

## **Architecture Tectonic Identification of Corbels in Keraton Surakarta Hadiningrat**

A. Haykal<sup>1</sup>, E. Priambodo<sup>2</sup>, R. F. Zuhdi<sup>3</sup>, A. R. Adikuncoro<sup>4</sup>, Putu Ayu P. Agustiananda<sup>5</sup>

<sup>1,2,3,4,5</sup> Department of Architecture, Universitas Islam Indonesia

E-mail: agustiananda@uii.ac.id

**ABSTRACT:** *Architecture tectonic (further mentioned as architectonic) is commonly called the art of construction, whereas the tectonic itself is very closely related to structure. Structure as the media of architecture, acts as the reason why the building can stand. Keraton Surakarta Hadiningrat Complex possess rich, expresfull, and beautiful tectonics and ornaments that mainly influenced by the architecture of Javanese, Chinese, and European. Identifying and analyzing the characteristics of the buildings could give information about the history and story that has happened along with the architectonic statics or changes if exist, and the difference of each tectonic for a different type of spaces.*

**Keywords:** Architecture tectonic, Corbels, Keraton Surakarta Hadiningrat

### **INTRODUCTION**

Tectonic was chosen as the object of the analysis, because tectonic (columns, beams, etc) is the place where the ornaments are placed. Those ornaments tell important stories about the palace's culture, symbol, and history at the exact time, define the character of the palace. These ornaments can also define how it was built according to the functions, while also shows how the people of that time has the technology to apply ornaments and structures.

Corbel, also known as bracket or console, are weight carrying member that is built into the wall so that it counteracts any tendency to overturn or fall outward. Traditionally, corbels may be an individual piece of stone, separate from each other as in the case of many medieval and Renaissance cornices, or they can be continuous course of masonry, such as the corbels under projecting oriel windows

Keraton Surakarta Hadiningrat is the official palace of Kasunanan Surakarta that is located in the City of Surakarta, Central Java. the Keraton is built by Susuhunan Pakubuwana II in 1744 as a substitute of Keraton Kartasura that was destroyed in 1743.

Keraton Surakarta is one of the most exotic buildings at the time. One of the architects is Sultan Hamengkubuwana I that was also the principal architect of Keraton Yogyakarta, so that the two building had a lot of general similarities. The Keraton is not built at once in 1744-1745, but in stages with still maintaining the basic programming with the original design. The last major construction and renovation is done by Susuhunan Pakubuwana X that reigns in 1893-1939. Most of the Keraton has white and blue nuance with the architectural style of Javanese-European mix. The purpose of this analysis is to identify the characteristics of the architectonics, specifically the corbels part of the building. This is done to ensure that the characteristics and the history of the building is preserved, even after further renovations.

### **THEORETICAL REVIEW**

#### **1. Architectonic**

According to Frampton in his book *Studies in Tectonic Culture*, the role of tekton leads eventually to the emergence of the master builder or architekton. Tectonic relates to the way of construction,

## **Arsitektur Islam di Indonesia**

the art of construction, and the craftsmanship of construction. More often, the term is more associated to the art of the process to the aesthetic, rather than the technology. This leads to the emergence of another new definition which states that tectonic is the art of joinery.

Eko Prawoto says in 1999, that tectonic is an architectural aspect that relates on how to process and bring together building materials and articulate them through joineries that relate to the style of construction. Tectonic relates on how the 'artist' process, play, join, solve, and invent joineries to make a whole structure from different materials, which aesthetic and poet factors are the main focus of study, completed with the technological aspect.

Indonesian architect that was famous for his mastery, honour, and expertise in the practice of tectonic is Y.B Mangunwijaya. He was described as an architect that really understand how the materiality on the local works, how human and architect should make contact and process the materials to make the whole complete structure. Not only the static whole rigid structure but complete as a logical whole, the connection between each material element along with the joints as the connector. The understanding of this, making the whole structure to be constructed according to the law of nature while reaching the best structural quality, is what Y.B Mangunwijaya meant in his writing.

Every region could possess their own characteristic and tradition of the tectonic aspect on architecture. Different joineries, different ornaments, and different materials can tell different stories and histories, and bonded to a particular house of vernacular or regional architecture. Different factors could affect the whole tectonic tradition of a building, which includes the economy, renovation, and modernization. Thus, two buildings in the same small region could end up having different tectonic and construction material. Comparing these two could give us information about the true origin of the architectural tectonics of the two buildings, what style of architecture that affected those two while analyzing any changes that could have been in the harmony of the original tectonic, or even contrary to it.

### **2. Corbel and Console**

Corbel is a structural element connected from a wall to carry weights, commonly overhang roof and shading weights. A corbel is a solid piece of material in the wall, whereas a console is a piece applied to the structure. Console is the most common one to be used as in Indonesian language. Mostly found under the overhang roofs, console has been used in many of Indonesian architecture.

## **METHOD**

### **Analysis Location**

The analysis and observation took samples in several buildings that are strategically located in the Surakarta Kasunanan Palace complex such as the KGPH Dipokusumo's Residence, Kori Kamandungan Lor, Siti Hinggil and Great Mosque of Keraton Surakarta, focusing on the corbels of each building.

### **Data Collection Techniques**

The data used in this analysis mainly obtained from the site survey done in 29 June 2019. We acquired the information from interviews and observations at the site. Other sources like books and scientific papers also used to obtain secondary data.

## RESULTS AND DISCUSSIONS

### 1. Console in Masjid Agung Surakarta Complex



Image 1 Console in Kuncungan of Masjid Agung Surakarta

The consoles at Masjid Agung Surakarta complex are made mostly from steel material, formed in a way to shape such shapes for ornamental purposes. Though styled, but it is still seen as a humble one. The ornamental shape mostly refers to the Art Deco style with a blend of Javanese style. Functions to hold the load from the extended roof structure, seems like no other major function could be seen of it. The consoles merely act to hold load, while giving simple decorative value for the mosque's architecture.



Image 2 Console in serambi of Masjid Agung Surakarta

Console that is in the serambi area is made of steel material. in this console, there is a triangle which shows the strength of the structure with truss patterns in general and this part does not show any ornaments at all. The console in this section relies on the column and supports the roof of the serambi.

**2. Consoles in Kori Kamandungan Lor**



Image 3 Consoles in Kori Kamandungan Lor

Consoles in Kori Kamandungan Lor area are made with steel, with a bolder design and slightly much more ornamental shapes and elements. The text “PB X” which stands for Pakubuwono X is commonly crafted inside the part of the console. This marks the renovation of Kraton complex at the period of Pakubowono X’s reign, substituting many elements with imported steel and fabricated materials from Europe.

High amount of PBX label on the architectonic element around this complex shows another alternate function of the console beside being a load-bearing element. The console is part of the ‘promotion’ attempt at the time to show the spectators about the identity of the person who ignited the renovation and development. It is a tool for identity and also for a time marking since the PB X label has not been changed to the next generation name up until today’s time.



Image 4 Consoles in Kori Kamandungan Lor Garage

Consoles around the garage on Kori Kamandungan Lor area also possesses the PB X ornamental text crafted in. The garage is popularly known as the place for the reign's antique old cars collection stored inside behind the doors. The labeling to give information about the owner of those doors are done one of them by the console itself. The console differs slightly from the previous one, as this one is stronger, straightforward, and less ornamental, although a small ornamental curvy shape is crafted at the low part of the corbel.

Load-bearing function is more dominant in this garage console, seen at the strong triangular and long shape to give ability of holding a longer element of the roof for the garage purpose.

### 3. Consoles in KGPH Dipokusumo's Residence



Image 5 Console in veranda of KGPH Dipokusumo's Residence

The console which is located on the veranda of the KGPH Dipokusumo residence has two types of consoles whose differences are quite significant. The first one which is located at the bottom serves to support the overhang of the veranda and the upper part serves to support the roof of the building, especially the veranda.



Image 6 Two types of console in veranda of KGPH Dipokusumo's Residence

Those consoles also have different type of material, the upper one made of timber and the below one made of iron. Both the consoles don't have a lot of ornaments on it.



Image 7 Upper console in veranda of KGPH Dipokusumo's Residence

The upper console very structural oriented, because it is not only support veranda but also distribute the load from the roof. And it's different from the console below it, which is proven from the thickness of it. Even though the lower console made of iron, but the thickness and the positioning is not vertical, so it means the console doesn't included as the primary structure.

#### **4. Comparison**

From the sample of consoles that we have gathered, one could do the next analyzing phase to find for any existing additional function of corbel and console that could be perceived. The results show that corbels could function not merely for load-bearing element that mostly transfers the load of overhang roof and shading.

Ornamental function is the first function after load-bearing function that could easily be found as designed by the architect. The corbels act as an ornament, giving ornamental or aesthetic values to the building, blending and inheriting the building's architecture or contrast it. As can be found in the cases, the chiseled shape could also be influenced by many surrounding architectural styles that is in the context of the location.

Symbolic function acts as a marker, the identity facade that transmits a particular identity for the spectator. It can be the architect, the stakeholder, the owner, or other people that wanted to be recognized. Symbolic function is in harmony with the structural theory in 'Analyzing Architecture' book that states; structure determines the space. The console, acts as the element that determines the meaning of the space, whether it is a mosque, or a strong, brave and prestigious space such as the Kori Kamandungan Lor. The shape could give information about the console space's function and goal of the design. It can also be used to mark not only a person, but a time that has an important agenda regarding the building, for example the PB X not only showing the important person behind the construction, but also the reign period it was constructed

## **CONCLUSION**

Most console in Keraton complex has a dualism of function. The first obvious function is structural function, acting as a load-bearing element mostly dealing with overhang loads. The second one is ornamental function. Ornamental could be conceived and divided onto another two branch which are pure decoration and symbolic function. Symbolic ornament functions to mark and tell a particular person or period that has a specific relation with the space and building. The architect could have used the console as the symbolic element to mark and give information for the spectators in any period in the future about the person or period behind the construction or renovation of the building itself.

## **REFERENCES**

- Hannigan, Tim. 2011. When Raffles Ran Java. <https://www.historytoday.com/archive/when-raffles-ran-java> (accessed June 20, 2019).
- Kajian Tektonika Arsitektur Y.B Mangunwijaya. Perpustakaan UNS: Bab II
- Lotha, Gloria. 2007. Corbel, Architecture. <https://www.britannica.com/technology/corbel> (accessed July 2, 2019).
- "Ragam | Karaton Ngayogyakarta Hadiningrat - Kraton Jogja". <https://www.kratonjogja.id/ragam> (accessed June 20, 2019).
- Unwin, S. 1997. Analyzing Architecture. Abingdon: Routledge.