Research on the Expression of Environmental Art Design Based on Virtual Technology

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Abstract
Virtual reality technology is a comprehensive information technology that transcends multimedia technology and architectural animation. In this paper, the author analyse the expression of environmental art design based on virtual technology. Virtual reality technology is introduced into modern environmental art design, and designers can process virtual reality system by computer. The above characteristics of virtual reality technology meet the needs of modern environmental art design. However, environmental design serves people by creating a variety of space environment design; therefore designers always need to put people's environmental requirements in the first place.

Keywords: Virtual reality, Environmental art design, Architectural planning, 3D simulation

1. INTRODUCTION

Virtual reality technology is beyond twenty-first Century multimedia technology and network technology, architectural animation is a professional comprehensive information technology. In a sense, it is the integration of the latest achievements of computer graphics, multimedia, artificial intelligence, network processing technology. As an important technical tool in the information age, the computer has been widely used in the field of environmental art design. The so-called computer aided environmental art design is refers to the designer through the computer technology design intent and eventually to the manner in which the image is to inform the customer, enabling customers to clearly understand the designer's intent and creative, it is a more direct and effective way of performance, usually known as computer architectural renderings can be divided into the building interior renderings, building outdoor renderings and landscape effect graph (Yongdong, 2005; González, 2015). Nature of environmental art design is macro, overall, system, so the concept of environmental art has not only: painting, sculpture, architecture, and other ornamental art combine to create a viewer’s outside of the art. But the connotation of it has done a broad extension, it includes the environmental behavior of the space environment to change the pure artistic environment works, its pure artistic behavior. It is based on people's subjective consciousness as the starting point, which is established in the beauty of the natural environment, which is guided by the spiritual pursuit of beauty. It also includes the combination of the spirit and the practical, the organization of various design elements, and the creation of the beauty of the human living environment (HOULDING, 1994; RAGHOTHAMA, 1998). The beauty of creation, is not necessarily to painting, sculpture and other ornamental art combined, it can free from outside of the context of natural beauty, and not from the body of the natural environment, it must rooted in a certain environment, become involved with organic symbiosis of environmental art. This fully reflects the macro, the overall grasp of the environmental art design, so as to establish the system of environmental art design research methods. In an increasingly humane, scientific and technological economy, the rapid development of political culture today, the growing demands for mankind (Daiyong, 2000; Qiang, 2004). Environment as the space of human existence, the art design of it must be in the premise of not destroying the sustainable development of the ecological system, the overall grasp of the macro. Is more and more closely related to human and environment, human existence and way of behavior in space on the broad extension, content also greatly enriched and deepened, environment problem is not only to meet the requirements of the people the most basic survival; but to solve the human survival and the overall requirements and improve the life quality; fully satisfy people outside environment in the physiological and psychological needs. Therefore, people's understanding of their own environment and the quality of life, as well as the environment of beautification, scientific, rational and perfect degree put forward higher requirements.

Understood from the perspective of subject and environment art design has been from the indoor space design and arts and crafts extends to cross disciplinary integrated system, it is a strong comprehensive and multidisciplinary, which includes natural science, humanities, and so on, is put into architecture, design, technology, art and technology combined with the overall artistic disciplines. From the ecological point of view, with the increasing of China's population and living space density, with the depletion of environmental resources, environmental pollution, land subsidence, sulfuric acid rain, heat island effect and other phenomena. The severe ecological crisis has caused people to reflect on the original living space, the life style and the value idea, which has aroused the awakening of the human ecological consciousness (Denghua, 2005; Liangfeng, 2006). In 1980s put forward the concept of sustainable development, the core of sustainable development is the
correct specification of the two basic relations: first, the relationship between man and nature, the relationship between the two is the relationship between people. From the designer's point of view of social responsibility, on the one hand, landscape architects, planners, architects of environmental art and design knowledge is not enough, on the other hand, due to the lack of a comprehensive knowledge of the environment art designer, resulting in us in the design process, the design of each link is independent, the monomer's. Resulting resources waste, unreasonable design, consider the overall week, integrity is not strong, design taste and cultural heritage of the low etc., especially ignoring the regional culture characteristics, focus only on the form, resulting in the design of great regret. Therefore, the use of systematic approach to design and study of environmental art is the historical responsibility of the builders of our generation. With the rapid development of science and technology in twentieth Century, the creation of environmental art is in an unprecedented new situation.

2. COMPUTER AIDED ENVIRONMENTAL ART DESIGN

2.1. Computer graphics technology

Computer aided design to develop a new field of design, computer graphics technology for the designer provides a new form of artistic expression, to shorten the distance between the designers’ creative and design work, it makes the design behavior of controllability and design method of the feasibility and design works can greatly enhance the production of. Computer graphics technology since the 60s of the 20th century so far, for the designer provides a machine hand, with the emergence of various graphics software and constantly updated, design creative designer can manifest itself through the computer. Not only can perform a variety of hand drawn effects, but also very difficult to achieve the visual effect of hand drawn, through the computer is not only convenient and quick to complete, but also more close to the reality of the scene. By computer 3D graphics software in order for model building, light setting, material editing. Finally, in perspective chart can be obtained a by computer calculation accurate perspective view, can also according to the customer request arbitrarily change the viewing angle, material, never with the angle of view to observe, examine, modify the work, greatly improves the authenticity of the design and predictability. According to statistics, a design work from the design concept to the completion of the work, the proportion of modification is about 70% or more. The computer’s convenience may simplify the tedious revision process. Due to the computer with the efficiency and accuracy of feature, the designer provides a kind of new art forms and manifestations in the space, so as to exploit the potential of creative designers, designers design force and the working efficiency is improved.
In the design of aesthetic and design thinking, the impact of the application of computer graphics technology is profound. The use of computer graphics design will gradually affect people's recognition of design, and then form a new design aesthetic consciousness and new design thinking mode. Such as computer aided environmental art design in the computer construction roaming animation, can more truly simulate the real scene, visitors can watch the space effect of the different angles, give a person a kind of be personally on the scene feeling. This kind of virtual space, which is so close to the real space, is difficult to be realized by other means of expression. Through the application of three-dimensional computer software technology, it creates a virtual world that does not exist, so that the creative imagination of designers can be realized. In his works, but also can make use of light and sound effects such as contrast the scene atmosphere, improve the vividness and authenticity of works. The application of computer graphics software technology makes the environment art expression space more extensive, the method is more abundant. This "real" virtual space of expression, as well as its aesthetic feeling, will have a subtle influence on people's aesthetic orientation.

Figure 3. Virtual space simulation

2.2. Practical application of 3ds MAX

Design course is an indispensable part of the teaching of environmental art design, and for the students who study the environment art design, 3ds MAX software is a very important tool for visual simulation design. 3ds MAX course is a very practical course, which involves rich content, clear hierarchy, wide range of applications. The course will be applied and environmental art 3ds MAX combined, will play a role. In rendering performance, whether it is indoor direction of environmental art design, environmental art design of the outdoor direction, 3ds MAX, powerful function and flexibility is the best choice to achieve creativity; in adjuvant application program design, the use of 3D Max software to create the needed space, more intuitive to multi angle observation perspective effect, flexible change materials and lighting effect. Compared with the traditional hand-painted save a lot of repeated work, relatively flexible, comprehensive, detailed and realistic expression of “idea”, makes it easy for the designers to continuous improvement and perfection.

In the process of design in practical engineering, virtual simulation design engineering case based on 3ds MAX, with the help of the virtual simulation design visualization, designers can greatly improve the work efficiency, reduce and avoid the design defects; in the process of communication with customer, 3D MAX renderings allows customers to browse to the project after the completion of the effect in advance so, to communicate with customers, in order to make the corresponding adjustment plan according to customer requirements, to reduce unnecessary economic loss due to design changes in the process of construction and construction; in exchange, 3D MAX can affect the auxiliary construction, and overcome the lack of construction drawings directly, can make construction personnel more visually see the structure, reduce the risk of construction error rework.
3. VALUE OF ART IN ENVIRONMENTAL ART DESIGN

3.1. Cultural value of environmental art design

Environmental art design is the history and culture, natural, economic and social comprehensive art, in order to fully reflect the value of environmental art, to elements of the mining, refining and finally the use of combination of thinking, system will be refined after the symbolic elements of accurate reflection and summary refined spiritual values. Only in the creation of cultural activities in order to become a true sense of the people; culture is nothing more than the human, the object of, is nothing more than the reality of symbolic activities and specific. This fully shows that the symbols in the environment through the mining, extraction, can be achieved through spatial language to convey the meaning and value of the purpose. Color can help us to recognize and identify the function of visual image, at the same time, the elements of different colors to match can also express different feelings, reflect the different spirit, culture, this is color of their own value. In ancient Egypt, the use of different colors have different symbolic meanings, such as yellow and gold symbol of the sun, with the green symbol of nature, with purple symbol of the earth, blue is the sacred color, etc.. Color culture of ancient Rome basically followed the ancient Greek building, dominated by white marble and brown granite, only in the decoration part of the frescoes and sculptures to blue, yellow, green, black and other colors.

3.2. Historical value and cultural inheritance

History is the development process of human thought and consciousness, is to grasp the progress of technology, and the morphology of human dwelling evolution process. The traditional historical value is that it can often wake up the memory of history and society deeply buried. Although this part of the memory may have been bleak, but it is a record of the same people have been living in the life of the world. We should protect the spiritual and cultural legacy of history, the protection of historical buildings, streets and places of different times, so that people in different times, events and places in the city left a mark. "Legacy" refers to the traditional spiritual and material elements retained, as part of the modern development, and to be recombination, so that the history can be extended. There are a large number of cultural heritages in the vast treasure house of human civilization, which is the historical and cultural heritage of the national classic.
intangible cultural heritage is a proposal for the protection of folk traditional culture, the oral and intangible heritage of mankind outstanding works. It represents a unique artistic achievement, a creative genius.

3.3. Principles of environmental art design

Environmental art design is to build the environment organized and structured approach for the purpose, through the environmental laws of form and form factors have an impact on the environment, then environmental design of the basic elements of the integration as a whole.

- **Proportion and scale:** The different proportion of the environment art performance is closely related to its functional content, technical condition and aesthetic point of view. The harmonious proportion relation can establish a kind of continuous visual perception between the whole and the part, it is an effective tool to improve the unity and coordination. The scale of the master reflects the number of designers in harmony on the scheduling capabilities.

- **Balance and stability:** in the visual arts, the equilibrium is the characteristic of any viewing object. For any element of the organization, whether it is the arrangement of the plane or space layout, must be in the visual to achieve a balance. Balance is involved in the construction of the various elements of the composition of the left and right, and the relative weight of the relationship between the processing, stability is involved in the overall structure of the relationship between the two.

- **Rhythm and rhythm:** whether it is in the plane art or space art, there is a regular repetition is the rhythm; the rhythm can make the elements of a simple relationship between them. The rhythm of the foundation is the rhythm, is the rhythm of the form of the deepening of the sentiment in the use of rhythm, the visual arts, rhythm, rhythm is the elements of any object into a system to repeat the attribute, and between these elements, with relationship could be recognized.

- **Unity and variety:** environmental art design is not simple designs, or the simple functions of the list, but the pursuit of a similar expression connotation and artistic image, also requires the designer to combine various elements and functions, to reach the overall harmony and unity. In various elements of the environment, there is a tension between order and disorder, unity and change, how to grasp the delicate and artistic tension, is the key to environmental art design.

4. VIRTUAL REALITY TECHNOLOGY AND ENVIRONMENTAL ART DESIGN

These characteristics make the operator can really enter into a computer-generated 3D interactive virtual environment, communicate and interact. Through the interaction between the participants and the simulation environment, and with the people themselves in contact with things the perceptual and cognitive ability, help inspire participants thinking. This personally on the scene immersive and interactive fun is the essential characteristics of virtual reality. The characteristics of virtual reality technology with modern environmental art design. The introduction of virtual reality technology in modern environmental art design, designers can handle systems with virtual reality technology through the computer, the virtual reality of the scene can be a real object model, can also be present The concrete model can not see the real life. For example: before the implementation, can be in an intuitive way and construction to discuss and report the design scheme and engineering model design, implementation units can be easily seen from the virtual scheme and model, put forward modifying opinions or options. This way not only novel, intuitive, and simple operation, each customer can feel their own; in addition, some of the complex construction planning, landscape design and interior design can also play a very good interactive demonstration. With the price of input and output devices to reduce and improve the quality of the video display, application software development and function powerful, easy to operate, the application of virtual reality technology has been popularized rapidly.

The advantage of application of virtual reality technology can also be reflected in the calculation of the project cost. It can strengthen the structure and material of the accuracy of budgeting, so as to avoid various problems due to budget error. For example: virtual city planning, a large complex of buildings and virtual indoor and outdoor decoration, can guide the design the structure of staff awareness, to avoid unnecessary losses due to material budget week in the design process. The virtual reality technology reflects the unique charm in the presentation of design scheme, design expression and customer communication, with more interactive than traditional ways. Customers can enter the virtual person in the room the relationship between the demonstration study, the specific design parts of each and every design element, understand the whole virtual reality space The function of using the process and function of usage, so that customers can show very truly feel the need. At the same time, customers can also discuss various problems, timely communication in design and designers, collaboration, collaborative communication

From the end of the 1980s China "virtual reality" concept was formally put forward to now, has got great development. Compared with the traditional environmental art design expression thinking, the breakthrough of the traditional dimension limits the virtual environment, is a comprehensive design expression system. It not only to limit the transmission channel and give up a large number of design information rich, can also break the
shackles of two-dimensional gauge form. Theoretically, almost any type of environmental spatial data can be displayed in the virtual environment design art multi-dimensional. The development direction of virtual reality is very clear: faster, higher quality graphics; cheaper, design input the output device more perfect; more processing power. These improvements will affect the application of virtual reality in the field of environmental art and design, will Further promote the design methods of environmental art, environment and nature of environmental art design innovation, the status of environmental artist in environmental design will also be re discussed. When the expression of potential environmental artists who explore the virtual reality, they will be more and more good at the performance of the experience of the complexity and subtlety of the comprehensive feel the feelings of the rich Lenovo, the tools and techniques of virtual reality will be developed.

Figure 6. Virtual Reality Landscape Design

5. CONCLUSIONS

At present, the virtual reality technology in theory and application have been great development, but the technology is not perfect, the application in the field of environmental art and design is still in its infancy. At the same time, wide application of virtual reality in the field of environmental art and design purposes is to fully reflect the environmental art design to meet the needs of people and human activities the environmental design. Designers always need to be on the environment, including two aspects of substance use and spirit, in the first place of the design. The design process of a multitude of things contradiction perplexing problems, designers need to realize that the environment is introduced in the design of virtual reality technology to is to serve the people, in order to meet the needs of interpersonal communication, therefore, should avoid and ignore the customer application technology center Perception tendency.

References


