25 Practice & Experience In The Design Of Building Model With The Micro-Computer

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Recently, I joined the competition for the commissions of the general department store of Tongzhou and Tongzhou agricultural trade centre, and succeeded in each competition. The design work was carried out with computer from first to last, with the use of AutoCad 12.0 and 3ds 3.0. I do not intend to introduce the design thoroughly, but I would like to deal with some aspects of CAAD.

The following are my major steps and practicable experience of using CAAD. In order to differentiate design of building model with micro-computer and traditional-concept models, the former will be referred to as "screen model", and the latter "object model".

1.0 STEPS:

1.1 Constructing three-dimension screen model in AutoCad.

To transform screen model into 3ds files smoothly, please pay heed to the points as follows:

- 3ds can only read surfaces in AutoCad files as x.Dxf.
- Make sure which layer, entity and color to transform into 3ds objects first, then choose commeaurate method of constructing models;
- Dxf documents do not necessarily require precision. Considering that 3ds can read two decimal places, you can only take three decimal places into consideration, with the aim of sparing time.

1.2 Turn AutoCad files into 3ds files.

1.3 Quit AutoCad and enter 3ds.

1.4 Load 3ds file with .Dxf.

1.5 Build color and material library in 3ds.

As for professional designer, it's advisable to choose color and material by yourself. Unlike the color mixing in watercolor and gouache, colorful light mixing is used in 3ds. The three primary colors in colorful light mixing are red green and blue. When the three kinds of light have the same proportion, you get white light. With the

adjustment of each light's proportion, you can finally get any color existing in nature. Color TV is an example of using that theory. As for color mixing, everyone has his own principle and experience, so I need not talk too much about it. Surely, besides mixing color yourself, you can still make use of the material library in 3ds, specially the that in CD-ROM. the main fault of utilizing material library is that it is not as mixing color by hand, you have to do all the things with software, with is just the fly in many architects' ointments. So we'd better use one method as the other's supplement, instead of antithesis.

1.6 Put color on the surface of the building.

When necessary, you may include material quality as well. As for buildings, if your main purpose is to adjust their dimensions, scale, relation, etc. You may deal with color only, excluding, which can save your time.

1.7 Add light.

1.8 Make scene.

First, you'd better make some scenes at rest then and perfect it. After you think it's already satisfactory, you can still go ahead to make a series of successive motion pictures to show on the screen. At this stage, you'd focus on saving your time. Generally speaking, the data of screen models is comparatively large, especially with city plan, for it always includes a large quantity of buildings, which will double the data or even more boring. Make one scene on 486dx2/66, which is nowadays very popular, will take time arranging from several minutes to dozens of minutes. Take a motion picture lasting ten seconds for example, granted that each scene will take five minutes, totally you'll spend 25 hours, and you can't stop midway. In order to improve your speed, you can consider upgrading your computer. For example, using a 586 Pentium computer, you can reduce the process to 10 hours. But the core of problem is not that motion-picture-making requires time, but that in order to design successfully, you have to view the picture continually when you are in the phase of studying and bettering your design. In this respect the designer's knowledge of his field and the cad user's skillfulness should be compounded perfectly. And that's exactly why CAAD is lagging behind cad in other fields at home and abroad. I propose to write out this problem at length these days.

1.9 Show pictures.

To show pictures at rest can be acted as the photos show. To show motion pictures you may administer the speed depend on the number of total frames. If small number, you can choose a low speed, such as 10 frames/second. Of course, sufficient frames and a speed not slowly than 24 frames/second is ideal.

2.0 REALIZATION

Making screen model with computer has its own characteristics, compared with traditional way of making models. Here is my experience in it:

2.1 You can make it at the same time with design.

Making three-dimension screen model is, at root, the process of designing and amending. It's analogous to designing and drawing on paper. But hand-made pictures have tenderness, liveliness, and-most outstanding-the aesthetic feeling given by curve drawn at will. Of course, we are weighing the aspects of buildings, are creating the shapes of buildings, so although computers won't provide such beauty, we can still get there. When you're familiar with a computer, you'll find the great convenience it brings. And the very convenience lies firstly in the faster speed. You can view your model on the screen anytime you'd like to. And after you've weighed your design thoroughly, you can revise it freely. You can repeat that procedure in a short period of time. That's rather why we say we make three-dimension models and design the build at the same time. Object models will take far more time and aren't so easy to reform.

2.2 You can see the models as if you're in a realistic situation.

You may choose viewpoint at will, and then you'll get a corresponding perspective picture. It's hardly passable for object models to used that effectively.

Such are the points at which screen model is distinguished from object model. But object models show clearer cubic dimensions, which is needful for screen model.

3.0 THE RELATION BETWEEN DESIGN INSPIRATION AND CAAD

- CAAD is a measure of design. It cannot take the place of the creativity of brain. According to my experience, basically, it's a mix of traditional design method and design technology.

- CAAD is a measure of design. It will not chain the creativity of human brain. We make use of it, combining it with traditional manifestation methods.

4.0 PHOTO'S ILLUSTRATION

4.1 Outline:

Tongzhou agricultural trade centre is in effect a series of buildings. On the Southwest are public buildings, including department stores, office buildings, etc. At the centre, the 1st and 2nd floor is a large-scale agricultural market, the 3rd to 7th floors are apartments. The site is compact, on the south and north is very close to already existing buildings. The designers need to come up with wall facing south is 230 meters long, we are required provide practical sunshade measure.

Considering the commissioner's requirements, we drew general plan, plans, elevations, sections all with computer. If all the perspectives were drawn by hand, that would be a huge work. Furthermore, all the compact parts would be impossible to show by hand. Precisely to decide the position of scenes. But computer could solve such problems easily. As for the red-line, it could also be easily solved with computer.

Tongzhou general department store is located at a downtown crossroads the commissioner was much concerned about the mold, function and specially parking problem. A design work as this generally would be revised many times before the plan was settled down. In the meantime, the designing of parking by hand would cause much trouble, for example, radius at bend of road and column grid size of turnaround, these are just snaps for a computer.

4.2. Pictures

1-11 is the photo of agricultural trade centre, pictures 12-15 is of the general department store. They were both photographed on the screen. If possible, you use color drawing instruments to draw on proper size paper, but that'll be a little difficult to balance the expenses.