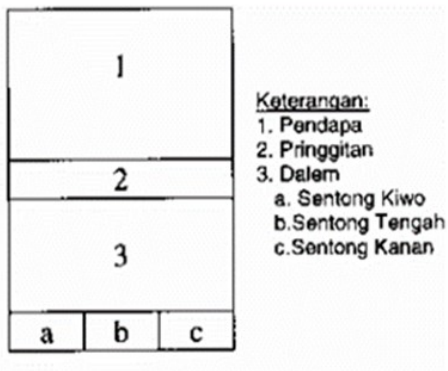


Figure. 1. Javanese house roof type
Source: Kartono, 2005

Spatial

The spatial pattern of Javanese architecture will be used as the basis for determining site zoning and space zoning, but still considering aspects of environmental analysis and the existing conditions of the site and the function of the facility, so if there is a tradition of spatial patterns that are not in accordance with aspects of function, site and environment, the tradition will transform as needed. This adjustment can be done by placing *pendopo* area for public functions, aisle for semi-public functions and *dalem* for private functions.

The spatial pattern of Javanese houses has various typologies in each region, but in general they have the same pattern, the difference lies in the completeness of the room, besides the difference in spatial plans is determined based on the social strata of the homeowner. The division of space functions can be divided into the pavilion area as a public area and multipurpose room, *pringgitan* area is used for office spaces, and *dalem* area for more private purposes such as a rest room, dressing room, bathroom, and others. Other functions can be added to *gandhok* area.



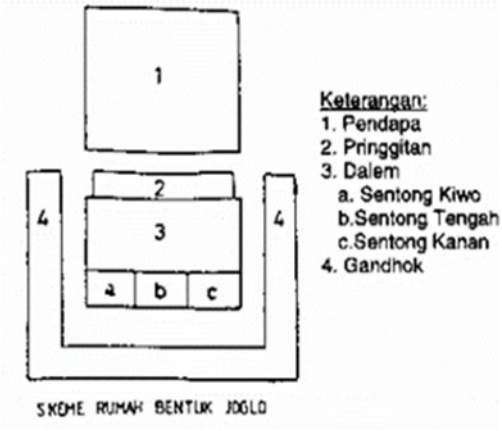


Figure. 2. Javanese house layout type
Source: Kartono, 2005

Ornament

The reinterpretation of the ornamentation is carried out by transforming the appearance of the carving into a simpler but contemporary form by using more modern materials such as aluminum plates with laser cutting or GRC technology. The ornaments used are non-structural ornaments that are not directly attached to the building construction. The choice of ornament and its placement is adjusted to its meaning with the function of the facility. Its placement is only on the sides that can be used as vocal points to capture the view of visitors who come. Ornament motifs of flora, fauna, nature, and belief will be used by choosing the one that best suits the function of the building to represent each type of carving ornament.

Here are simple shaped decorations that can be transformed: 1. *Patran* Flora/leaf ornament which means beauty and perfection, usually placed on the edge of the field. 2. The ornament of the rooster / *ayam jago* which means courage and strength, is usually placed at the end of the ridge. 3. Natural ornament/ *gunungan* means the peak of majesty from the illustration of a tree which is a form of protection, can be placed as a secondary building skin or indoor wall decoration. 4. Belief ornament: *mustaka*/ head which means crown, can be placed on the top of the roof of the building.

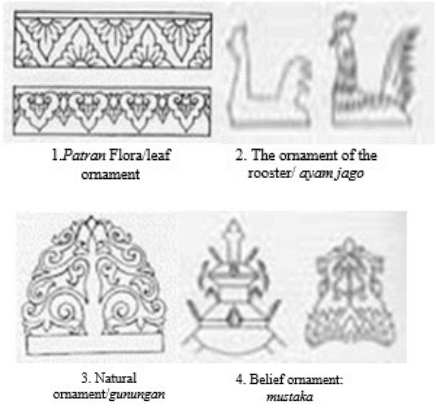


Figure. 3. Javanese house ornament type
Source: Cahyandari, 2007

These decorative ornaments are transformed into simpler displays such as the use of shape outlines, geometric patterns, simplification of shapes, or by repeating geometric shapes, including the choice of ornament material that can use iron or aluminum plates.

Orientation

The orientation of Javanese houses generally faces north and south with consideration of trust. The orientation of the building will adjust to the existing conditions of the site related to main road access into the site. If possible, the orientation facing south or north will be applied as the main orientation of the building, its application depending on the results of the site analysis carried out. In addition, orientation must consider the direction of the sun's trajectory, to anticipate sunlight in the afternoon to determine the location and orientation of volleyball and futsal fields so that players are not exposed to sunlight. The north-south orientation in principle can minimize the direct impact of the sun's heat that passes from the east to the west, so the concept of north-south orientation in traditional Javanese architecture is appropriate to be applied as a response to climate aspects.

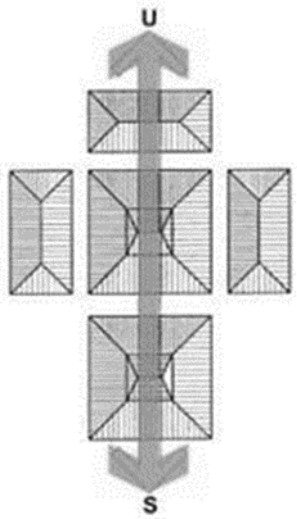


Figure. 4. Javanese house orientation
Source: Wahyudi, 2015

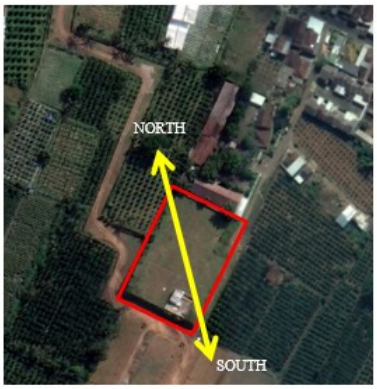


Figure. 5. North-south orientation on site
Source: Google earth

Adjusting the north or south orientation on the site can still be done if you see the position of the site with the surrounding environment. However, with a slight adjustment so that the orientation of the building remains facing the main road access to enter the site on the east side. Determining the orientation of the building must also consider the view out of the site, because the view out of the site has some good natural views, especially towards the south facing the city of Malang and views to the west and north which directly lead to the view of the mountains.

Material

The use of building materials adapts to the needs of each facility and will use modern materials. The original materials from Javanese houses, such as wood, natural stone, bamboo, will only be used for certain elements, while bricks are still used as the main material for the walls. The structure will use a combination of concrete and steel, for the roof according to the results of the roof shape transformation analysis. The floor material in the multipurpose room uses materials that are suitable for multifunctional activities for sports, art activities and ordinary gathering activities. Materials must also consider local aspects in the form of materials found in the area, so further identification is needed regarding the local materials. The use of appropriate local materials can provide benefits from the sustainability aspect of the material itself.

Construction

Umpak construction is a stone that is used as the foundation for the pillars of the teacher pillars, the pillars of the teacher are the four main pillars in the middle of the pavilion and the tumpeng sari is a wooden beam arranged horizontally that rides on the pillars of the teacher will still be shown in the reception area of the Balai RW but with a different appearance and material from the original, besides that, the use of *empyak raguman* will still be used on the ceiling in some rooms while still using the original bamboo material.

Figure. 6. 1 Soko guru, 2 tumpeng sari, 3 empyak raguman, and 4 umpak

Source: Vitasurya & Hadi, 2019

The reinterpretation of the traditions contained in each of these elements is used as a reference in conducting site, form, and space analysis to determine the design concept of Balai RW 7. The space facilities that have been determined are then analyzed for their layout on the site. The next process is the analysis and visualization of design concepts that describe the transformation of each architectural element that has been studied in a contemporary appearance in terms of appearance, use of more modern materials, and contemporary technology that is in accordance with the functions and activities of residents. The following is a detailed description of *rong-rong* structure that connects *umpak, soko guru*, and *tumpak sari* which can be used as a reference in the design transformation process from construction elements that are considered unique in traditional Javanese architecture.

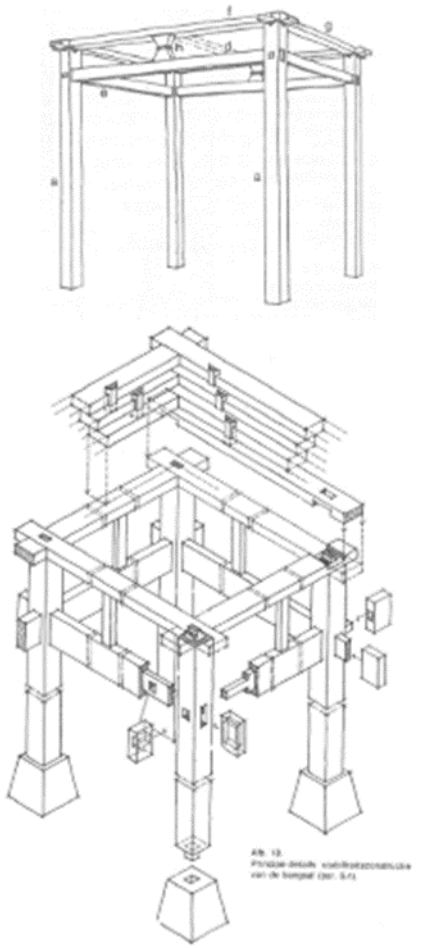


Figure. 7. *Detail of the rong-rong structure*
Source: Leedam 1969

Rong-rong construction as in Figure 6 uses a peg system using wood material. Transformation in terms of material can be done by using iron or box steel, but by adjusting the connection system. On the other hand, the construction of this *rong-rong* can also be maintained like the original, so that it is contrasted with other elements. The transformation model used depends on the needs or intentions to be conveyed to the design object.

IV. Conclusion

Based on the results of the discussion, it was found that there are 6 elements of traditional Javanese architecture that can be reinterpreted in the form of the architectural design of Balai RW 7, namely the elements of the appearance of the roof shape, space pattern, ornamentation, orientation, material, and construction. The interpretation of Javanese architectural elements applied to the design concept is the display element focused on the transformation of the 5 typologies of the Javanese house roof, the spatial pattern adapted to the functions and facilities of the Balai RW, the transformation of flora, fauna, nature, and belief ornamentation into a simpler appearance. and contemporary, the orientation is directed to face north or south but still adjust to the existing conditions of the site and the environment, some materials use more modern substitute materials, as well as the transformation of the roof construction of *empyak raguman* and the construction of *umpak, soko guru* and *tumpang sari* in the receiving area with materials using several substitute materials. These architectural elements are used as the basis for the analysis and visualization of the design concept at a later stage in accordance with the description described in the reinterpretation stage of the tradition. This study is still in the form of a description of the concept of reinterpreting tradition, so it is necessary to adjust it to aspects of function, site, and environment, as well as other technical aspects.

This study is still limited to the search for elements of traditional Javanese architecture that can be reinterpreted in the context of contemporary architectural forms. So, there is a need for further studies that analyze and visualize the elements of traditional Javanese architecture in accordance with the nature and function of the object as well as the existing conditions of the site and the environment of the object to be designed. Thus are the reinterpretation of tradition will be realized as a whole element, not just one or two elements.

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