The Role of Sketch in Architecture Design

Yanjin Li¹, Wen Ning²

¹Southwest Jiaotong university, Chengdu, Sichuan, China
²Southwest Jiaotong university, Chengdu, Sichuan, China

¹449058351@qq.com, ²522107258@qq.com

Abstract. With the continuous development of computer technology, we rely more and more on the computer and pay more and more attention to the final design results, so that we ignore the importance of the sketch. However, the sketch is the most basic and effective way of architecture design. Based on the study of the sketch of Tjibao Cultural Center of sketch, the paper explores the role of sketch in architecture design.

1. Introduction

Sketch is a kind of carrier of the architecture designers to express their own design intention and idea in an intuitive form. It is a process that the designers quickly record their own design. However a designer of hand drawing skills, understanding of architecture and engineering technology is reflected in the rapid expression of the process [1]-[2]. For example, a picture of ingenious design sketch can be used as a perspective renderings to convey understanding of the designer of the space, structure and shape. At the same time, sketch also plays a important role in guiding of the construction. However, with rapid development of software technology, we gradually neglect the importance of architecture sketch. This paper elaborates the role of sketch in architecture design illustrated by the example of sketch in architecture design.
2. Analysis of sketch of Tjibao cultural Center

2.1. Introduction of Tjibao Cultural Center
Tjibao Cultural Center was completed in 1994, located in New Caledonia Noumea. Renzo Piano took pains to understand the local customs, beliefs and aesthetic taste, when he designed the architecture. He won the aboriginal elders' support who are with wary of the Western colonial control [7]. Tjibao Cultural Center successfully drew lessons from other local traditional building "shed" and wood frame structure. These double braided facade of "shed" can withstand hurricanes and it also can use the sea breeze in the upper part of the formation of pressure from the lower part of the air to play the role of ventilation [8]. The shutter can also play a role in regulating the indoor light. He pays attention to the combination of architectural art, technology and the environment around the building. His architectural thinking is rigorous and lyrical on the traditional inheritance and transformation.

2.2. Contrast between the architecture and sketch
From the expression of Piano's sketch, it skillfully expresses facade, section and structure. Section space can be thought as the half space of "the shed" section. In addition, in order to merge into the surrounding woods Piano learn from the local wood rib structure of the building to make architecture merge into the environment. The final sketch of and the architecture is basically in agreement with the architecture. But from the sketch and final architecture section, there is a difference in the curvature of
the outer frame of the sketch and the final appearance of the architecture. The surface structure of the sketch is nimble. However, from the final section of the architecture, the curve of the structure is somewhat cumbersome. This shows that Piano coordinates the structure of the wood rib frame and the sketch of the structure, so that the final construction and sketches to minimize the deviation.

Figure 4. Sketch of Piano (author painting copy).

The wood rib of the culture center of the sesame is double layer, which is for ventilation and lighting. However, In order to strengthen the link between the two tier structures, the transverse members are connected. Horizontal linkage members draw lessons from veins of palm trees fan-shaped distribution of enlightenment and it also reflects the local architectural materials extracted architectural vocabulary. They are firmly anchored in a horizontal way to replace the weaving or tying of the folk and to increase the wind resistance of the building.

From a whole point of view, the structure of the sketch is similar to the structure of the final architecture. The angle of the component in the sketch is different from final architecture because the structure needs to achieve the best force transmission system through the computer technology to calculate and adjust the angle between the components. Secondly, Piano pays attention to the regulation of the transverse component location. It can ensure the reasonable structure system and make less influence on structure curve. This difference can be weaken by the foil of surrounding.

Figure 5. Comparison of shed sketch, sketch and final architecture section

(Author self drawing).
Figure 6. The main frame of the final architecture (Author self drawing).

Figure 7. Sketch of Piano's structural components (Author self drawing).
2.3. **Summary**

From the sketch of the culture center, although the final completion of the building and the sketch are a little different, but it is acceptable. And sketch has strong guiding to the design and construction of architecture. building has a strong guiding. From the expression of the sketch and the construction of the process of building, the coordination of sketch and architecture also fully embodies the architect's professional accomplishment.

3. **Conclusion**

The reason why we have to study the sketch is that it is better to use it. In today's increasingly developed computer digital technology, the traditional style is gradually overwhelmed. Complex computing, sophisticated graphics can be completed by the computer, its advantage is beyond doubt. But in any case, the architectural sketch will not be replaced by digital technology. When we are obsessed with the accuracy of the computer, but it is also limit our thinking. So some people say that professionals still have to look at the sketch. It is very reasonable. The architectural sketch is the most spiritual expression in the process of architectural creation. Computers have also been designed to bring a lot of convenience. No matter how we have the way to stimulate thinking, the expression of the sketch is the most concise, concise, fast, free and intuitive. The training and analysis of sketch will help to improve the design quality, but also it is lacking in Contemporary Architectural Education in China.

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