An Approach to Design the Conceptual Scheme of Virtual Reality News Documentary

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Abstract: News documentary belonged to the category of journalism has some characteristics of film arts. It uses film practice approaches to report news content, reflect objective truth, even show real characters and stories. With the help of virtual reality technology, news documentaries can restore scenes more artistically lifelike, focusing on scene rendering and relevant storytelling details. So that users will have a deeper experience of the narrative content of news documentaries. Virtual reality news documentary can contact some information design methods to screen for auxiliary or read stage objective. At the same time, the user of immersion in virtual news documentary, will be more convenient and effective to receive electronic information content, with the autonomy of selective and more freedom to control their own likes and dislikes in virtual reality news documentary content under the distribution of their own free time. This essay carries out conceptual design of virtual reality news documentaries, and provides design thoughts, design methods and other design schemes to provide reference for future research.

Keywords: approach, virtual reality, news documentary, conceptual scheme

Introduction

Virtual reality news documentaries are produced, released and shared by network media. Due to the convenience of information acquisition, the homogenization of content is also a major obvious problem facing the development of media culture. The accurate way to earn users' eyeballs is to constantly apply updated technical tools and computer technologies to improve visual effects. The application of virtual reality technology in news documentaries enables the supplied media groups to gain profits and increase capital possession, which also naturally achieves the expected social responsibility. [1]

Similarly, according to the evaluation of virtual reality news application in recent years, the data distribution of followers of virtual reality products and mobile clients almost completely overlaps. Both the input in the early stage, and the rate of return in the later stage reflect that users' demands of virtual reality journalism are in pursuit of visual art. Users' reasonable and free activities in the digital world cannot be restricted, so they will choose the best products because of their time-changing needs. As one of the expression forms of digital documentaries, the ideographic form of innovative images of virtual reality news documentaries attracts audiences. Its technical application mode of promoting advantages while avoiding disadvantages and artistic expression degree of narrative content cater to the real needs of network users. The creation process of virtual reality news documentaries has played a positive role in the continuous evolution of deep immersion, raising users' experience initiative to an unprecedented level.

The flashback plus music of the virtual reality news documentary comes from the current audio design innovation, while the visual art of the image comes from the transcendent immersion feeling brought to users. [2] The visual and auditory experience brought by the brand new art form has a great impact. Users can not only receive the creative culture under the influence of creative economy, but also integrate innovative art into news documentaries through experiencing. The virtual reality news documentary's character building because of its three-dimensional realistic effect makes the character appear more substantial, and makes the development of news storytelling more smooth at the same time. Technical tools are generally only the most basic process for the design of virtual reality news documentaries, helping users to understand the narrative plot, then also help improve the artistic connotation of electronic works.

The Design Outline of Virtual Reality News Documentary

1. Exploration and Analysis of the Topic

In the preliminary design, we should fully consider the direction of narrative plots from all angles. In this study, video clips of BBC documentaries are selected as narrative material, so it is recommended to select this topic as the source of virtual reality art works. While assuming its social responsibilities, BBC embraces the new digital media art in line with the trend of media transformation. Therefore, the BBC still strives to maintain its status even though it has abundant news sources in the Internet age. The attention paid by the BBC to *Reality Check* further ensures the authenticity and rationality of the source material of this study's virtual Reality interactive design. This research design works will finally choose video clips of the BBC documentary *Frozen Planet* as the source of narrative content, because it not only has high-quality materials, but also has unusual humanistic spirit significance and historical influence.

2. Planning and Analysis of Storytelling

Frozen Planet has a total of seven episodes. It began its first broadcast in the UK from October 2011. It took five years to shoot and spent huge amounts. It was narrated by Sir David Attenborough and showed the Antarctic and the Arctic in different seasons. Natural soundscapes, as well as the living conditions of polar creatures, show the polar ecosystem in on-the-spot report. The first episode of *To the Ends of the Earth* gives the aerial photography of the vast ice sheet, and makes the exact transmission of the Arctic landscape, highlights the main performance role in the previous section– a male, and a female polar bear. Among the lens clips, this work subtly reveals their most common but instinctual and everyday life – walking alone on the snow, smelling the smell, looking for each other, then chasing and knowing each other. In addition to the scenes in the first episode of *To the Ends of the Earth*, the fifth episode *Winter* was once again appeared a shot of an independent polar bear walking on the snowy mountains in the polar region. In order to consider the show-time of the electronic works and the size of the project file, this study designed the video content between the 4:06 to 5:54 in the first episode of *To the Ends of the Earth* as the narrative material.

The traditional 2D video began to show the snow scene of polar region in the lens from 4:06, the thick sea ice is endless. From 4:13, the *leading actor* male polar bear began to slowly enter. The massive, strong and white body comes into the audience's view. His shadow is in front of himself, and his foot leave a deep step in the snow. Step by step, on the way of finding love, taking a seemingly awkward pace, walking on the quiet Arctic land, constantly adjusting the rhythm of the march according to the smell of female polar bear that can be smelled on the snow. At 4:57, the aerial lens captures the distant vision, including snow-capped mountains, snow cover, and polar bears that gradually become small until they finally approach the invisible shape. The *Female Leading Role* with a sleek, small-sized, slow-moving action enters at about 5:06 until the two bears meet in 5:54. Based on the narrative content for design arrangement, this study named the design work *The VR Encounter of the Polar Bear*.

3. System Framework Design

Before explaining the design idea of the system framework, this part first introduces the necessary system development environment. The system development environment requirement is an important premise to make the whole virtual reality news documentary. Firstly, in the application of hardware platform, the work prepared two laptops according to the actual operating conditions, one is a ThinkPad laptop with Windows 10 system, and the other is a Macbook Pro with abundant storage space to assist the demonstration and other design functions. In order to construct virtual reality mobile development, the system is expected to prepare the necessary hardware for the selected VR BOX Pico U with 3DOF motion sensor handle, which is a set of Chinese production, and at least one android phone with 5 to 6 inch body, and one pair of in-ear headset for better sound experience.

In determining the hardware platform development, we start to design the framework of this system. The system resource can realize the division of MVC design mode of thinking inspiration and study their characteristics to improve. The adjustment of MVC design mode of thinking is inconsistent with the design of the interface, so change the section which do not apply, then enhance the system's expandability and extensibility.

In terms of the three levels of the system framework design, the first level is the measurement data layer, which divides the data into three type, it's Demand Data, Original Data and Image Data. The Demand Data is coordinated with the overall design principle. The Original Data comes from the basic data of the three-dimensional virtual model, and Image Data describes the details of the materials, colors, etc. in the computer graphics information. The second level is the logical construction layer, in which the main tools in the design process are Maya and Unity 3D, which will make the main model, edit the main scene, and add C# scripts that control the interaction of the scenes, then cause collisions between the data. The third level is the audio-visual display layer, whose main functions include the

human-computer interaction interface. It implements other functions besides virtual reality roaming, enhances information intelligence according to the user instructions, and outputs the processed second-level logical construction layer results onto the interface, until the audiovisual display effect can be achieved. [3] Implementing the system framework requires more detailed basic operations, so set up the functional design which is gradually demonstrated on the platform to push the next step.

4. Functional Refinement Design

Open virtual reality news documentary work *The VR Encounter of the Polar Bear* to enter the system, the sight of the scene is already completed the documentary footage according to the arctic view from the first episode of *To the Ends of the Earth.* Users need to wear a display device (HMD) this study provided to make the tracking point of view and follow the position to get the appropriate images, namely better rendering image of a light field. Users can then freely immerse themselves in it, autonomously control the information content, watch and roam from the first-person perspective. First of all, the scene in the 2D original documentary film is the polar region environment, so few non-professionals have the opportunity to truly experience the vast and cold real natural scene. Therefore, in the on-site experience environment, users can use the controller, namely the bluetooth handle, to move the position to conduct scene transient roaming, feel the simulated polar ecological environment, and get closely to contact with polar creatures.

ASMR (Autonomous Sensory Meridian Response), whose concept and sound thinking are applied to the sound design section of virtual reality news documentaries making in this study, provides guidance to the audio design of virtual reality news documentaries in the field. Based on the perceptual effect of ASMR media sound design, users can feel the stereo effect by wearing headphones that are endowed with immersive sound other than the *Head-mounted Display Device* (HMD), and use adaptive rendering to design spatial voice audio content. Firstly, the original sound of the BBC documentary is extracted from the environmental sound of the same period for artistic processing, and then the sound field information is collected. Users can experience the *sensory orgasm* leisure experience played by video platform, and experience the virtual reality digital sound landscape, seek for where the sound is present, and experience the second time by following other senses. ASMR audio is embodied in the specific character scene and interaction, which is also the classic and innovative point of the whole virtual reality news documentary design.

5. Somatosensory Interaction Design

Somatosensory interaction design is also an important part of the design of this whole study, which is dedicated to realizing one of the immersive interfaces of sense of presence. Meanwhile, it provides research samples, other than operating conditions and approaches hardware devices for user experience evaluation and measurement experiments. After simulating the simulation scene, UI operation will be the main presentation mode of the interface. The interface designed in this study is mainly composed of the initial interface of the system, the interface of role explanation, and the interface of popular science content. The following text will explain the conception process in detail.

Firstly, the first information of the interface generated by the system indicates that the design work theme is *The VR Encounter of the Polar Bear.* When an animated version of the main character polar bear comes into view, users can obtain the design outline through the interface generated by this simple system. Therefore, the initial interface of the system should be concise, which not only provides accurate information, but also cleverly expresses the theme and content, so as to avoid leading misunderstandings to users, increase the time for actual leisure experience, then reduce the *trouble time* beyond unnecessary experience. The simple interface includes relatively simple flat graphic structure and relatively soft and single color, so in the implementation process, the initial interface of the system will operate in this direction.

Since virtual reality works require users to independently experience them from the first perspective, the interface of character explanation plays the role of the leading role's progressive performance. Users can understand the simulated 3D character model through operation, which increases the process of embodied cognition and thinking of narrative content. [4] In order to achieve important interaction functions, characters need to explain the interface layout with extra white space instead of dense text. Users need to use concise and vivid design text for next interactive operation, so as to achieve the experience purpose of obtaining the set complete role information.

The interface design of science popularization context is a way of summarizing the interface of role explanation. Adding the interface of popular science content can appropriately increase the interest and entertainment of the whole work. It utilizes interactive text to relieve users' fatigue and boredom when watching and enjoying, help them to learn more knowledge outside the original BBC documentary *Frozen Planet* in a relaxed and pleasant virtual fantasy

world, and improve users' concentration rather than wandering. In the design process, we should pay attention to the identity of the interface explained by roles, compare and match multiple alternative documents prepared before the design, and make the final selection after consider the applicability and feasibility.

Conclusion

Besides the planning of the first visual interaction interface, the establishment of role models and the construction of basic scenes, this conceptual design scheme also features the planning and consideration of ASMR audio. So this concept design scheme is mainly divided into two aspects, environment design and audio design. In the section of environmental design, due to the selection of the original film as narrative material, the artistic images of the main characters in this design work -- two polar bears, one male and one female, are respectively implemented as the key point of view outside the laid scene. While modeling according to the original ecology, the design should also fully consider the details, such as the material and gloss of polar bear hair, and change the user's sense of presence and presence with the constantly modified sense of presence. Such artistic processing can expand the user base of the system and attract more users of different ages to watch virtual reality news documentaries. In the audio design, it is an important task to innovate the sound part of ASMR. Its artistic creation and processing come from the fading documentary soundtrack, which controls the sound field in the works with the real output characteristics that trigger the multi-sensory effect. Virtual reality audio not only need overcome the lag in the development of customer service hardware, but also adds new ideas in artistic creation, continues the virtual reality research in ergonomics at the same time, and then changes the previous simple physical operation method of single sound multi-track production or changing sound source.

Virtual reality news documentary design is the concrete practice of new media technology in news communication research, and also the accumulation of electronic works. The virtual reality news documentary *The VR Encounter of the Polar Bear* has three parts, measurement data layer, logical construction layer, and audio-visual display layer. In terms of function distribution, there are mainly virtual reality scene roaming, ASMR sound experience and motion sensing interactive design, etc. Besides the functions setting, the art design also has the ingenious conception. In the field of environment design, we fully consider the details of the visual arts, and the three-dimensional modeling attention for the simulation effect. In the stage of the innovation of virtual reality audio design, namely ASMR sound design, is used as the background sound in the design works. The virtual sound field is built to increase the sense of presence, and the previous single audio design, which is completely influenced by hardware's development. The design of virtual art works should not be limited to the previous scene's visual effect innovation and interactive function setting, but should also break through the shackles of hardware equipment level, but not affected by its development bottleneck. It should strive to make active breakthroughs in design, rather than passive, lagging, and always imitated.

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References
1　Immersive Journalism: Immersive Virtual Reality for the First-Person Experience of News [J]. Presence, 2014, 19(4):291-301.
2　Roy F L, Vanderbeeken R. The Documentary Real: Thinking Documentary Aesthetics [J]. Foundations of Science, 2018, 23(2):197-205.
3　Rogers K, Ribeiro G, Wehbe R R, et al. Vanishing Importance: Studying Immersive Effects of Game Audio Perception on Player Experiences in Virtual Reality [C]// Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems. ACM, 2018.
4　Jones, Sarah. Disrupting the narrative: immersive journalism in virtual reality [J]. Journal of Media Practice, 2017:1-15.

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