Research on the Expression of Interior Design Based on Computer Renderings

Guoliang Xu1,*

1Sichuan Vocational and Technical College, Suining, Sichuan, 629000, China

*Corresponding author e-mail: xutongzi@sczyxy.cn

Abstract. With the improvement of living conditions, interior design (hereinafter referred to as ITD) has become an indispensable basic matter in people's life, which can meet the purpose of improving people's living needs. Through ITD, we can gradually move towards intelligent life and other aspects. Traditional ITD is based on hand-painted renderings, which has been difficult to meet the demands of the development of the information age. Therefore, designers are looking for new ways of ITD, which can better achieve the effect of ITD. The expression of ITD is mainly divided into four links, including plan practice, sketch design, effect drawing expression and construction, namely plan, sketch, effect drawing and construction drawing. With the rapid development of computer, designers have gradually used software rendering, which can let customers know the effect. First of all, this paper analyzes the expression of ITD. Then, this paper analyzes the expression methods based on the computer renderings. Finally, some suggestions are put forward.

Keywords: Computer Rendering, Interior Design, Expression

1. Introduction
ITD is a kind of behavior based on interior space activities, which is a creative production activity of human aesthetic to interior space environment design [1]. Through ITD, we can create a reasonable, comfortable and beautiful interior environment, which will meet the aesthetic and demand of people's daily life [2]. Through ITD, people can enhance science and art, which will strengthen the professional technical ability. Through computer software, designers can use modern design methods to improve the living function and aesthetic function, which will realize the unity of the function form and form of interior space [3]. Through ITD, we can create an indoor space environment suitable for human survival. Information model technology has become a hot topic in product design and architectural design, which has been applied in the application of information model [4-6].

2. Interior design expression
2.1. Idea sketch
ITD starts with sketches. The inspiration and creativity of the designer are drawn into a beautiful sketch. Concept sketch is the most critical step in materializing a design. Sketches or freehand lines are the first
choice for designers to express their preliminary design ideas. Through the hand drawn concept sketch, designers can present and record their own design ideas, which will be expanded for subsequent design. The concept sketch represents the designer's preliminary design idea, which can reflect the designer's design intention [7]. In the initial stage of design, concept sketch is an important way of design expression. This paper presents a conceptual sketch, as shown in Figure 1.

Figure 1. Design sketch of Hongkong and Shanghai Banking Corporation (Norman Foster)

2.2. 2D drawing
After the preliminary design scheme is determined, more and more indicators can be measured by specific figures in the scheme, and the two-dimensional expression of the design scheme becomes the main means. Using the characteristics of the computer, we can draw accurate two-dimensional drawings, which will become the main process. In the process of drawing, we will make detailed design and construction drawing design and other accurate drawings [8]. Designers will use the necessary digital design tools to carry out the detailed design and construction drawing design, such as AutoCAD, Su, 3D max. Compared with hand drawn drawings, 2D method is more efficient and fast. Design results can be copied without limitation. Through two-dimensional drawings, designers can draw the plan, elevation, section, structural details and so on. Through the two-dimensional way to express and design the three-dimensional space, we can carry all the design information, including the specific spatial relationship of the design scheme, the shape and style, the material used, the structural relationship, etc., which is mainly in the form of two-dimensional lines and text description [9]. The 2D drawing is shown in Figure 2.
2.3. Manual model
Making manual model is to verify the spatial relationship of the scheme. ITD is the design of space, which needs to verify the spatial relationship from a three-dimensional perspective. Therefore, designers will verify the effect of space through manual model or digital model. The design information carried by the manual model is mainly the relationship between geometry. Manual model is a miniature way of spatial expression, which makes up for the lack of two-dimensional expression to a certain extent. Through the manual model, we can facilitate designers to grasp the design effect of space to a certain extent. At the same time, the manual model also plays an auxiliary role in the display of space. Manual model can express the three-dimensional effect of space, which also has some limitations, for example, the miniature space expression can not truly simulate the human perspective [10]. This article lists some manual models, as shown in Figure 3.

![Figure 3. Manual model](image)

2.4. Digital model
Digital modeling technology promotes the development of 3D space representation. Through the digital 3D modeling software, designers can easily and freely build a 3D model of the design scheme, which can freely give a variety of materials and colors. At the same time, the digital model can observe the design results from multiple angles, which is the visual information of the three-dimensional geometry and its spatial relationship, material and color of the design scheme [11]. The computer 3D model of multi angle expression is shown in Figure 4.
3. Representation based on renderings

3.1. Advantages of computer effect drawing
Using two-dimensional images, we can complete the thinking space, which is a very difficult task. Computer rendering is the use of computer technology to model and render the indoor space, which will be close to the reality. With the popularity of computers, the proportion of professional drawing software development began to decrease. Traditional ITD renderings are various. Computer effect drawing can reduce the limitation of design intention and owner communication, which can show the most detailed structure and detail of ITD. Comparing Auto CAD with 3D MAX, Auto CAD is the first step of ITD, which is usually the plane structure of ITD. CAD drawing has a variety of tools, such as ruler tool, coordinate system, which can make the drawing more accurate. 3D Max is based on the DOS operating system of 3D Studio, which is developed into a 3D animation rendering and production software. Therefore, 3D Max is the most commonly used modeling, material, lighting and rendering software in the computer field.

3.2. Rendering results of renderings
ITD drawings can use computer drawing software to have a very accurate grasp of three-dimensional space. Computer rendering is a tool, it can match the designer's real thinking very well. Therefore, through the computer rendering, we can effectively improve the efficiency of drawing. Computer rendering can reproduce real space. Through the rendering effect, we can make the whole picture full of modern sense, which is better than the real scene. Computer graphics has a precise grasp of geometry, which can be closest to reality. Therefore, the rendering is easy to show the overall environment atmosphere, which can be recognized by customers. This paper lists the rendering results of an effect picture, as shown in Figure 5.

4. Conclusion
Through the renderings, we can reduce the communication barriers between ITD and customers, which will better express the requirements of customers and the ideas of designers. Through the creativity of ITD, we can lay the position of ITD, which can better express the effect picture.
References

[1] Chen Zhidong. Hand drawn architectural representation in computer context [J]. Chinese and foreign architecture, 2009, 10 (12): 64-65.

[2] Cui le. Type analysis of interior furniture in Guanzhong traditional dwellings [J]. Popular literature and art (Theory), 2019 (19): 101-102.

[3] Geng Xiaoyan. ITDers should not ignore hand painting [J]. Going abroad and employment (employment Edition), 2011, 18 (02): 120-121.

[4] Han Chaohui. Research on the combination of hand drawing and computer in ITD [J]. Friends of fine arts, 2009, 03 (23): 81-84.

[5] He Qingyan. Traditional Chinese color and its application in New Chinese style living room [J]. Journal of Southeast University, 2016 (12): 147-149.

[6] Huang Lei. Application of hand drawing in ITD [J]. Journal of Puyang Polytechnic, 2011, 05 (15): 119-121.

[7] Jiang Bo. Analysis of the relationship between hand drawing and computer drawing in environmental art design [J]. Journal of Jiamusi Institute of education, 2011, 02 (21): 104 - 107.

[8] Lu Jia, Chen Yu. On the integrated design of indoor and outdoor space in Architecture [J]. Architecture and environment, 2009 (4): 150-151.

[9] Wan Shaolong. Interior space design and separation [J]. Jiangxi building materials, 2018.04:53-54.

[10] Wang Lijun. Enlightenment of traditional color culture on modern ITD [J]. Furniture and interior decoration, 2019 (4): 26-27.

[11] Yang Shuguang. Application of traditional architectural space elements in modern ITD [J]. Beauty and times (first half of the month), 2018 (2): 56-59.