Poetic Expression by Virtual Reality Technology

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Abstract. At the present stage, the digital world and physical world continue to blend. Which has become an important trend of future development. The basic relations between people and society, people and people, people and things also have profound changes due to the intervention of digital technology. In the trend of continuous integration, anew space of digital society, digital economy and digital culture has been formed. One of the ways to integrate digital and traditional culture is to use virtual reality technology to realize the digitalization of cultural resources, make culture resources "immortal" and create various application scenes. How to realize the transmission of cultural content and express its spiritual connotation under the capability of virtual reality technology? This paper has started with "poetic". It describes how to inherit and carry forward the "poetry" in traditional Chinese poetry with modern technology, from the "artistic conception" created in Chinese traditional culture to the "virtual environment" created by reality technology, the "meaning" and "image" produced by the unique narrative mode of Chinese ancient poetry and the "Virtual Reality" technology from the perspective of UR, what are the appropriate application scenarios of poetic expression of virtual reality technology, this paper has summarized the poetic expression and construction methods of ancient Chinese poetry based on virtual reality technology. It also has considered the significance, development and application prospect of virtual reality technology in traditional cultural expression.

Keywords: Virtual Reality, ancient poetry, Interaction, Poetic Expression.

1. Introduction

There is a certain distance between ancient poetry and modern society because of three main reasons: the language style of ancient poetry is difficult to be understood for modern people; Too few contacts in life; Poetic communication does not stop at the surface of words. The emergence of virtual reality technology provides experiencers with the possibility of stepping from the real world to the virtual world created by designers at any time, but today the technology is mostly used to provide new entertainment for the public. "Transform reality into virtual reality, create images as symbols, materialize and substantialize the highest human mind." [1]Through virtual reality technology, the "poetry" in the creation process of Chinese ancient poetry is constructed from the perspective of VR, the physical "poetry" is transformed into invisible "poetry", the real people become "virtual images", enter the "virtual environment of ancient poetry", provide more perfect imagination space for experiencers, and enable experiencers to have a deeper understanding of "poetry". This paper starts from exploring what poetry is in the art of traditional ancient poetry, deconstructs and analyzes the way of poetic communication, and then express with virtual reality, so as to construct and express poetry in virtual scenes and interactions, and at the same time integrate virtual reality technology into the design which serves human beings.

2. Analysis of Poetic Meaning

The source of Chinese ancient poetry is "music language" [2], the function of which is to educate people in the traditional ideology and to train them to conduct etiquette or government affairs. Thus, "poetry" is originally a kind of "speech". With the continuous deepening of human thought, the connotation of "poetry" is also gradually profound. From the simple transmission of information to the transmission of ideas, and then to the emotional sustenance, poetry contains many artistic conception and atmosphere that "can only be understood, but cannot be expressed".

Chinese poetry originated from folk, but the ancient elites and scholars spent a lot of effort to turn "folk songs" into "court works" to reinforce their rule, because poetry represented the ancients' original understanding of nature and human beings [3]. These poetries contain things to be feared, believed, close to and admired. [4]These "things" originated from the birth of poetry are exactly the "poetic" discussed in this paper.

In Blue Reaction and A Kind of Chinese Poetry, Mr. Shen Qi mentioned that when he read Chinese ancient poetry in the 1970s in his confused period, he always felt that "it was always separated from the current experience of life and survival" [5]. However, when he read Pushkin's Lyric Poems, he felt like" get a sweet shower after a long drought" and "excited as if he had finally met the lover of his dreams" [5]. It can be seen that there are some differences between Chinese ancient poetry and foreign poetry in terms of lyric expression. Foreign poetry is more closer to modern life, while Chinese ancient poetry is only superficial in understanding, like scratching through a boot. The purpose of this paper is to remove this layer of "boots" and express the poetry of ancient Chinese poetry with virtual reality technology.

"Poetic" is the reading effect produced by the text or some kind of possible life [6]. Poetry itself does not exist in the words on page, but needs to be extracted from the words of ancient poetry by readers' reading. In other words, poetic expression must rely on the joint effect of media and readers. Therefore, to deeply explore the meaning of poetic expression, we must simultaneously analyze the key elements and methods of poetic expression in traditional ancient poetry.

2.1 Key Images and Tension in Poetic Expression

Guangqi Rong concluded in his article New Poetry and Old Poetry: Common Poetic Generation Mechanism : what makes literature be literature is not just "thought" and "emotion" , but the internal language activity and form composition of "material transformed into poetry". Chinese ancient poetry has a unique style of writing and form composition, the inner language hidden under the words is extremely rich, a lot of connotation, implication, metaphor and author's thoughts can be expressed through broken image unit. Cognitive linguists believe that metaphor and metonymy are not only a rhetorical device, but also a systems of thinking and cognition [7].For example, "willow" in ancient poems can describe the soft figure of a woman, describe the spring scenery and express the feeling of missing home [7]; "Grass" in the "east shake the grass" in the poet's heart wandering uncertain thoughts, in the "white dew with grass" shows the poet's feelings and anger about the fickleness of the word, in the "the grass will wilt with the autumn" expresses the deep and unforgettable yearning sorrow [8]; "Moon" to Li Bai can represent patriotism and nostalgia, homesickness for friends, metaphor for oneself and philosophy of life [9].Such a concise way of expression has made the ancient poetry extremely readable and literary. When readers bring in their own emotions and experiences, and experience the same or different images in different scenes to express different intentions, poetry was born.

Alan Tutter, an American new critic, pointed out that "the meaning of poetry is all about the power of poetry" [10], which is the inevitable attribute of a good poem. One of the important ways of poetic expression is to stimulate the internal tension of poetry, and tension is one of the important means to expand readers' sensibility. In Youling Chen's paper *Internal Tension Exudes Poetic Beauty -- A Reading of Tennyson's poem" Tears, Flowing Without End "*, there are three ways to express the effect of tension: first, heterogeneous images constitutes the tension; Second, abnormal relations constitute tension; Third, concreteness and abstraction combine to form tension [10]. Corresponding to the Chinese ancient poems, they can be explained as follows: in Du Fu's *"Happy Rain on a Spring Night"*, "the wild path is dark with clouds, and the river is bright with fire. " The contrast between "black" and "bright" constitutes a contradiction, and both sides of the contradiction set off each other, forming an contrast and harmonious picture, which leave readers with endless aftertastes; "*ShangYe*", "the mountains have no mausoleum, the river is exhausted, thunder in winter, rain and snow in summer, heaven and earth are together, but dare to break with you. " The absurd conditions and abnormal promises accurately express the protagonist's

determination not to "break away from you", and clearly express the absolute ideal and romantic feelings in love. In Li Bai's "*Ancient Imitation*", "the long rope is difficult to tie the sun, and we share sorrow since ancient times", while expressing emotion by concrete objects, he also uses abstract feelings to elevate thoughts, the sense of historical vicissitudes and the tension of poetry are on the verge of breaking out.

2.2 Expression Methods of Poetry in New Media

The good sentences in a poem condense the poetic of the poem, and the creation method of painting with the good sentences is actually the writing method of the poem, namely "Xing" in "Fu""Bi""Xing" that are common used in poetry, rises the artistic inspiration from the poetic. Liu Xie's The Literary Mind and the Carving of Dragons said: " Make analogy explicit and association implicit [11].""Xing" starts with something else and causes the content to be described. It has certain implication and symbolic meaning, which is a more poetic expression technique.

From the above analysis, it can be concluded that in painting, the method of "Xing" is usually used to depict the poetry in poetry and prose into pictures, that is, not directly using pictures to express words, but using related objects to express the meaning of poetry, thus enhancing the charm and appeal of the picture. Since ancient times, Chinese culture has undergone great changes, and the images of feelings expressed in many ancient poems are not often used in modern life, which makes it difficult for modern to easily understand the feelings expressed by the ancients. However, "human feelings never change, and the feelings of human are the core of poetry" [12],which can be more suitable for modern readers to understand by means of "restoration" and "change". In the Qing Dynasty Wu Qiao's Weilu Poetry Talks,the interpretation of "restoration" and "change" on the law of artistic creation is straightforward and clear. He pointed out:" The way to write poetry is nothing more than change and restoration.' Change' can be understood as the application of ancient methods, ' restorationcan be understood as the imitation of ancient methods. Only by 'change' can we 'restoration', and only by 'restoration' can we 'change', which complement each other [13]." Therefore, for the production of pictures for modern viewers, we should not blindly imitate the ancient times, but adjust them according to the current social situation ,to find harmony and unity between retro and innovation, which not only retains the charm of the ancient style, but also makes it easy for modern people to understand, which is the basic law that modern people should follow when creating arts according to traditional culture.
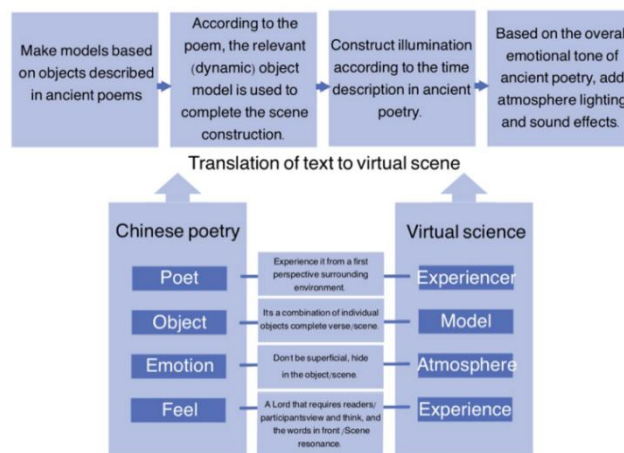

Fig. 1 The interrelation and transformation process between ancient poetry and virtual space

3. Picture Presentation and Interactive Analysis of Poetic Expression by Virtual Reality Technology

3.1 Visual Form Harmonization and Visual Guidance Based on VR Perspective

In the visual art works restricted by the frame of the shot, the director usually uses rich lens language to guide and attract the audience's sight, so as to ensure that the story is narrated smoothly, focus the audience's attention on the transition and closure of the story. Based on the characteristics of virtual reality technology, visual art works from VR perspective bring the sense of immersion and substitution of "body presence", but experiencers lose the opportunity to experience the beauty of traditional lens language to a certain extent. As Saschka Unseld, creative director at Oculus Story Studio said:" It is amazing to be personally on the virtual environment, but it is really distracting. Even if you have best story in the world,no one will pay attention if you're faced with an absent-minded, unqualified narrative subject [14]."

Therefore, in the absence of a large number of opportunities to use lens language, we should start from the audience's inner, analyze effective ways to guide vision and attract attention. The sight of the audience is usually guided by internal and external ways, namely the guidance of external environmental events on visual attention and the influence of human internal emergency response on attention [15]. In the practical application of visual guidance, the attention of experiencer should be reduced by external events as far as possible, and the inner emotion of experiencer should be aroused in various ways to seize the attention of experiencer.

Currently, there are many ways to deal with the problem of audience inattention in virtual reality-based visual works. VR visual works makers can choose the appropriate way of expression according to the content of the film. The author will take three immersive visual works from VR perspective as examples to outline three effective ways to guide the sight of spectators: AGE of SAIL (2018) is an animated film. In this film, the sight of the viewer will change with the development of the story. In the clip of the girl escaping from the waves, the audience can watch the environment of the story in 360 degrees, thus obtaining a brand new audio-visual experience. Buggy Night (2015) assigns tasks to the experiencer at certain stages. The experiencer needs to participate in the story and drive the development of the story. Compared with the previous film, Buggy Night is more like a game; Henry (2015)'s scene is more like a theatrical stage. The plot design breaks the "fourth wall" between the "actor and the audience" and allows the audience to participate in the internal space of the film [15].

To sum up, in the VR perspective of visual works, experiencer can change the viewing angle according to their own needs, use their legs, hands and the same way as in the real world to spontaneously explore the virtual world. As a result, visual works based on virtual reality technology are no longer the traditional "you play, I watch", but the experiencer is wrapped in what Karakauer calls a "designed reality". Usually, the beginning of a VR films does not immediately introduce the experiencer into the story, but give some time and space, so that experiencers can slowly step into the story, satisfy the experiencers' exploration heart of free viewing, stimulate their curiosity and attract their attention through visual fluidity and exquisite details.

A visual work in VR will leave a lot of time at the beginning of the title to lead the experiencer into the plot step by step. The identity of virtual world experiencer has changed from a single viewer to a multi-dimensional participant, and in future virtual reality visual works, experiencer will invest more senses to participate in the full dimension and deep immersion [16]. Compared with traditional visual works, the artistic charm of visual works based on virtual reality technology lies in diluting and stripping away the narrative components of traditional works and trying to create a virtual space. Through hardware equipment, experiencers can really enter the virtual space. At the same time, the reaction of experiencers may affect the occurrence and development of stories in the space.

3.2 Interactivity in Poetic Context

Good participant experience [17]is the key to virtual reality technology system. Through reading and analyzing the *Overall Scheme Design of Poetry Immersive Interaction System Based on VR* [18], It is concluded that the interactive experience function based on poetic context should meet the following four characteristics:

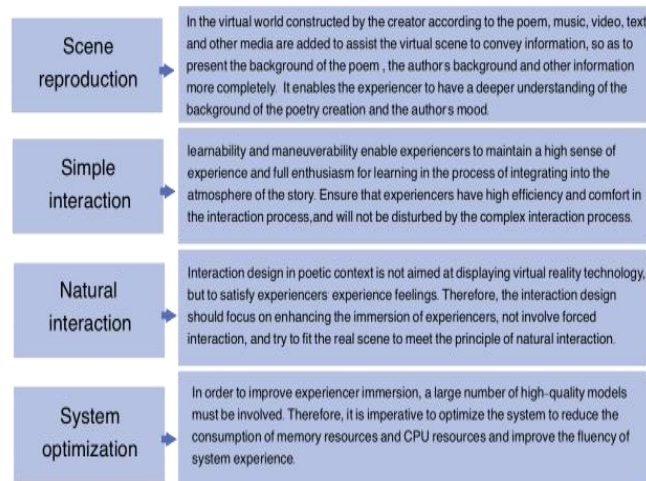| Scene reproduction | In the virtual world constructed by the creator according to the poem, music, video, text and other media are added to assist the virtual scene to convey information, so as to present the background of the poem , the authors background and other information more completely. It enables the experiencer to have a deeper understanding of the background of the poetry creation and the authors mood. |
Simple interaction	learnability and maneuverability enable experiencers to maintain a high sense of experience and full enthusiasm for learning in the process of integrating into the atmosphere of the story. Ensure that experiencers have high efficiency and comfort in the interaction process,and will not be disturbed by the complex interaction process.
Natural interaction	Interaction design in poetic context is not aimed at displaying virtual reality technology, but to satisfy experiencers' experience feelings. Therefore, the interaction design should focus on enhancing the immersion of experiencers, not involve forced interaction, and try to fit the real scene to meet the principle of natural interaction.
System optimization	In order to improve experiencer immersion, a large number of high-quality models must be involved. Therefore, it is imperative to optimize the system to reduce the consumption of memory resources and CPU resources and improve the fluency of system experience.

Fig.2 Four characteristics that need to be satisfied by interactive experience feature

According to the research results and feasibility analysis of Baolin Lin [19], Heiko Hecht [20] and Yue Pengfei [21], the following three problems should be avoided in virtual space interaction based on poetic expression: First, the interactive items are consistent with the style of the scene and cannot stand out, which leads to the loss of the suggestive and guidance to the experiencer the overall process is not clear , resulted in the decrease of experiencers' sense of experience. This problem can be solved through the hint of light and shadow or the planning of the path within the scene. Second, the lighting system plays a decisive role in the authenticity of the virtual scene. The lack of uniformity and rationality of light intensity, color, cold and warm may cause the experienced to feel dizzy to 3D in the experiential process and affect the overall learning experience. Third, the size design of the virtual scene and the movement mode design of the experiencer need to be matched, and the complexity of the route within the scene and the guidance mode need to be matched. When the experiencer is in a scene that is too large or too complex, but can only move in a small span and slow speed, patience will wear out, resulting in a decline in the overall experience.

The interaction form in the virtual environment is three-dimensional, and the interaction mode, touch and relevant feedback of the real scene should be restored as far as possible [22]. Therefore, the following four points should be satisfied : the principle of consistency, perceptibility, predictability and feedback. To sum up, interaction modes based on poetic expression can be divided into: mobile interaction for experiencers to observe scenes from different angles according to their own wishes and customized interaction for scenes described in different ancient poems.

3.3 Dynamic Presentation of Artistic Conception Picture

Compared with poetry of other languages and modern poetry, Chinese ancient poetry has a remarkable feature -- independent syntax. The juxtaposition of images and images occurs frequently in ancient poetry, and the words are broken with each other, the meaning connection between them are left to the readers' imagination [6]. For example, in the sentence "Cooks crow, small inn and the moon. Footprints ,boards of bridge and frost." which is come out of *Early Departure at Shang Mountain* [23], the spatial relationship between "Inn" and "Moon" and between "Boards of Bridge" and "frost" is not defined. Without positioning, the author seems to stand aside, allowing the reader to intuit between things, in and out and participate in completing the impression of the moment [24].
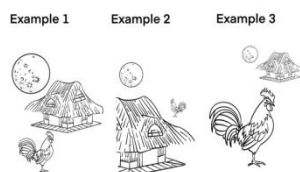
Fig.3 Diagram of different spatial relationships

4. The Prospect of Poetic Expression by New Media

4.1 Significance of Spreading Traditional Culture with Virtual Reality Technology

As an excellent traditional culture of China, ancient poetry has been disseminated for so long, and its mode of dissemination has been constantly innovated with the changes of The Times. Although the transmission mode of teach orally is vivid and geniality, it still has the problems of low efficiency, easy error and easy loss. After the emergence of material carrier, the renewal and optimization of media promoted the spread of ancient poetry and made the spread of ancient poetry appear a new popular way.At that time, the appearance of paper made copying become an important means for the dissemination of ancient poems. However, in the process of the dissemination of ancient poems by physical media, the media was easy to be damaged or lost. At the same time, a large number of paper or bamboo slips were not easy to carry around and read at any time.
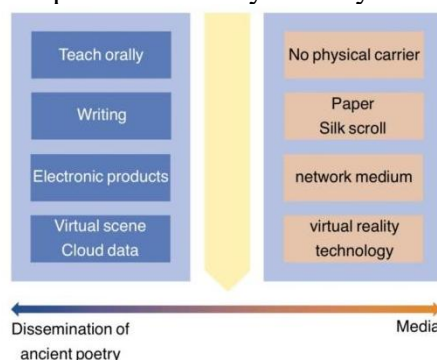

Fig.4 Media and communication form development diagram

To sum up, the communication mode of ancient poetry should conform to the development of The Times and update and optimize with the progress of science and technology. In the new era of vigorous development of virtual reality technology, ancient poetry is uploaded to the cloud and optimized into a virtual space designed based on virtual reality technology that is "visible", "accessible" and "experiential", which improves the sense of experience of ancient poetry learners, increases their interest in learning ancient poetry, and enrich the way of learning ancient poetry. It provides the possibility for learners to wear VR devices to learn ancient poems at any time.

4.2 Immersive Experience of Contemporary Educational Scene

Constructivism holds that knowledge cannot be constructed without personal experience. The purpose of teaching is to teach students to gradually build their own knowledge and understanding by using the tools and words in their environment. In constructivist learning theory, scene, writing, painting and meaning construction are the four major factors of learning environment. Virtual reality technology can just meet the teaching needs composed of these four factors and turn teaching into free exploration by individuals instead of "indoctrination" teaching mode in traditional classrooms.

Virtual reality technology can effectively give experiencers immersive feelings. When it is transformed into a teaching tool and applied in actual teaching, there are three main advantages:
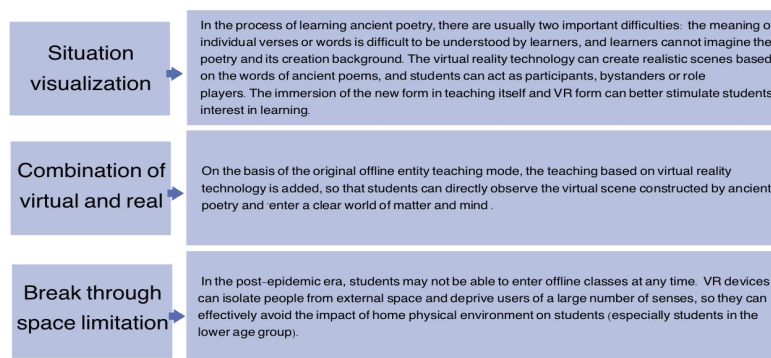
Fig.5 Three main advantages of integrating virtual reality into teaching

4.3 Future Prospect of New Media Expression of Traditional Culture

"Draw Artistic Inspiration from Both Within and Without" ,The creation of art comes from the "imitation" of nature, and the construction of "virtual environment" comes from the "imitation" of existing entities. However, the transformation of entity and "virtual" requires the participation of designers. The "meaning" and "image" generated by the unique narrative mode of ancient poetry are similar to the "artistic conception" generated from the perspective of VR technology. The poetic transmission of Chinese ancient poetry and the reader's spirit work together, and the "objective object" and the experiencer's "subjective experience" collide with each other in the virtual environment, forming the artistic conception of the virtual reality. By analyzing the feasibility of virtual reality technology to express poetry and the application scene of poetic expression, it is concluded that the application of virtual reality technology is feasible in the spread of traditional culture, and can be applied to the communication of other traditional culture as a methodology.

Virtual reality technology is endowed with infinite hope in the display and expression of traditional culture and has a broad space for exploration. In the future research, it is necessary to keep up with the development trend of science and technology, combine the expression of traditional culture with modern technology in the way of empirical research, and actively explore the expression mode of traditional culture in the "meta-universe" era of the 21st century.

5. Summary

It can be seen that the origin, development and development of ancient Chinese poetry has a long history, and its spiritual core "poetic" is the key to the wide spread of traditional ancient poetry. Perhaps the "object" can no longer be seen, but the spirit and emotion expressed by the "object" are no different from today. With the emergence and development of virtual reality technology, the real world and the spiritual world of human beings are constantly integrated. Abstract "meaning" and "image" emotion expressed between the lines of traditional Chinese poetry are interpreted more concretely from the perspective of vr. It can be concluded that: First, the "poetic" of ancient Chinese poetry is the core of emotion expression. Although times have changed, the emotion hidden in traditional poetry can still arouse the resonance of modern people if it is excavated; Second, the traditional ancient poetry has a unique way of narration, which makes it feasible to use virtual reality technology to express the "poetic" of poetry; Third, virtual reality technology enables the deep "poetic" in traditional poetry to be displayed on the surface of the "virtual environment". Immersive scenes and multi-sensory stimulation further enhance the understanding ability of experiencers and deepen their feelings, with a very diverse range of application scenarios. Therefore, virtual reality technology can be applied to the display of various traditional cultures. However, the construction of "digital cultural resources" is extremely difficult due to its long-term and arduous nature. Modern scholars should keep up with the development of science and technology, constantly explore ways to integrate culture and modern science and technology, and move forward with the ideal goal of "eternal life" of traditional culture.

References

[1] Zong Baihua. Zong Baihua corpora:2 [M]. Hefei: Anhui education publishing house 1994.

[2] Zhu Xiuquan. Music language education in Zhou Dynasty and the production of Chinese poetry [J]. Journal of Hunan University of Science and Technology(Social Science Edition) , 2020,23(05):90-99.

[3] Chen Qian, GU Jun. The dialogue between Chinese and foreign poetics in the study of ancient ballads [J]. Chinese literature Studies,2011,No.100(01):114-118.

[4] [France] Ge Lanyan. Festivals and ballads in ancient China [M]. Translated by Zhao Bingxiang and Zhang Hongming. Guilin: Guangxi Normal University, 2005:1-6, 17, 222-226.

[5] Shen Qi. Bule reaction and another kind of Chinese poetry – The "Citation" of the "Virtual Thesis" on some reflections on the translation of new poetry and oreign poetry [J]. Literary and Artisitic Contention, ,2018,No.283(02):114-117.

[6] Rong Guangqi. New poetry and old poetry: Common Mechanism of poetic generation [J]. Huazhong Academic, 2022,14(03):240-251.

[7] Zhangg Xinmiao. Conceptual Metaphor an metonymy analysis of willow image in ancient poetry [J]. New Documentary, 2021(34): 74-76.

[8] Qi Na. Research on the image of "grass" and "wood" in Nineteen Ancient Poems [J]. New Documentary, 2021(35):24-26.

[9] Li Siqi. Analysis on the meaning of the word "moon" in Li Bai's poems [J]. Chinese Culture, 2021, No. 284(12) 66-67.

[10] Chen Youling. The inner tension exuding the beautiful poetry – A reading of rennyson's poem "Tears, flow without cause" [J]. Appreciation of Masterpieces, 2021(23):153-154+172.

[11] Works by Liu Xie, Annotated by Fan Wenlan "wen-hsin-diao-long", Beijing: people's literature publishing house, 1958,p.601.

[12] Zhang Bin. Classical poetry in Feng Zikai's painting art – Centered on ancient poetry and new painting [J]. Rong Baozhai,2022(09):96-109.

[13] Yuan Xingpei et al. Geeral theory of Chinese poetics, Hefei: Anhui Education Publishing House, 1994, p.934.

[14] Jerremy Hsu. How oculus story studio leaned soryteling in virtual reality,2015.4.

[15] Yang Yixuan, Jia Xiuqing. Reserch on visual guidance and visual interaction of viual reality image [J]. Contemporary Animation, 2019(04):94-97.

[16] Wang Nan, Liao Xiangzhong. Constructing a new aesthetic space: An immersion threshold analysis of VR films [J]. Contemporary Film, 2017(12):117-123, p.117.

[17] Li Chenlong. Research on human-computer interaction technology in virtual reality system [D]. Zhejiang University, 2017.

[18] Wang Yu. Research on immersive interactive system of poetry based on VR [D]. Beijing Institute of Printing and Technology, 2022.

[19] Liu B, Wang Z, Son G, et al. Cognitive processing of traffic signs in immersive virtual reality environment: A ERP study [J]. Neuroscience Letters,2010,485(1):43-48.

[20] Daniel Oberfeld, Heiko Hecht&Matthias Gamer. Surface lightness influences perceived room height [J]. Quarterly Joural of Exoerimental Psychology,2010,63(10):1999-2011.

[21] Yue Pengfei, Lu Houjun. Design factors analysis of participant experience in head-mounted virtual reality system [J]. Computer Science, 2020,33(03):134-135.

[22] Ma Siqi. Research on event-based virtual relity user experience [d]. Beijing Jiaotong University, 2021.

[23] (Tang Dynasty) Wen Tingjun: Notes on Wen Tingjun's poems, Shanghai: Shanghai Ancient Books Publishing House, 1980,p.155.

[24] Ye Weilian,"Interpretive Activities in Classical Chinese Poetry", Chiese poetics, Background: New Knowledge of Life and Reading, Sanlian Bookstore, 1992, p.17.