Research on Virtual Reality Interactive Design of Alien Beast Images in the Classic of Mountains and Rivers

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Abstract: *The Classic of Mountains and Rivers is a geographical masterpiece of ancient myths and legends in China in the pre-Qin period. There are five volumes in The Classic of Mountains, which has unique significance and research value with a large number of images of supernatural beings and alien beasts. The historical content and image value contained in The Classic of Mountains and Rivers has practical significance for studying the traditional cultural heritage of China. With the development of information and digital technology, the information age is coming. Emerging science and technology have been applied to the inheritance and protection of traditional culture, and virtual reality technology is one of the important ways. With its unique sense of immersion and interaction, virtual reality technology can give full play to the essence of traditional culture, and its unique advantages also provide a better display and a dissemination way for the inheritance of China's ancient excellent cultural heritage and national wisdom. In this paper, the alien beast images in The Classic of Mountains and Rivers are taken as the main research subject, some of them are selected to summarize the morphological characteristics, and the digital painting technology is used to innovate, and the alien beast shapes in The Classic of Mountains and Rivers are created. Finally, the interactive alien beast images are displayed and transmitted dynamically by combining virtual reality technology, which is of great significance and value for the popularization and development of traditional culture.*

Keywords: *The Classic of Mountains and Rivers, Alien beast images, Cultural heritage, Virtual reality, Interactive design*

After the birth of digital media, digital technology makes the entity of traditional culture communication no longer important, and virtual image become the focus of communication. Virtual reality technology, with its unique immersion and interactivity, can give full play to the essence of traditional culture. Therefore, the author studies and sums up the literature characteristics of the images of exotic animals in The Classic of Mountains and Rivers in different periods, and combines these characteristics to recreate the images of exotic animals, and finally shows them interactively by combining virtual reality technology, which is of great significance and value for the popularization and development of traditional culture.

1. Reference and setting of alien beast image and role in *The Classic of Mountains and Rivers*

1.1. Alien beast image elements refining and role reference

Most of the alien beast images depicted in *The Classic of Mountains and Rivers* gradually evolved by ancient people because since their ignorance of the world, their blind worship of nature, and their religious beliefs. After researching, it is found that most alien beast images in the ancient picture of *The Classic of Mountains and Rivers* are based on real alien beasts, and then processed, refined, deformed, and alienated to form new strange alien beast images. When creating the nine-tailed fox, the author first refers to the scripture describing the nine-tailed fox in *The Classic of Mountains and Rivers of the South Mountains*[1]and compares the shapes of the nine-tailed fox in the picture books of *The Classic of Mountains and Rivers* in different periods. What they have in common is that they are all drawn in the form of white drawings, and the lines are smooth and concise, which can intuitively and accurately express the image characteristics of the nine-tailed fox[2]. Modern materials refer to a large number of real-life photos of foxes and some picture books by contemporary illustrators, and finally create the design works with the ancient charm of China (see Figure 1). This traditional style of expression and

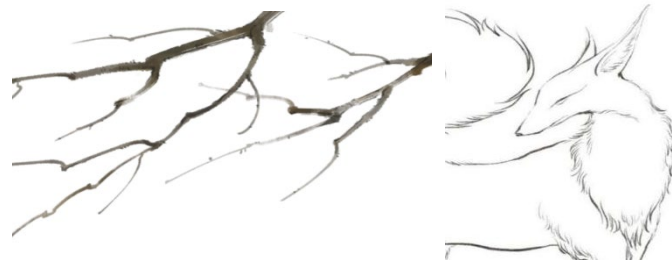the addition of oriental elements laid the design direction of creation.

Figure 1: Image design of a nine-tailed fox (drawn by the author)

2. Line Shape Shaping and Color Setting of Alien Image

I hope the whole work can show the simplicity and artistic conception of *The Classic of Mountains and Rivers*, and pursue the classical and elegant painting style to better show the oriental aesthetics. In the process of redesigning the digital drawing of exotic alien beasts, the lines and colors refer to the traditional painting method of China and are combined with modern technology. The molding of lines is mainly influenced by the usage of bone pens in China's traditional painting[3]. The lines are outlined with the ink.

Figure 2: Partial drawing line draft (drawn by the author)

Gou Xianbi brush in Photoshop, and the flowing feeling and artistic conception of the picture are increased by the virtual and real relationship of lines. The drawn lines pursue the combination of rigidity and softness, vivid charm, and reflect the connotation of traditional culture and oriental charm (Figure 2).

In the later virtual reality scene, the alien beast images are displayed in a simple picture scroll. Considering that the the earlier alien alien beast images are coordinated with the colors and light and shadow in the later virtual reality scene, the overall warm color style can make the scene brighter and conform to the traditional cultural artistic conception, so the color orientation of the whole work is set to warm color. With the proper matching of cool color with the element features such as object attributes, the alien beast images are drawn with a uniform warm color background.

In the color setting, it imitates and draws lessons from the color principle of China's traditional painting [4]. Based on Chinese traditional color, it refers to the color of Chinese painting in traditional painting and digital color style of Fahai Temple murals [5]. It selects the corresponding color in the Photoshop panel and makes appropriate adjustments according to the picture to set the color of antique style, cooperates with traditional painting coloring techniques, and integrates the understanding of traditional culture and subjective emotional factors of personal creation. The overall stylized basic settings of different saturations, color systems, and hues are made, and the traditional color features such as beauty, harmony, and low saturation are emphasized in the color setting. Finally, the setting and collocation of colors are used to create a simple, elegant, and classical picture atmosphere with oriental artistic conception and traditional painting (see Figure 3).
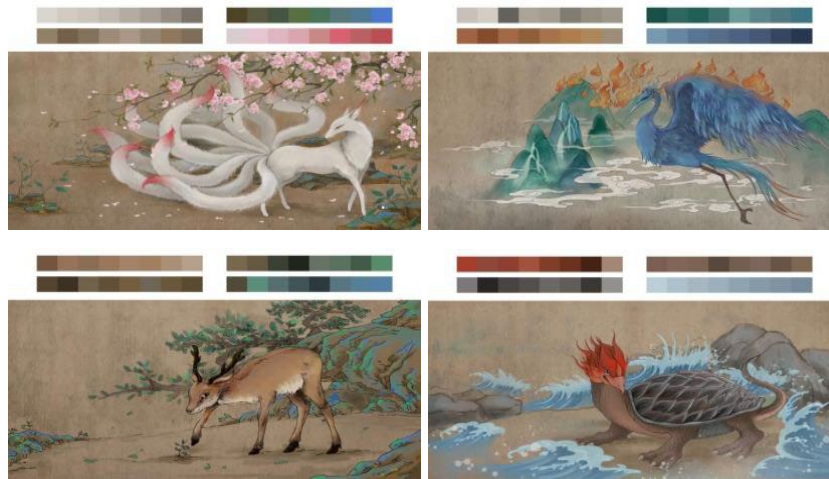
Figure 3: Color style setting of alien beast images (self-made by the author)

3. Virtual reality interactive display and the immersion design of The Classic of Mountains and RiversAlien Beasts Volume

3.1. Interactive display

After redesigning the alien beast image, the author chooses to combine it with virtual reality interactive technology for further display and experience, and realizes the design of a virtual reality VR interactive system for displaying the alien beast image of *The Classic of Mountains and Rivers* with wearable devices as the carrier. The unique intuition, immersion, and interactivity of virtual reality can better display the designed image, and bring the audience a visual experience different from the simple digital illustration[6].

The author takes the ancient book "*The Classic of Mountains and Rivers*" as the creative theme, draws lessons from traditional painting art forms and expression techniques[7], and uses digital technology to create images of exotic alien beasts, which are displayed in the form of scrolls in the interactive virtual reality work "The Classic of Mountains and Rivers Alien Beasts Volume". The audience can watch the picture scroll in a three-dimensional virtual reality scene, look around the surrounding virtual scene in 360 degrees and move in a small range in front of the picture scroll. Click the interactive button corresponding to the alien beast image, and watch the dynamic display of the alien beast image in the picture scroll and the narration of scriptures and popular science stories. Each scene is matched with the corresponding classical music sound effects, and the overall atmosphere creates an environment with certain visual, auditory, and tactile abilities. The works mainly use Photoshop, After Effects, Premiere, Unity3D, and other design software and coding languages as technical means. For the purpose of experience, display, and appreciation, the works re-create the alien beast images, dynamically design the alien beast images, design the interactive interface (see Figure 4), construct the three-dimensional virtual reality scene and realize the interactive program, and make interactive viewing from the first perspective of the characters. Moreover, it cooperates with the shaping of the scene atmosphere, the display form of interactive picture scroll[8], the dynamic demonstration of exotic alien beast shapes, and the telling of popular science stories, and strengthens the immersion and substitution of works, thus causing the audience's emotional resonance and bringing immersive sensory experience.

Figure 4: Interactive interface (self-made by the author)

3.2. Creation of scene atmosphere

The scene is an important space-time environment for unfolding the content of the works, and it is

also an important element for setting off the emotional tone and laying the artistic style. In the setting and preparation of the previous works, the author considers various ways of realizing the combination of alien beast images and virtual reality technology[9]. If these alien beast images are all converted into three-dimensional models, the traditional style and artistry embodied in them will be lost. Therefore, it is not suitable for making three-dimensional alien beast images for display. If the alien beast image is displayed on the wall as a mural in a room, it is relatively closed and monotonous. Hence, the idea of displaying the images of exotic alien beasts in a three-dimensional scene in the form of scrolls has emerged. In order to better experience and feel the design works of exotic alien beasts, the author has set up an open three-dimensional environment where people can look around 360 degrees. A scroll with ancient charm is set in the center of the scene to display the designed images of exotic alien beasts, forming a scene setting integrating experience and appreciation. Combined with clickable interactive design and light and shadow atmosphere shaping, the user's main focus is concentrated in the main scroll, and the whole scene is created.
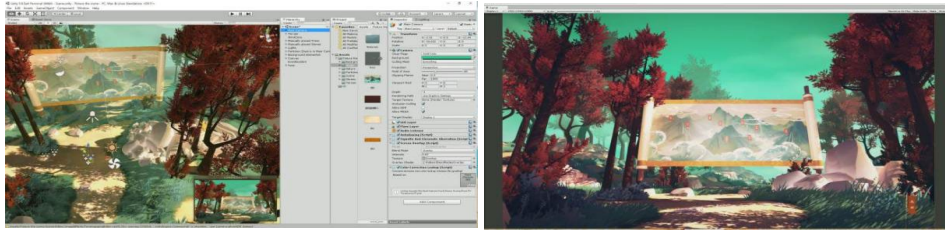

Figure 5: Screenshot of 5:Unity3D scene production (made by the author)

The author made a three-dimensional scene with artistic effect in Unity3D (see Figure 5), mainly selected natural scenery materials, cooperated with thin cloud and mist special effects, adjusted the parameters such as materials, light and shadow, ambient light, etc., and finally rendered and baked the scene with ancient charm and fantasy flavor. Several rays of sunlight were projected on the scroll, and the lighting conditions in the scene atmosphere were particularly important, and its rendering ability could bring uniform tones to the picture. These treatments can effectively adjust the atmosphere of the whole scene. In terms of sound effects, traditional classical music and some background sound effects are matched, and the narration of the background story is used to better enhance the atmosphere of the work, make the atmosphere of the scene fuller and form a stronger appeal[10].

Figure 6: Experience of the virtual reality work "The Classic of Mountains and Rivers Alien Beasts Volume" (taken by the author)

4. Conclusion

"The Classic of Mountains and Rivers Alien Beasts Volume" finally presents an interactive experience mode of virtual reality, with the HTC Vive head-mounted device using Steam VR technology as the carrier. It connects the PC to run and debug, and experiences and feels the virtual world in the PC through the head-mounted display and handheld devices (see Figure 6). Combined with the virtual reality interactive technology, the dynamic dissemination and popular science display of the redesigned animal image in *The Classic of Mountains and Rivers* are realized [11]. Through theoretical research and creative practice, it is hoped that there will be more combinations of virtual reality technology in the protection and digitalization of cultural heritage in the future. It is to better inherit and spread the excellent culture of China. In this general trend, the functionality of VR will be expanded and applied.

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