Thinking Transformation of Traditional Animation Creation Based on the Virtual Reality Presentation

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Abstract. With to the advent of the new media era and the promotion of virtual reality technology, the thinking pattern of traditional animation creation is no longer completely appropriate for the need of social development. Both the animation's artistic context and its communicational mode have undergone profound changes. Based on the connotation of animation creation and the comprehensive influence of the new media's form and environment, this paper analyzes the existing theoretical foundation of creation and the analysis of the characteristics of virtual reality technology, and studies how traditional animation in the period of new media representation can make use of virtual reality to realize the idea innovation and the transformation of creative thinking, and explore the shift of creative thinking and the way of describing stories from the perspectives of subject, script, scene, usage of lens, viewpoint selection, transfer mode, etc. The paper also indicates how to seize the scale of interaction and the communication of the subject.

Keywords: Virtual reality · Traditional animation creation
Thought of traditional animation

1 Introduction

When traditional animation, film and television gradually can not meet people's requirements for visual experience, technical innovation is inevitable. Virtual reality technology was born at a time when it was urgent to address the growing visual experience of people. "Demand Promoting and Technology Driving" is the ubiquitous rule for every kind of technology to develop, including the virtual reality technology.

The application of VR to the animation field is still at the exploratory stage. Comparing the current stage with the traditional animation creation, there are still significant differences in the presenting effect. how to undertake and carry out the thinking in the future development of VR animation are the difficulties which needs to be solve with research and discussions.

2 The Meaning of the Traditional Animation Creation

The Animator's Survival Kit says: "Animation is a special form of art, its soul is above but comes from reality. It can turn life's 'dare not' into 'dare'……" [1], it is animation creation that employs various manifestations to exaggerate the true story

and present it to the audiences, letting them accept what the creator wants to express joy more easily.

2.1 The Formation and Development of Traditional Animation

Chinese traditional animation creation has various forms and themes. From artistry to cultural connotations, it owns a position in the world's field of animation creation, sets a good example and has a great impact on other countries' animation creation.

From 1920s to 1980s, Chinese traditional animation creation entered the first peak. At that time, the themes and elements of animation creation became the basis of Chinese animation characteristics by exploring and introducing the traditional Chinese art and culture. The former animation creators began to widely absorb the pith of Chinese traditional folk art, dramatically integrating the expressive methods such as paper cutting, opera, puppet, shadow puppet, paper folding and Chinese Brush Painting into the field of animation's art creation. The combination between the element of traditional art culture and animation creation is not only in accordance with the tastes of the people at home and abroad, but also opened up a new way for carrying forward Chinese traditional culture and folk art.

Various excellent animations made at that time also became the classic works of Chinese traditional animation in the memory of a generation of Chinese people and set a firm basis for the following creation. Later on, with the development of the society, the themes and contents of the animated works also become increasingly various, the expressive form of animation art is more diversified, the manifestation of animation art is more diversified, and the domestic animation creators are gradually exploring more possibilities.

2.2 The Characteristics of Traditional Animation

Continuity and Long-Term. Chinese traditional culture is board and profound, and the development of animation has formed the features of Chinese characteristics. The themes of Chinese traditional animation are largely derived from chapter novels, operas, legends and folk stories, which makes it possible to divide a subject into numerous plots and be coherent with long-term and continuous characteristics.

Combining Policy and Marketization. China attaches great significance to the development of cultural soft power; traditional animation, being the carrier of art and culture, it has a large cultural influence globally, and the national promoting policy is one of the positive factors for the development of Chinese traditional animation. Meanwhile, the huge demand in domestic animation industry is the fountain of the creation of traditional animation industry, and satisfying the need of the market's diversification is the primary goal of Chinese traditional animation creation. Therefore, its market's characteristics and industry condition are the fruit of the interplay between policy and market.

Containing Profound Educational Significance. The main audience of animation is teenagers, and traditional animation's guiding effect of spreading idea and social values

is not negligible. Chinese traditional animation's theme usually delivers the Chinese traditional virtues, and pursues higher core cultural values.

2.3   The Creative Thought for Composition of Traditional Animation

The creative thought for the composition of traditional animation is through the whole producing process, and is reflected respectively in each stage:

During the general designing stage, in accordance with the social demands and combining with the market research, the animation creators make plan, draft a script, get inspiration from the story and social news and establish the theme and spiritual orientation of the works. The general story is roughly formed during this stage, and the creators all want to render the correct value and interest to the audiences through the works.

During the designing and producing stage, the creators combine their own artistic accumulation and apply color modeling elements with distinctive style and artistic features from numerous traditional art cultures by absorbing and extracting into the design of role and scene. By combining the theoretical basis of audio-visual language, the creators then make storyboards, which reflect the rhythmic cohesion of each link in the script and strengthen the artistic atmosphere of the picture and the infectivity of the role emotion.

During the actual creating stage, the primarily main job is the in-betweens of the original painting and coloring. From the traditional Chinese Brush Painting to the contemporary advanced paperless animation, the creators both pursue the distinctive style of work and explore expressive methods which are more diverse. With the development of creating techniques, more excellent animation works emerge and present a striking artistic effect, bringing us the enjoyment of beauty.

During the post-production stage, edition is conducted according to the director's anticipation and the design of the storyboards; a good edition applies montage to greatly improve the artistic expression, and the integration of sound, soundtrack and sound effect invigorate the works, enhancing the rhythmicity and infectivity of the story from the level of auditory sense.

3   The New Trend of Animation's Development Drove by New Media

Nowadays, being the main communicational means of the information age, new media has replaced many traditional ones. As New Media Literacy puts it, Microblog, blog, online video, online forum, SMS, etc., as the new media emerging in people's life, their practicality and maneuverability is more suitable for existing in the contemporary world when compared with the traditional medium [2].

3.1   The Concept of New Media

New media is the technique and Internet is supported by the digital technique and is mainly characterized by interactivity. They are the media of interaction and the tool and

means of two-way information dissemination, such as new material, image and artistic language. It is also represented by new organizations responsible for collecting, distributing and distributing information such as micro-blog, WeChat, social media, and video website. New media is from computers or relies on computer circulation, including URLs, human-machine interface, virtual world, virtual reality, multimedia, electronic games, electronic animation, digital video, movie effects, network movies, interactive computer equipment, etc.

3.2 The Speculative Process of Animation Creation Triggered by New Media

The history of animation's development is firstly the history of media's development. Every progress of the media and the birth of every kind of new media are both the opportunity and challenge of animation, leading to the innovation of idea and thinking pattern.

Animation art is the sheer thought in the creator's mind before its creation, what the animation can do is toward the creator's imaginary world to exhibit the fanciful imagination. The technical support is needed to find a powerful exit beyond the reality and construct a world which parallels the world we live in. The proper intervention of new media is able to make the perspective of the imaginary world credible and enable the audiences to combine the true image with the imaginary figure. The estrangement of the two disappear, and the world mix together and form a new entity. The audiences can be provided with a brand-new perspective.

3.3 The Contextual Relation Between the Formation of New Media and the Development of Animation

Artistic context always refers to the environment produced in the creation of art, and the outcome surrounded by the work and influenced by the art producer, art intermediary and art appreciator in a certain social context; in the three contextual structures including the context of art production, the social context of art, and the text of art, the development of contemporary art is apparently impacted by both the advanced technique in the production chain and the social customs and the appreciators' increasing experience appeal, unceasingly forming the new contextual relationship of animation in the VR age.

New Media Gives Birth to New Ideas. The emerging of new media enables dynamic images and audio to dominate most of our leisure time; the shaped political idea and the social behavior change the structure of our daily life. New media culture also offers many people assistance to mold the world-wide popular views and the most profound value. The affinity between the animation art and the new media reveals that the new medium affects the reality and the future of the independent animation. The new media will have a significant impact on the animation itself when its culture fully affects our cultural life.

New Media Gives Birth to New Structure. New media rebuilds the relations between the virtual and real reality. Synthetic technology constantly refreshes the boundaries to surpass reality, while new media's intermediation and the virtual digital information provide a large amount of fragmentary information to the publishers and recipients. It runs in a semantic web, each of which can be referenced to each other, linked by hypertext, nevertheless, the molding and thinking mode of culture or artistic concept are remolded by the media. With its emergence, the specific media such as electronic screen, mobile phone surface and streaming media reacting to the animation art as content, also change the structural performance of animation.

New Media Changes the Public's Accepting Ways. The most obvious change of new media to our life is the change of our ways to accept information. Today's media are fully linked; the traditional, new, and especially the mobile media make our daily life medialized all the day. Closely linked with the media, animation constantly relates other old and new media; the public create their feeling in animation image text, the animated object he or she accepts is no longer the object from the creator, but the image text from the works interacting between the recipients.

4   The Experiential Characteristics of Virtual Reality in the New Media

Virtual Reality (VR for short) is a technology which is able to create an interactive three-dimensional virtual world with multi-sense and multi-source information fusion. Through such multi-sensory and interactive method, the user can feel an immersive feeling [3]. Virtual reality technology, being the strongest technology of immersive interactive experience in the new media, has been unparalleled in the 2016 of the year of virtual reality.

4.1   Browsing Flow Experience

Virtual reality technology is the lifelike three-dimensional images created by computer according to human's physiological and psychological characteristics of vision and hearing. Putting on the interactive equipment such as helmet indicator and data glove, the user is able to be immersed in a virtual environment and become a member. While moving the head, the images in the virtual environment will change accordingly; objects can move with the hand's motion when picked up, meanwhile, three-dimensional simulation sound can be heard. In the virtual environment, user feels that everything is so lifelike and there is an immersive feeling. Such kind of experience enables the audiences to enter the animation scene with a strong sense of presence to immerse in.

4.2   Conductive Interactive Experience

Human-machine interaction in virtual reality system is nearly like a natural interaction. The user is able to interact not only with the keyboards and the mouse, but also via special helmet, data glove and other sensing devices. The computer can adjust the image and sound presented by the system according to the motion of the user's head, hand, eye,

language, and body. The user can test or operate objects in a virtual environment through their natural skills such as their own language, physical movement, or action. This experience can enable viewers to selectively track multiple scenes, observe scene props, thus enhancing the interaction experience between the audience and the scenes.

4.3 Sublime Interactive Experience

Virtual reality technology should have a broad imaginable space to expand the scope of human cognition. It can not only reproduce the real environment, but can also create an objective environment that does not exist or ever happen. As the virtual reality system is installed with visual, auditory, touch, and dynamic sensing and reaction devices, the user can thus obtain visual, auditory, tactile, dynamic, and other perceptions in the virtual environment. The sense perception of their arrangement and reorganization breaks the limitations of previous experience, making the sense of the senses magnified and extended indefinitely. This experience enables the audiences watching movies with technical services provided by the cinema to get more sublimation sensory experience, the audiences and the characters in the movie are able to experience the same feeling, which is the so-called empathy.

5 The Advantage of Introducing VR Technology in Animation

5.1 VR the Progressive Choice of VR Animation's Interactive Level

With the development of the technology and the improvement of people's material civilization and living standard, the characteristics of the traditional two-dimensional animation cannot meet with the audiences' needs; a growing number of audiences attach more importance to the presentation and emotional communication, hoping they themselves could be integrated into the animation and communicate with the characters.

The application of VR technology in animation creation has changed the current animation greatly. The application of such technology to construct 3D virtual animated image with the equipment creating real spatial sense allows the audiences to directly participate in the plot and interact with the characters. While appreciating the animation, the audience is allowed to not only get better visual and psychological satisfaction, but also have new recognition and thinking to art; it is more beneficial to the further development and progress of animation.

VR technology is a technology which is built upon the simulation technology and is more real. It not only extends the audiences' sense, but also enables people to obtain other senses from other ways besides the physical sensory organs and perceive the images beyond the reality via image medium [4].

Currently, VR animation's interaction has achieved three levels:

Simple interaction: The primary way to perform a panoramic view is still relatively simple. Through panoramic photographic equipment's 360-degree rotation and moving shooting, the audiences can fully observe the virtual space exhibited, having a sense of involvement to achieve the most basic visual level of interaction.

Complex interaction: The more profound interactive participation needs to be realized by three-dimensional virtual animated images. Setting a virtual camera to lead the audiences to participate in the exploration of the virtual space screen, and then achieve displacement interaction. Such VR animation is more focused on guiding the audiences to actively observe and discover through rich details.

Creative interaction: The more complex VR animation may involve the development of applications, it is able to achieve the effect where the audiences participate in and choose the development of plot, making the audiences more role-oriented and more involved in the development. The three levels of VR interaction provide them with an increasing sense of immersion and interactive experience in accordance with the degree of active participation.

5.2 The Multiple Choices of VR Animation's Recreational Perception

VR technology can be interpreted as that the VR builds a world and an environment with the help of the computer and some peripheral induction equipment. It is not a consciousness, nor a real existence, but a new existence in the world. It has the dual characteristics of dependence and transcendence with the reality, closing the distance between the reality and the virtual world.

People not only perceive the animation's effect by watching and hearing, but also by desiring to have more feelings of participation to let the taste, touch and every part of the body perceive the rhythm of the plot development of the animation and know when to tense, when to relax, when to enjoy and when to be sad…the audience hopes to link more sensory organs with the virtual worlds in animation to feel the sunshine, the clear river and the wonderful terrain. Hoping to perceive the world in the animated story is possible and personally experience the information of the animated kingdom. People are born with a desire to control and in animated story to be able to flexibly master the time and space of the animation. We also hope for excitement while flying through the jungle with Tarzan and the enjoyment of feeling the agility every time when climbing vines.

People's perception of all things in the world comes from the inductive organs, which are mainly divided into visual, auditory, tactile, smell and taste. Due to their physiological characteristics, the environment and things around them are mainly induced by vision and hearing. According to scientific researches, vision occupies about 80% of human's perception of the objective world; today, most of us use vision to realize virtual reality and augmented reality. Visual deception is closely related to the audiences' physiological responses such as the plot that roller coaster makes people afraid; the use of VR technology to display content enables the human brain's perception of picture to be upgraded to another level of time and space, thus making the emotional interaction between audience and animation becomes deeper.

The freshness and experience of VR animation can also catch the curious audience. Through the virtual space created by the creator, it can create the immersive sense of immersion to quickly mobilize the audience's emotion and participation, attract the audience's attention in a short time, let the audience devote themselves to VR works, and enhance the interest and entertainment of the works.

6 The Display of Virtual Reality (VR) Boosting the Revolution of the Creative Thinking in Traditional Animation

There are differences between the VR animation and the traditional animation. For those who make animation, VR makes the animation become more active compared with traditional passive animation. It could endow the animation with the playful and interactive features through different methods, such as getting into the character. The design of the scripts, characters, scenes and plots should be attached to the features of the VR technology which include interaction, immersion and multi perception in the creation of VR animation.

6.1 The Selection of the Subject and the Content

The main difference between the animated cartoon and other forms of film and television art is that the former needs infinite imagination and is not limited by real and objective rules and shapes. The display of imagination in animation cannot be compared by other traditional film and television forms. This imagination could be amplified and externalized to a larger degree based on the application of the VR technology. Creators could make use of this new technology to experience things that are invisible and unachievable in the real world and make their unrestrained minds be more figurative and authentic to be perceived.

Specifically, creators could conceive with a more open mind instead of being restrained by the perceived environment of the material world in their animation production, in which their imagination and inspiration could be fully presented. The interaction provided by the VR technology enables the audience to be immersed in the story and to actually experience the scenes of the script and interact with the characters, which brings up a new feeling. Undoubtedly, this would spark the creators' inspiration and help reflect the personal features an artist and the differentiation and non-substitutability of each artwork.

Although, currently, the development of the VR technology is likely to display all audiovisual feelings, the films that are more interactive should particularly stress on the content which is more recreational, intellectual and enjoyable or which features exotic culture and pays more attention to travelling in the selection of the subject, as the audience would gain more sensory stimuli and immersive experiences. Nevertheless, horror should be avoided because VR features the enlarged sensory stimuli due to the difficulty in distinguishing between genuine and fake, and the deep immersion.

Based on the authentic news documented by BBC, the film is produced by Aardman Animations can be regarded as the continual exploration of BBC for VR potential for future medium. One of the most famous works of Aardman Studio is the stop-motion Claymation *Wallace & Gromit*. *We Wait* is the initiative attempt at the immersive story description. The familiar Claymation of the Aardman team gives the immersive film a unique and great experience. *We Wait* highlights the loss, fear,

anticipation and excitement of homeless refugees when they try to go across the sea to Europe. The team uses motion capture devices and figures out the best way to depict all the characters in the limited conditions of the project (Fig. 1).

Fig. 1. The VR animated short film *We Wait* (Source: http://www.sohu.com/a/121681470_505777)

6.2   The Organization of the Clue in the Script

Different from the "narrative" display of traditional animation, VR animation tends to the actively "discovering" and "exploring" audience. Therefore, the nonlinear narrative method could be considered by the creators in writing the script. Meanwhile, they could take into account the interactive plots which endow the story with immersion and participation. The audience could observe or even explore from multi aspects.

The overall development of the story is guided by the shooting scripts and the nonlinear structure is combined with narration. Details which could be excavated by the audience are added to extend the story through exploration. Differentiating from the continuity of the traditional animation, the information points in VR, such as props, motion, light, color and sound, are adopted to attract the audience's attention and then move the plot.

Audience participation determines the structure of the script in writing. It can be divided into several types, such as one with various moving plots with a similar ending, one with various moving plots with various endings, and one with one moving plot with various endings.

In the VR world, height and walk are free. Linear and nonlinear structures are combined to avoid the excessive freedom and low attention of the audience to plots. The plots will be distinguished as primary and secondary. Although, the plots are different, they will guide the audience into the main plot, which will make the film more interesting and bring rich experiences to the audience.

It describes the story of a girl who accompanies her father, a musician who composes the song *No Wrong Way Home*. The scene of the story is in a car and it plays from the perspective of the passenger. *Pearl* is multi-structural. There are several trigger points in the plot which may produce different endings. Its screen time ranges from five minutes to seven minutes (Fig. 2).

Fig. 2. VR animation *Pearl* – The first VR animation nominated for an Oscar (Source: http://www.sohu.com/a/128967067_223570)

6.3   The Spatial Arrangement of the Scene

In traditional two-dimensional (2D) animation, the display of the space is finished by simulating the three-dimensional (3D) things in the 2D way. 3D animation is able to present a relatively authentic world, but it is fundamentally a 2D display mode. It only displays a 2D plane set up by the author, while the audience cannot perceive from other perspectives and dimensions. Therefore, more attention is paid in displaying the space and dimension in designing the scene of VR animation. The VR technology is adopted to strengthen the sense of reality in the 3D model, break the spatiotemporal limit and bring the actual 3D feeling to the audience.

In designing the scene, each detail of the VR animation should be elaborately designed, there should be a clear distinction between the primary and the secondary, and the virtuality and reality should be combined, compared with the scene designing of the traditional animation. There must be no dead angle at 360 degrees for all objects in the scene. All the directions must be accurate compared to the former behavior that only the part which is shot is prepared.

The leading role Henry is a hedgehog that yearns for friendship. His aggressive appearance makes him fairly annoyed. He is lonely and has no friends. The audience is

supposed to be involved in and holds the birthday party with him. The good immersion provided by the delicate scene and the shape design of the character enables the audience to experience a totally different feeling with that on screen in this short story (Fig. 3).

Fig. 3. The scene design of VR animation *Henry* (Source: http://www.sohu.com/a/130034086_285313)

6.4   The Control of the Rhythm and Keynote

A clear distinction between VR animation and the traditional animation is the display and control of the rhythm of the story. The director takes absolute control of the rhythm of the story and largely uses montage in editing and cutting in the traditional animation. The sentiment and attention of the audience fully depend on the design of the atmosphere of the story by the director. However, the audience owns the dominant right in VR animation where their participation in the virtual world is further enhanced. It is necessary to start with more details, such as lens switch and the combination of music and sound effect, to highlight the rhythm of VR animation. The treatment should be more natural and subtle so that it seems to be actively uncovered by the audience. It is important to seize the function of details about the stimulation of the mental feelings of the audience and finish the guide of the rhythm of the audience's sentiments insensibly, which could increase the immersion of the work and the participation of the audience.

At present, the way to control the stimulation degree of the audience in response to details is a research difficulty. Faced with different events or objects, individual response degree of the audience is determined by the age, experiences, life experience, interests, focuses and other aspects. It might be an alternative to design various details to guide the audience.

It tells the story of a little girl Ella who goes out wearing her new sunglasses. It rains as long as she puts on the sunglasses and the rain stops if she takes off the sunglasses. It is a VR short film which involves many interactive elements. The time the audience spends on focusing on a certain part of the story would affect the content they watch. For instance, there are two lovers who are drinking in front of the bar. The longer time audience watch them, the more they get drunk (Fig. 4).

Fig. 4. The VR animated short film *Rain or Shine* (Source: http://www.sohu.com/a/128967067_223570)

6.5 Setting of the Observation

In the current traditional animation, the conversion of viewpoint is a narrative practice, which is more conducive to the audience to perceive the message conveyed by the works from multiple levels as of objective ones and subjective ones. The VR animation presents in an entire environment, with no concept of field of view, so the audience as the first-person point of view are under no limits. Audiences do not know where they ought to look at, nor do creators know where to let them look. No editing, no storyboard. Therefore, it is most likely for the audience to lose the key details of the story simply by turning around. Of course, we can design guiding factors like sound, light, color, and video into it which requires the designer of VR animation to carry multiple levels of design thinking.

In the VR animation, the audiences often act as active participants, keeping up with the plot. Therefore, the character design can be made in a richer form, so that the character's style and image can be more distinctive, better fitting the script and plot design. Taking into account the audience's self-recognition and their own conditions like height, environment, and actions, which can be used to guide the plot. Because the participants may vary in observation speed and degree of exploration, there shouldn't be too much plots at the same time, or the audiences would lose the focus, narrative clues, and the continuity of plot.

The background of the story is that two aspiring aliens are bent on ruling the earth and trying to destroy anyone who stops them. But when they came to Earth they met two cute rabbits, and the player's character was one of two rabbits (Fig. 5).


Fig. 5. VR Animated Short Film "Invasion" (Source: http://www.sohu.com/a/128967067_223570)

6.6   Transition Design

In traditional animations, it is necessary for the director to use the lens for the narration of the story. The occurrence of the story needs transition between the scenes. Generally, the audience does not care about the relationship between the characters and the beginning of the next scene, which solely relies on the clipping by the creators to present for the audience. The common traditional transitional methods include: fade in and fade out, cut to, fold change, dark fade out and so on.

Although the VR animation is the active plot participation by the audience, it is difficult to avoid the story transition to promote the story line. In VR animation transition, the audience's sense of involvement can easily be interrupted, thus the transition needs careful consideration to look smoothly, focusing on creating the feelings of the audience, otherwise, their attention would be diverted elsewhere. For example, the audience's attention is concentrated on the main line of this scene when suddenly, behind him, there is a sound, and the audience's attention will be attracted by the voice, and hence the realization of the transition is done. By enlarging the scope of the focus to show a scene, and through narrowing, we can eliminate the surrounding scenes. In this way, we have achieved a transition mode of superposition (Fig. 6).
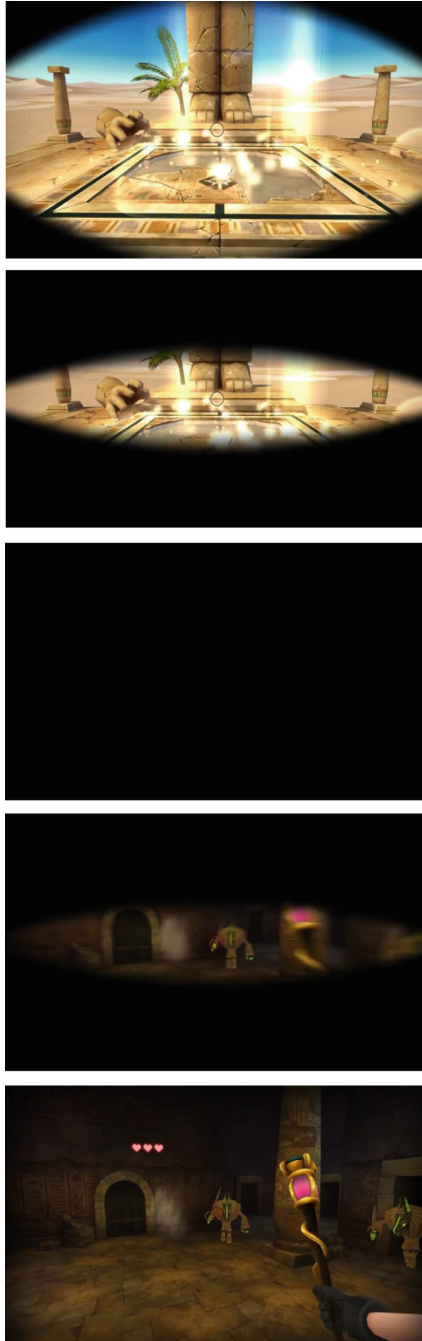
Fig. 6. The Blinked Transition Effects in the Case of *Tomb of the Golems* (Source: https://www.
zhihu.com/question/40002907#answer-29107251)

7   Conclusion

Traditional animation at this stage is based on some basic theories of film and television art. In the VR field, it breaks the conventional two-dimensional observation mode, creating great breakthroughs in the means and methods of artistic expression. The VR animation performance needs to be reformed on the basis of the traditional film and television art theory, combined with the unique interaction, immersion and conception of the technology of virtual reality.

The progress of technology promotes the revolution of art. The new medium generates new context of the development of animation art. VR animation can give full play to the advantages of virtual reality. From the selection of theme content, the organization of script cues, arrangement of scene space, master of the basic tempo, and setting of the audience's observation to design of transition, it can change the traditional creative thinking and implement a disruptive innovation, giving the animation art new expressive forms and infectious capabilities, so as to meet the audience's growing aesthetic experience and interaction needs.

VR animation is currently at its infancy and its technology is immature. Relevant research of academic theories needs continuous exploration and reform based on the traditional animation. With the development and application of more advanced devices and technologies, the front-projected holographic display augmented reality can combine with VR animation, it is believed that one day we can walk in a "real" dream hall.

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