Research on Virtual Landscape Design Based on VR

Yin Yang 1,*

1Department of Art Design, Chongqing Aerospace Polytechnic, Chongqing, China, 400021

*Corresponding author E-mail: yymail002@cqepc.edu.cn

Abstract: In recent years, with the rapid development of China's urban landscape construction, people's aesthetic requirements for high-quality landscape art image are constantly improving. However, the so-called "high-quality" and "diversified" landscape construction process is aimless and unrestrained, which aggravates the confusion of landscape visual organization form, and makes the original harmonious and complete landscape form present fragmentary and heterogeneous landscape visual characteristics. In view of these problems, this paper puts forward the visualization research of VR virtual technology in landscape design under big data analysis. In this paper, according to the current situation of visualization in landscape design in China, 220 landscape design workers and landscape customer groups in China were selected as the survey objects, and the satisfaction of VR virtual technology was more than 85%, which played a role in promoting the visualization of landscape design. Through the comparative analysis of standardization, intelligence and visualization between traditional landscape design and modern landscape design, it is concluded that each index of modern landscape design is superior to traditional landscape design. Visualization research in landscape design provides technical support for VR virtual technology under data analysis.

Keywords: VR Virtual Technology, Big Data Analysis, Landscape Design, Landscape Visualization

1. Introduction

Concept of visualization has been widely recognized by all walks of life. As a new technology with rapid development, it has been widely used in various fields in some developed countries. Landscape visualization technology can directly display the achievements of various aspects and conduct more direct communication [1-3]. As an emerging technology, it has not attracted enough attention from all walks of life in recent years. Visualization technology is produced with the wide application of digital technology. It mainly includes the simulation and reproduction of landscape on the three-dimensional scale, that is, through computer graphics and image processing, the data is converted from two-dimensional form to three-dimensional, making the landscape vivid, specific and lifelike [4-5]. Visualization technology is widely used in society, such as urban planning, landscape design, natural
science and many other fields. Since the 1990s, the rapid development of digital technology represented by virtual reality has brought new development opportunities for digital landscape and digital landscape creation [6-7]. With the improvement of information transmission speed and the popularization of network application, people's digital survival degree is getting higher and higher. Under the heavy burden of network communication, information is no longer limited by media, network information interaction is more and more easy to operate, and information exchange is unprecedented prosperity [8-10]. Digital technology has brought great changes to many fields of production and life, and great changes have taken place in the landscape industry.

This paper analyzes the actual situation of visualization in landscape design in China, and points out that there are still some deficiencies in VR virtual technology investment in the development of visualization in landscape design. This paper establishes the visualization research of VR virtual technology in landscape design under big data analysis. In the research, according to the characteristics of landscape design in China, combined with VR virtual technology, the development strategy has played a positive impact on the visualization of landscape design in China, and effectively improved the competitiveness of landscape design in China. Through the investigation and analysis of the influence factors of visualization in landscape design by different groups of people, this paper believes that the development of landscape design visualization using VR virtual technology can promote the modernization of landscape design, and thus enhance the comprehensive strength of landscape design in China.

2. VR Virtual Technology and Visualization in Landscape Design

2.1 VR Virtual Technology
Virtual reality technology is a kind of computer simulation system to create virtual environment and experience virtual world. It is a multi-source information fusion, interactive 3D dynamic scene and entity behavior system. Through the interaction of computer software and hardware, it can simulate the visual, auditory and tactile effects in the real state, so as to make users feel "in it" from multi-dimensional and multi-dimensional, so as to realize the maximum simulation of the real scene.

Virtual reality and other related technologies have broken people's traditional linear space-time concept and one-way acceptance aesthetic view, expanded people's sensory range, and completely subverted people's cognitive attitude and way of the real world. The concept of virtual reality can be seen as the concept produced by the internalization of virtual reality technology. It can also be understood as a series of spiritual experience needs for people to pursue a kind of illusory experience, spiritual satisfaction and dream realization. Facing this new landscape form, people can seek pleasure in the process of experience, seek novelty in the process of participation, and seek change in the process of exploration, so as to strengthen their independent experience and real-time communication, and enhance their creative wisdom.

2.2 Visualization in Landscape Design
Visualization of landscape art is a systematic description of landscape form from the perspective of art, system, harmony and beauty. It is a complex structure of landscape, art and vision. It must be established under the framework of landscape system, emphasize the systematicness, relevance and expressiveness of landscape art expression, and artistically deal with the landscape environment system and space as well as various landscape image elements, coordinate the relationship between aesthetic subject and environmental space visual image, meet their visual demand for high-quality landscape image, and finally achieve the harmony and unity with regional environment Department. Through the use of computer technology, graphics and image processing technology, remote sensing and geographic information system technology, the use of scientific data calculation, and then directly express it vividly, provides an intuitive method for people to change the invisible into visible.
3. Investigation and Analysis on the Development of Visualization of VR Virtual Technology in Landscape Design

Research shows that more than 90% of landscape design at home and abroad takes VR virtual technology as the core factor of industry competitiveness. The application of VR virtual technology in landscape design began to increase in recent years, especially in the field of landscape design visualization. In the visual application of landscape design, VR virtual technology can imitate the visual, auditory and tactile effects of the real state, so that users can have the feeling of "being in it" from multi-dimensional and multi-dimensional, so as to achieve the maximum simulation effect for the real scene, and effectively improve the work efficiency and quality of landscape design.

In the research and analysis, this paper adopts two methods, namely questionnaire survey and interview survey. A total of 220 landscape designers and landscape clients were selected as the survey samples. In the process of investigation, this paper found that no matter landscape designers or landscape client groups, the application of VR virtual technology is involved in the visualization of landscape design. In this survey, we conducted a data survey on two groups of people. One group is landscape designer; the other group is landscape client group. The development of VR virtual technology in landscape design is analyzed. The results are shown in Table 1. Based on the survey results of the two groups, the application of VR virtual technology in landscape design visualization can promote the modernization of landscape design and enhance the competitiveness.

Table 1. investigation and Analysis on the development of VR virtual technology in landscape design

| Investigation items                      | Landscape designers (%) | Landscape customer group (%) |
|-----------------------------------------|-------------------------|-----------------------------|
| Play a promoting role                   | 91                      | 87                          |
| without effect                          | 2                       | 3                           |
| It doesn't work                         | 7                       | 10                          |
| It is suggested to increase VR virtual technology investment | 95                      | 91                          |

4. Discussion

4.1 Change of Landscape Design Concept

(1) The change of concept category
As one of the most concerned topics, landscape design has also experienced such an evolution process. The landscape is created by people's pursuit of spiritual realm after they are full and warm. The different landscape types in different periods reflect the spiritual needs of people in different social backgrounds. With the continuous expansion of landscape types, the development of landscape planning has experienced a process from local to overall, from qualitative to quantitative, from conventional to modern. The structural change of landscape is strictly planned within the scope of known and experienced natural laws, which can prevent the mistakes caused by intuition and instinct in human decision-making.

(2) The concept of sustainable development
In the 21st century, China is facing the major problems of sustainable development, especially the landscape industry. At the same time, our resources have been greatly damaged and polluted. We should look at history and natural systems from the perspective of sustainable development. Garden is built for people, balance and peace, so sustainable development is very important. Due to the continuous destruction of ecology, the ecological characteristics of landscape design have been promoted to an unprecedented height, because this is the art we rely on for survival. Landscape design is a kind of self-renewal landscape with the help of natural force.

(3) Infiltration of ecological concept
Rapid development of landscape ecology emphasizes the relationship between ecological process and landscape pattern. In the design process, the concept of "natural design" is infiltrated into various fields to make the design scheme more reasonable and better handle the relationship between man and nature. The traditional landscape first emphasizes the visual beauty, while the ecological landscape emphasizes the perfect combination of the ecological value and aesthetic value of the landscape to beautify the environment, maintain the ecological balance and reduce the deterioration of the ecological environment. Landscape specialty began to enter the field of maintaining natural processes and protecting other life, and its ultimate goal is to protect human beings themselves. On the one hand, artificial ecosystem is derived from the scientific research on various aspects of natural terrain; on the other hand, it is also a new ecological balance landscape that absorbs human beings and their activities. Landscape specialty constantly expands its activity space.

From the analysis results of Figure 1, it can be seen that the standardization, intellectualization and visualization of current landscape design are superior to traditional landscape design. Part of the landscape design planners in our country have more traditional ideas, it is difficult to give up the traditional ideas, the lack of attention on the investment of new technology, and do not give full play to the work efficiency of modern landscape design.

![Figure 1. comparison of standardization, intelligence and visualization between traditional landscape design and modern landscape design](image)

In order to further analyze the application of landscape design visualization in VR virtual technology, the results are shown in Figure 2. As can be seen from Figure 2, after VR virtual technology is put into use, the visual satisfaction of landscape design has increased year by year. After the introduction of VR virtual technology in landscape design visualization, the visual, auditory and tactile effects of users are improved, and the effect is also significantly improved. They think that VR virtual technology has more advantages than disadvantages in the development of landscape design visualization, and that VR virtual technology is very necessary.
4.2 Significance of VR Virtual Technology in Landscape Design Visualization

(1) Provide theoretical reference for contemporary landscape creation. Since the emergence of virtual reality, with the development of science and technology, the research on its philosophy is also deepening. The application scope of relevant theories is also relatively wide, involving literature, painting, film, industrial manufacturing, medical treatment, education and other fields, and the compatibility of the application process and technical practice is constantly improved. The application threshold of virtual reality technology is low, and it is easy to integrate into the work and life of most people. It subverts people's traditional concept of space-time and material, and produces new technical connotation. This provides a theoretical perspective for people to re-examine the new world composed of virtual and reality. The landscape creation under the new situation also needs to be supplemented under the guidance of new ideas and technologies.

(2) To meet the diverse needs of the public from agricultural society to industrial society and then to information society. In the process of development, people's mode of production and life has changed from ethnic minorities to mass standardization, and then to focus on personalized. In this process, the way of thinking and acceptance psychology gradually tends to be diversified, and the aesthetic mode is also changing to the direction of interaction and experience. It introduces the development process of structuralism, deconstruction and post structuralism to landscape and its related fields. Therefore, how to scientifically and reasonably introduce the concept and technology of virtual reality into landscape has become an urgent topic. By introducing the concept of virtual reality, we can guide the landscape designer to complete the transformation from "landscape designer" to "landscape user" in the creation process, so as to design the era landscape more in line with the diversified taste of the public.

(3) Under the background of big data, through the theoretical construction of virtual reality concept of landscape creation, combined with the philosophical origin and development motivation of virtual reality, the paper systematically combs the introduction mode of virtual reality concept in the landscape creation process, summarizes the guiding methods and technical models of landscape creation process based on virtual reality concept, as well as the tools of landscape space and form creation, which are information The visualization of the times landscape design provides a reference.
5. Conclusions
In the process of studying the development of visualization in landscape design in China, this paper takes the introduction of VR virtual technology into landscape design visualization as the main line of research. After research, this paper believes that VR virtual technology is an indispensable part of the development of visualization in landscape design. Through the investigation and analysis of different groups of people involved in landscape design, we get their application of VR virtual technology in landscape design Development survey results. VR virtual technology gives full play to the advantages of standardization, intelligence and visualization, and is widely used in various fields of landscape design. Through investigation and analysis, it is concluded that landscape design visualization can improve the standardization, intelligence and visualization advantages in the development of VR virtual technology, and can increase the competitiveness of landscape design. According to the survey results of this paper, in order to make full use of VR virtual technology, VR virtual technology must be effectively integrated with the actual situation of landscape design. Effectively analyze the development process of landscape design under VR virtual technology, attach importance to scientific introduction, formulate development strategies effectively, and ensure the effective development of landscape design work and steady improvement of efficiency. This research has achieved ideal results and made a contribution to the visualization research of VR virtual technology in landscape design under big data analysis.

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