THE COMPUTER MEDIA METHOD OF ANALYSIS OF ARCHITECTURE WORKS

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Abstract. The analysis of architecture works is through the design of architecture. It is closely related to the review of architecture and also is the most important method to research into and study architecture. But it hasn’t been paid enough attention, because of the limitations of the traditional methods. Now with the development of the computer media technology and its wide use, there appears a new method—the computer media analysis method, which has many advantages that the traditional methods haven’t. In this paper, we discuss the frame, the process and the feature of the new method. And through the analysis of examples we explore the working of this method under the current condition. We hope through the research and the study of this new method, the analysis of architecture works can be used consciously by students, educators, and practitioners to think deeply about, research into, study architecture, and at the same time to creating better designs.

1. Introduction

Developing from the mechanism-era to the info-era is the most vivid feature in the twentieth century, and the wide application of the computer technology is the most basic feature of the info-ERA. The influence of the computer technology is so wide that we have to face it. As an architect, what we are concerned with is what the computer brings to architecture. In the fields of engineering, the computer can not only aide drawing, but also aide designing, analysis making, building, management and so on. In the same way, in the fields of art, there are many precedents that the development of the means and the tools of expression cause the art revolution. So can we think that the rapid development and the deep application of the computer technology will cause the revolution in the architecture design methods? Although our ulterior object is to do better architecture designs, at the beginning of the research, we have to return to the foundation of architecture and have to analyze the current architecture works. After all the analysis is one of the most important means to research into and study architecture, the basic skill which the professional ought to have, the starting point to promote the architecture review and at the
same time it is very fit to put into practice the architecture education.

In the past, the main ways to analyze architecture works were with texts and diagrams. They have many limitations on use. The most obvious fact is that architecture involves three or four-dimensional objects, but the text is only one-dimensional media and the diagram two-dimensional media. The development of computer technology, especially the development of the multimedia technology builds the technique and substance foundation for renovating the traditional methods of architecture works analysis. In the event that work analysis is the anti-process of work creating, does it infer that researching into a new analysis method will develop a kind of new design method? This is the object why we do the research, and is our hope to invoke the attention and thinking of most of the architects.

2. The analysis of the architectural work analysis

The architectural work analysis includes the person who executes the analysis (the researcher, the learner), which is the body of the analysis, and the architectural works to be analyzed, which is the object of the analysis. It plays an important role in the connecting of the body and the object of the analysis, the architecture theory and the design practice. The relationship of the body and the object of the analysis is cognizing and being cognized. The procedure of the architecture works analysis is the procedure for the analysis body to decode the design procedure of the designer. Of course, this procedure does not need to reproduce truly the design intention and the design progress of the authorship. It is just a progress of reading, understanding, digesting for the analyzer, because the meaning or space of architecture is not contained in its shape, but set up during the progress of being read, being understood and being digested. This procedure is a recreation of the object of analysis by the body.

The analysis of architectural works as a system includes four parts:

- Technology supports;
- Theory bases;
- Analyzing contents, and
- Analyzing methods.

Technology supports refer to the relative technology and equipment. Theory bases refer to all the theories relative to architecture. Analyzing contents vary from person to person. The very general ones are: the environment quality analysis, the analysis of the function of plan, the shape organizing analysis, the traffic streamlining analysis, the light and the shadow analysis and so on.
At present, the methods often used in architecture are the text-language mode, the diagram mode, the model mode and the photo-slide mode. Each mode has its own features, and has its own limitations at the same time. E.g. the text depends on the imagination, which is a secondhand experience. The diagram is not a bad analysis method, but the space of architecture is four-dimensional, so this two-dimension method sometimes appears to be pale and disable. And the model mode that is widely used in architecture education is three-dimensional, but the models are not easy to be moved and saved, and the finished model can’t be removed and reconstructed, which makes the communication difficult. The model mode also lacks a key factor in building the space, which is the human parameter, the human scale to the interior and the exterior. The photo mode, on the other hand, has more advantages than the model mode to show the scales, especially when the photo takes the person in, and at the same time the photo is a record of reality. But it is static and we can not get the experience which we get when we look around the building.

3. The computer media method of analysis

The method of analysis of architecture works is grounded on the usability and practicability of the computer multi-media technology, which has its own workflow, work environment and work result.

3.1. THE FRAME

The computer media method of analysis as a system includes three basic elements. Its system diagram is shown in figure 1.
3.2. THE PROCEDURES

After the object to be analyzed is determined, five steps will follow the procedure (see Figure 2). This procedure distinguish the media method from the traditional method.

Figure 2. The Procedure Diagram of
The Computer Media Method

- Collecting Materials
- Constructing The Digital Model
- Analyzing And Plotting
- Media Integrating
- Works Analysis

3.2.1. Collecting Materials

The first step is to collect as much material as possible about the architecture works to be analyzed.

3.2.2 Constructing The Digital Model

Then construct the model in the computer, which is in fact a kind of virtual model relative to the handmade model. It has some advantages over traditional ones: it contains more kinds of information, with much higher precision, no limitation on the scale and the place. It is more interactive (could be transformed, incised, or taken apart freely).
Constructing the digital model is a very important step. It is a simulation of the original design for the analyzer to rebuild the architecture work according to the graph paper. After the digital model is finished, the space, the function, the character of the architecture work is clear.

3.2.3 Media Plotting
After constructing the digital model, we can go on to do some analysis and plot about the different analysis contents. For example, to analyze the traffic flow, the exterior wall can be hidden with only such interior construction components as the stairway, the steps shown. This can express the transformation of the space in the horizontal and the vertical direction, which the normal illustrations and photos can not express so clearly. One also can make an animation with the digital dynamic model to analyze the line of sight and the psycho-experience in the architecture works. The analysis content thus will achieve a great development after the plotting.

3.2.4 Media Integration
The results of the analyzing and plotting are so many different digital media, such as: animations, renderings, texts, collected photos, dissertations, video records and so on. Media integration is a creative procedure which combines all into one. It is somewhat like writing the script or editing out and synthesizing in the filmmaking. But they are different intrinsically. The frames of the film are orderly played back, while the elements of the result media can be played orderly, paralleled or crossed according to the controller. So the integrated media is available and controllable.

3.2.5 Media Analyzing
Using the media organization and the integrated media, the analyzer can select the architecture works which he feels interested to analyze.

3.3 TOOLS
To do the computer media analysis of architecture works needs some software and hardware, as the scanner, CAD software, animation software, multi-media edit software and so on.

3.4 CHARACTERISTICS OF THE MEDIA METHOD
In general the computer media method has at least three characteristics and advantages:
4. Practice with the computer media method

In the research, we want to practice the availability of the computer media method in the current conditions. We select Tadao Ando’s architecture works to analyze with the method. Tadao Ando is a famous Japanese architect. He has taught himself and studied architecture by travelling worldwide. His architecture is very simple but full of the spirit of the east world. Just because of this, we think he somehow goes beyond Le Corbusier. Now we can study his works with the computer, although we have no chance to visit the real architecture, especially the students. For example, we study Tadao Ando’s Church On The Water. First we collect all the materials about the work, and then we set up the work in the computer. During the procedure of setting up the church, we design the architecture work with the understanding of the architecture referring to all the materials we have collected. In so doing, we feel the architecture, we feel the procedure of Ando’s designing, we feel the spirit of our east–world space. We use the digital to analyze the architecture. We reorganize the elements of the digital model to analyze the shape organization, the basic forming, the streamlining of the traffic, the relationship between the different spaces and so on. Then we write the script to form a system. We use Macromedia Authorware to do it. Figure 3 shows the procedure of construction of digital model and typical frames in some analysis.
5. Application in Architecture Education

In architecture education, the students use the computer media method to study and analyze the architecture works, and all of the results of the students can finally form a database of the architecture works and can be published as an electronic book or published on the internet. This is very helpful for the basic research and the CAAE (computer aided architecture education).

References

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