The Application of Virtual Reality in Art Design: A New Approach

CHEN Dalei[1, a]

[1] School of Art, Henan Institute of Education, Zhengzhou 450046,China

[a] chdalei@126.com

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Abstract. As virtual reality technology matures and popular, it is gradually applied in art design. Virtual reality is constructed by high-tech means of the artificial environment. How best to achieve the user in the virtual world of realistic experience, has become a new research hotspot. In view of the present virtual reality technology and virtual aesthetics can improve the effect of the simulation are faced with the problem, in this paper, the study of virtual reality in art and design. Put forward the integration of technology and art technique can improve the virtual reality visual properties and the degree of match user requirements, improve the effect of the simulation.

Introduction

In recent years, along with the development of network and multimedia technology, virtual reality technology matures and popularization, the virtual reality technology is gradually applied in art design [1]. Virtual reality, art design is accompanied by virtual reality technology and the popularization of computer application technology and related form of audio-visual design new topic, it used the computer virtual reality technology and integrate images, sound, animation, video and other multimedia means, through the creation and performance of virtual objects with virtual space, information is a new way to display and form, make the information more intuitive, efficient delivery. As people gradually understand and attention to this kind of art and design, its application and development are also more and more widely and rapidly [2-3]. Based on the implementation and application of virtual reality in art and design as the research content, this paper expounds the concept of virtual reality display design, characteristic, expression and basic types, this paper discusses the virtual reality display design should follow the spread of the design principle and the design of practical significance.

Virtual reality is constructed by high-tech means of the artificial environment. How best to achieve the user in the virtual world of realistic experience, has become a new research hotspot. In view of the present virtual reality technology and virtual aesthetics can improve the effect of the simulation are faced with the problem, in this paper, the study of virtual reality in art and design. It inherited virtual aesthetics research idea, that is, based on the relationship between subject and object, pay attention to the combination of art and technology; In addition to fit the subject requirements and the object function is to improve can improve the effect of the simulation, it is a new way of thinking.

In this article, through analysis of its application in the field of art and design, discussing the application of the different value and significance. This paper tries to use the thinking of art design enhance the user experience of reality. Not only beneficial to meet the needs of the people production and living of virtual simulation, has certain practical significance; But also enrich the theory of art and design research, has certain theoretical value. And panoramic view of 3D modeling of virtual reality and virtual reality these two design categories for specific studies, this paper expounds the design principle, application technology and design content, specific expounded its artistic connotation and artistic characteristics. Finally, virtual reality design problems and development direction were discussed and prospected.

Virtual reality technology overview

Virtual reality technology, refers to the computer hardware and software, and various sensors (such as high performance computer image generation system, and data, data glove, etc.) of support in the form of virtual simulation for the visitors to create a real-time changes reflect the entity object and interaction of 3D virtual world, and through the helmet mounted display (HMD), data gloves and other auxiliary sensing device, the user can in the visual, auditory and tactile sensing channel natural interaction with virtual world, the architecture is shown in figure 1. The concept of virtual reality can be summarized as simply, using computer to generate a simulation environment, through a variety of sensing equipment users - investment. To the environment, realize the user and the environment of natural interaction technology directly [4-6].

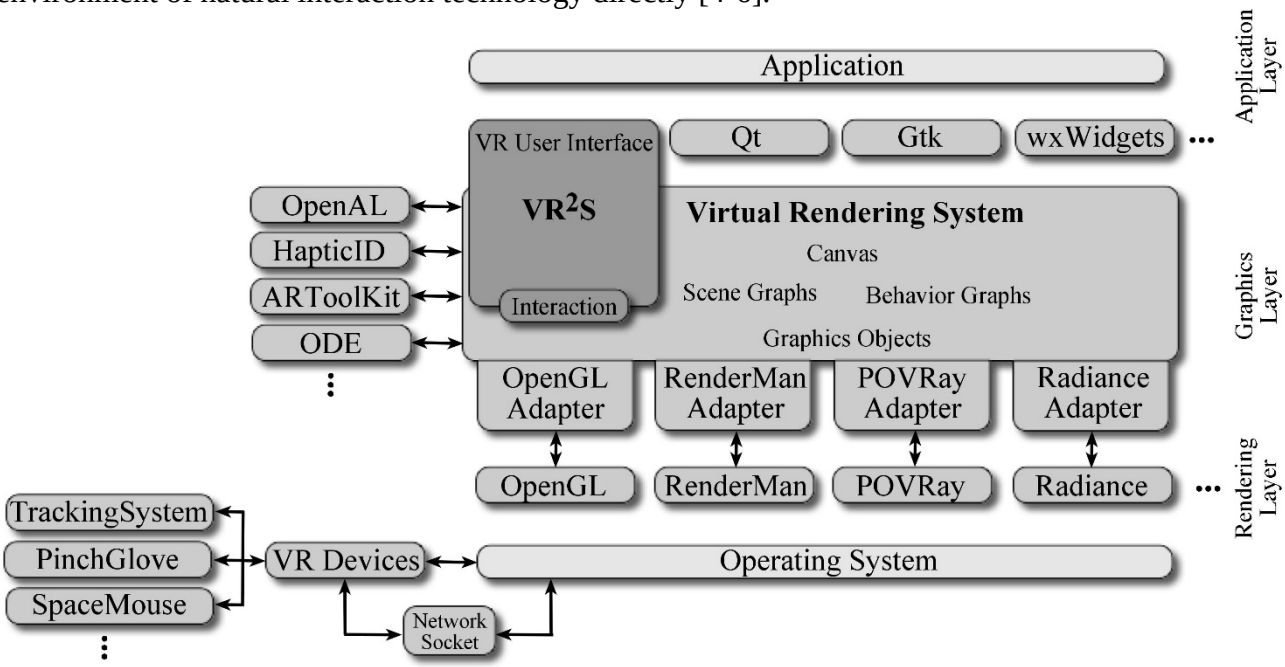

Figure 1.Generic virtual reality software systems architecture

According to different user participation form and the degree of immersion can be various types of virtual reality technology is divided into the following four types:

The immersive virtual reality. The immersive virtual reality also calls the desktop virtual reality, the immersive virtual reality simulation is to use a personal computer and the low-level workstation, computer screen as the user to observe the virtual realm of a window. Through a variety of input devices to realize fully interact with virtual reality world, through the computer screen to observe 360 degrees within the scope of the virtual realm, and manipulation of the object.

Immersive virtual reality. Immersive virtual reality system can provide a sense of complete immersion experience, as shown in figure 2. It uses the low monitors or other equipment, the participants of the visual, auditory and other sensory closed up, and to provide a virtual sense of space by digital technology, and use the position tracking device, data gloves and other manual input devices, voice and allows participants to produce immersive.

Augmented reality of virtual reality. Augmented reality of virtual reality is not only the use of virtual reality technology to simulate the real world, the real world, and to take advantage of it to enhance participants feel about real environment, which is in the augmented reality can't perceive or inconvenient.

Distributed virtual reality. Distributed virtual reality (Distributed VR, DvR), is a kind of virtual reality system based on network information transmission, is an online virtual world, are located in different physical location of multiple users or multiple virtual world are connected through the network of sharing information system.

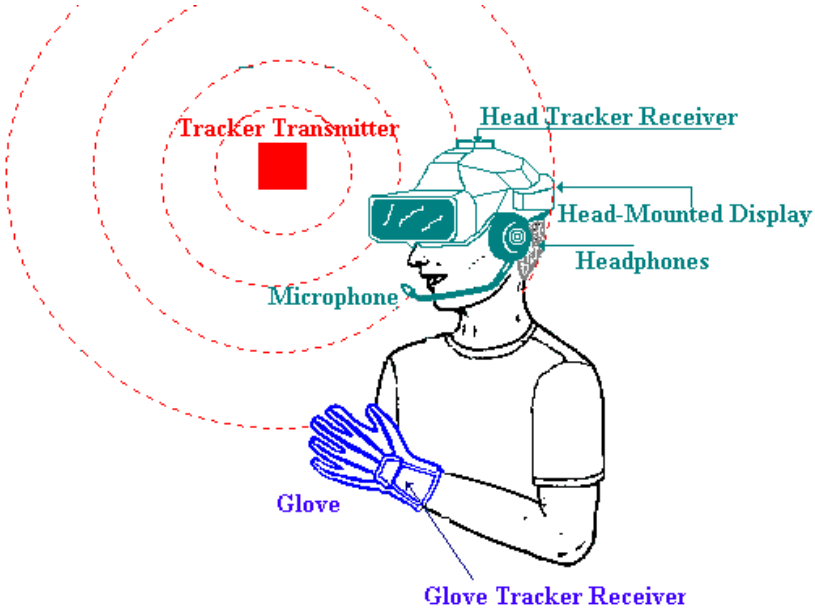

Figure 2. Immersive virtual reality hardware structure

The virtual reality on art design based on 3D modeling

Based on 3D modeling of the virtual reality of art design is based on the geometric design of virtual reality technology is implemented, the geometric type virtual reality, it is to point to by 3D scene and 3D object model, usually with the help of a professional modeling software (such as 3ds Max, MAYA, etc.) to complete, this kind of art design method to compare the performance of the real scenes and objects in the real world, at the same time can also generate animation [7-8]. Show the effect of virtual reality is rich, powerful, interactive is strong.

This design principle is according to the requirements of the show, through a variety of modeling software, with geometrical entity to construct a virtual environment, and if it meets the requirements of virtual reality technology, map, rendering process, the current mainstream 3 d modeling software such as 3 ds Max, Maya, and so on can be scenes and objects modeling, texturing and rendering. After import virtual reality software realize the interactive operation, the application of multimedia information integration and output. On the whole, this kind of art and design based on virtual reality principle and main link as shown in figure 3.

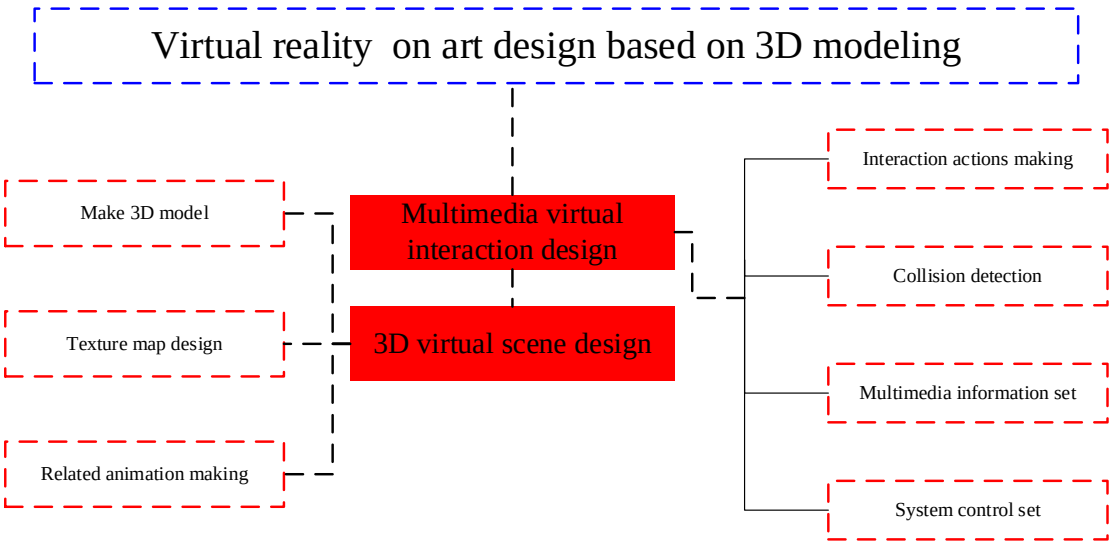

Figure 3. The phase of virtual reality on art design based on 3D modeling

3D modeling of virtual reality and art design to realize the need for multiple links of design and production, from design to achieve the specific process and sudden, usually has the following steps:

1) Three-dimensional modeling: the designer according to display design purposes, using CAD, 3ds Max, Maya, VRML several modeling software to design several dimensions such as digital model, and relevant optimization.

(2) Making texture: to design a good 3 d model for texture material or map production, lighting and set the scene, according to the needs of different related parameter adjustment.

(3) Animation: making the corresponding animation camera and set the scene.

(4) Interaction: the completion of the above design, import the VR software for editing, and realize tile operation, add multimedia information.

(5) Output release: virtual design work is complete, choose the type of release for output, into practical application.

The implication of virtual reality technology in art design

From the perspective of art and design research of virtual reality has two characteristics: one is attaches great importance to the user, to person's demand as the starting point and the foothold, enhance the sense of reality depends on the increase the degree of user requirements and the virtual world attribute matching; The second is the value of the object with the rule of art, combining art and technology to solve the problem. In this paper, in the previous two chapters, respectively is human factors, virtual reality and art design elements (object) is analyzed, a practical example, this chapter will combine the two, discuss virtual reality art design creation of specific methods and procedures, and verify this idea can be in a certain technical and cost constraints to improve the effect of the simulation.

For art and design, virtual reality technology is a relatively new technology, there are in the process of actual use of the high cost, difficult technology, and requires a lot of related technical support, especially the problems such as software development, but from the point of its prospects for development, virtual reality technology will be the future show an important direction to the development of the high-tech sector, as shown in figure 4.

Figure 4.Virtual reality technology application cases

In art and design, how to make the visitors can really "see" the experience of some sort of an action, has always been the difficulty of the design. Although modern exhibition can use other techniques to create a certain situation, but also can't really let the audience begin, or in certain

motions to watch certain scenes, and virtual reality technology provides the possibility. Many technology abroad museums are using virtual reality technology to let the audience experience to experience in daily life activities. In recent years, domestic also began to develop and introduce the technology, and applied to the art design.

Conclusion

With the popularity of computer, the design means of space and got great development. The emergence of the Internet makes us art design workers have new responsibility and creative space. The future art designers should pay more attention to new areas of information dissemination, because throughout the design development and evolution, we is not hard to find, the relationship between design and technology presents the trend of more and more closely. Due to the rapid development of digital technology and computer graphics, virtual reality have been able to take on the role of the art design of the powerhouse. At the same time, it will drive the art design concept innovation, took art design to the new field of new digital virtual space. Means of virtual reality designers can take advantage of the advanced, more reasonable arrangement of the relationship between human and nature, between human beings and planning out a more reasonable way of information transmission. In the present of coexistence of traditional and modern perfect tradition, expand new areas will be a way for art design road.

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