Talking about the Application of VR Technology in Art Derivative Cultural Creation

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Abstract. In the context of the epoch-making development of science and the continuous improvement of the social system, VR technology has quietly emerged. With the rapid development of the Internet industry, various industries are also adapting to receive the collisions brought by new fields. VR is one example. In recent years, art-derived cultural creation has continued to expand. In order to improve the integrity and creativity of cultural and creative product design, some industries use VR technology to realize product design from a full perspective, so as to have a more comprehensive and in-depth understanding of the cultural and historical sense of the product. Through the analysis and discussion of the application status of VR technology, the integration of VR technology and the design of art-derived cultural and creative products will finally show the cultural and creative products in the form of three-dimensional models, which has certain guidance for the inheritance and development of culture significance.

Keywords: VR Technology, Art Field, Cultural Creation, VR Application

1. Introduction

With the development of traditional art and culture, people’s requirements continue to increase. In order to enrich their own cultural system, more and more people have gradually gained new understanding and cognition of cultural and creative products. The era of mobile Internet intelligent manufacturing, nothing is impossible. With the integration of high-end technology, VR virtual reality technology has gradually become known to people, and the idea of combining VR with art, culture and creativity has been accepted and implemented more and more by people. The design of cultural and creative products frequently appears in our lives [1]. What happened in recent years is beyond our previous impressions. Especially in the high-tech industry, more and more high-tech technologies are integrated into people's lives. For cultural creation, it is an interpretation of my country's historical culture and the inheritance of culture. VR technology, we have also become virtual and reality technology. Through its combination with modern cultural and creative art, most people can feel the collision of ancient and modern cultural products and the integration of modern life [2]. VR technology can provide the exposure and design inspiration of cultural and creative design, and also give the public more channels to understand the nature of art. The vigorous development of VR
technology also provides a broader platform for viewing, giving a better place for art, culture and creativity.

The combination of VR and cultural and creative arts is not as simple as we think, it is a combination of deep-seated concepts and traditional methods. Wang Tongju believes that in essence, virtual reality technology is an advanced human-computer interaction technology [2], and VR technology can present greater possibilities as an original art form. In real life, there are some examples of the integration of cultural creation and VR. Zhang yi believes that by allowing viewers to communicate with virtual objects [3], we can not be constrained by space or even time, so there is a kind of time and space. The illusion of superposition [4], the use of "art exhibition" here may not be appropriate. Of course, some people think that this is only a physical support in the context of traditional cultural creation [5-6], and there is no deep expressive meaning. But we know that VR mainly acts on the channels of information dissemination. But although it is virtual, it can give people the realism of art [7]. The potential value of traditional art works is its cultural significance. We deepen the intuitive experience of cultural and creative products in a profound visual experience, which is conducive to the true spread of culture, and immersion in reality and works of art. Fiona believes that the goal of immersive virtual environments (VEs) is to allow users to experience a computer-generated world [8], as if it were real-to create a sense of presence in the user’s mind, or "be there" [9-10].Virtual reality applications are making valuable contributions to the field of product realization. This article evaluates the integration of virtual reality technology and cultural creativity to support the important role of VR in real art and cultural creativity.

From the past scientific progress, we know that every technology and innovation brings new opportunities and challenges. From past experience, each technology can be considered as transitional, and there will be a better technology experience later. We know that the higher the dimensionality of the experience of anything, the higher the corresponding experience we get, such as our common texts, sounds, etc. The texts want to render and engrave a certain scene, which will give people a deep impression, and the writing style is extremely demanding. High, but the sound is different, its dimension is higher than text, and higher, such as video, can express the scene more quickly and intuitively. This kind of immersion makes VR really come alive, which is why the VR industry is suddenly so hot. For VR, it is difficult to say whether it is scientific instruments or some other things to produce virtual experiences, but it is precisely this kind of virtual experience that complements traditional art and cultural creation and brings positive effects. With the gradual maturity of VR technology, it will inevitably make art present a more vibrant ideology in creation and expression.

2 Method

2.1. VR Technology
VR, which is what we often call virtual reality technology, had such an early concept in the 1920s. To use computers and some science and technology to make people produce a kind of virtual scene senses, and there are virtual sensory enjoyment in time and space. We already know the origin of VR technology from the above is actually very early, so in what way is it realized? In fact, the use of our eyes will cause confusion. When two cameras are constantly taking two photos, the two images are overlapped. When we think it is a photo, what we see is one In-depth information. There is a phase difference between the left eye and the right eye, so there will be an overlapping area between the two eyes. Of course, the left eye can see more left or right than the right eye, so they will have one difference in the position of the image, when they overlap, we see that there is a depth of field. In fact, this principle is also applied to other products, which are also related to VR.

2.2. VR Application
Virtual reality is currently a new thing for the masses. In some art exhibition halls, the combination of VR and art, culture and creativity is a new experience for the people. They are immersed in it and feel the illusory reality. The artwork in reality gives people an illusory historical experience. Under the
effect of VR, they can explain themselves more comprehensively, and even interact with the experiencer in time and space, which greatly improves their potential in the market. This virtual technology also brings opportunities and challenges in its own field. For now, the integration of art works and virtual reality technology breaks the traditional way of online browsing. The biggest feature or benefit is that it gives people an immersive feeling. Some scenes are experienced virtual, but they are so real. In this way, there has been a significant improvement in the degree of interaction or recognition between the public and artworks. For now, it has been applied in many fields, such as the entertainment field. Some game companies have already realized the prospects of the industry. Some 3D games have been launched. In the field of military aerospace, virtual battlefield exercises are the focus of more and more countries. In the medical field, in the field of anatomy, pathology and other fields, virtual operation rehearsal increases the probability of success of the operation. In the field of art, static things can be transformed into dynamic ones, which improves the user experience. In the field of daily education, the virtual learning environment allows students to experience more interesting aspects than traditional learning methods. It also plays a huge role in many fields such as cultural heritage, victory fields, etc., in various fields Flourish.

2.3. Art and Cultural Creation

Cultural and creative products refer to high value-added products produced through the development and application of intellectual property rights by relying on existing culture, using scientific and technological means to show them in a novel and unique appearance. Generally, a characteristic ip will be its foundation, leaving unlimited creativity and imagination. Secondly, his characteristic is to integrate with the contemporary, blend into life, and resonate with others. Finally, the unique details are dealt with as people remember a logo of a certain product.

2.4. Collision of VR and Art, Culture and Creativity

The emergence of VR technology is a positive attempt for artists or artworks. Whether it is a new display of previous art works or enlightenment concepts for emerging works, it is undeniable that the application of VR technology, whether for artists or the public, is a new opportunity, and art will have greater development. Space, the experiencer will have a better sensory experience. The development of cultural creative products has the following characteristics: high added value, high knowledge, strong integration, low resource consumption, and great market potential. VR technology is a relatively advanced and experiential means of information dissemination. When it intervenes in the field of cultural and creative product design, it will inevitably promote the upgrading of cultural communication structure, which is also an inevitable trend of the development of the times. In today's competitive market of cultural soft power, the development of new forms of cultural and creative industries is an important driving force. This article focuses on the possibility of VR technology in the development and application of cultural and creative products and the integration mode of the two, and provides more forward-looking ideas.

3. Experiment

According to the foregoing, in this chapter, we will apply VR technology to specific art and cultural creation. Through the intelligent combination of VR and cultural creation and comparative experiments with traditional cultural creation, we will summarize and analyze the integration of VR technology in art. The advantages of cultural creation over applications.

3.1. Selection of Experimental Subjects

Taking our province as an example, we selected two different art industries as the survey subjects, and divided them into experimental group and control group by applying VR technology and traditional art-derived methods. One month was used as the experimental test period.

3.2. Experimental Test Indicators
Within this month, we conducted a questionnaire survey on the cultural and creative industries and the public by means of random interviews, and combined the feedback to compare and analyze the effects of the two sets of experimental data.

3.3. Processing of Experimental Data

We use the Bayesian formula of statistics to verify. Its significance is that when you can’t accurately know the nature of a thing, you can estimate and judge the occurrence of a known transaction by relying on the probability or how much of the event related to the nature of the thing. Essential probability. It is expressed in mathematical language: the more events that support a certain attribute occur, the greater the possibility that the attribute will be established, the formula is as follows:

\[
P(A_i | B) = \frac{P(B | A_i) P(A_i)}{\sum_j P(B | A_j) P(A_j)}
\] (1)

Group parameters are also a good way to experiment. Group mean and group variance. (Population mean) reflects the overall status of the group, defined as follows:

\[
\mu = \frac{1}{N} \sum_{i=0}^{N} x_i
\] (2)

Correlation is not a deterministic relationship. Correlation coefficient is a measure of the degree of linearity between variables. Due to different research objects, the correlation coefficient is defined as follows:

\[
r(X,Y) = \frac{\text{Cov}(X,Y)}{\sqrt{\text{Var}[X]\text{Var}[Y]}}
\] (3)

4. Result

4.1. Two Groups of People Are Interested in the Application of VR in Art-Derived Cultural Creation

In the questionnaire survey, we understand the public’s degree of interest in VR in art and cultural creation. According to survey data, 11% of the people in the experimental group said they were not interested in VR at all, and 47% of the people said they were more interested in VR. 32% of the people said they were very interested, and 10% of the people said they were unclear. In the control group, 22% of the people said they were not interested in VR at all, while only 23% and 13% said they were more interested in VR. He is very interested, 42% of the people said they don’t know. This shows that compared to traditional art-derived cultural creation, the new intelligent method that combines artificial intelligence and VR technology is obviously more effective in terms of public acceptance. In the intelligent mode, intelligent tools and equipment are used. The public can experience and feel the charm of VR more personally, and have a deeper understanding of the process of art and cultural creation, which is more conducive to the development of cultural and creative in the field of art, and also greatly facilitates the public to understand and support art and cultural creation. The comparison of the two groups of people's interest in VR applications in art-derived cultural creation is shown in Table 1 and Figure 1.

|            | Not at all interested | More interested | Very interested | Unclear |
|------------|----------------------|-----------------|----------------|---------|
| Experiment | 11                   | 47              | 32             | 10      |
| Control    | 22                   | 23              | 13             | 42      |

Table 1. The final comprehensive results of the two groups of people in degree of interest in art-derived literature
4.2. Two Groups of Cultural and Creative Industry Personnel's Understanding and Views on the Application of VR in Art and Cultural Creation

In the survey on "Views on the Application of VR in Art and Cultural Creation", we found that the experimental group's industry seems to be more positive and optimistic in answering this question. The experimental group recognizes that VR is inspiring or thinking support for artists ability in this area has great potential. It improves efficiency, accuracy and productivity, which is very important for the art industry. In the era of artificial intelligence, the way of life of human beings will be greatly changed compared to the past. Freeing humans from repeating standard labor, allowing humans to have the space to play humanities, art, and culture. Artificial intelligence also brings about the cultural and artistic industries. The positive impact has also brought unprecedented new energy. However, the current multidisciplinary integrated research of the Chinese culture and art industry has always been a shortcoming in the Chinese talent market. In the wave of industrial transformation in the new era, the talent pool for cultural and artistic management is the key; on the contrary, in the control group industry, many academic staff's cognition of art and cultural creation is still a rigid set, traditional exhibition hall exhibition. More than 85% of the employees in the experimental group expressed their desire to accept emerging practices and integrate them into the derivative cultural creations of artworks, and about 15% of the employees believe that it is a traditional system with its own uniqueness, and there is no need to learn from it. The relative proportions of the control group were 60% and 40%. This has already demonstrated that emerging VR and artificial intelligence are gradually being integrated into artworks. The cognition and understanding of the two groups of industry employees on VR is shown in Table 2 and Figure 2.

Table 2. Understanding and views of two groups of cultural and creative industry personnel on VR application in art and cultural creation

| Willing to accept | More willing | Indifferent | Opposition |
|-------------------|--------------|-------------|------------|
| Experiment group  | 75           | 12          | 5          | 8          |
| Control group     | 60           | 22          | 16         | 2          |
Figure 2. Understanding and views of two groups of cultural and creative industry personnel on VR application in art and cultural creation

5. Conclusion
Use new technological means to support traditional cultural methods, and use traditional crafts to influence the future. VR virtual reality technology is advancing by leaps and bounds and is constantly improving and updating. As a tool, means, expression or presentation form, it will certainly become a means of creation and expression by artists and designers. Whether it’s commercial and market applications or services, or as a pure art form of expression, the superiority may lie in how artists and designers cleverly use the characteristics of VR to better achieve communication and communication, solve problems, affect our lives, inspire or what kind of thinking or perception aroused. I believe that under the guidance of cultural creativity + technology and innovation-driven concepts, VR technology will continue to forge ahead and forge ahead. How to surpass or break through its limitations, to improve or innovate, what kind of human response and social problems will be encountered in the new situation or landscape. How do we change, adjust ourselves, influence others, improve and adapt to the new environment, continue to survive, etc.

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