# The Creation of Shadow Animation under Digital Technology

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***Abstract:*** *The rapid development of digital technology has brought about new expressions and opportunities for the creation of Piying animations. However, to do well in this area requires knowledge and unique understanding of a range of interdisciplinary elements including digital technology, shadow puppetry, animation media, etc. Taking Sun Wukong Thrice Foils Bai Gujing, a 2D digital animation as an example, this paper tries to reveal the link between the digital production of Piying animations and the ontological characteristics of animation, and to identify more possibilities and conditions for the creation of digital Piying animations in China by exploring the multifold connections and interactions among digital technology, animation, and shadow puppetry.*

***Keywords:*** *digital technology, animation, shadow puppetry, Sun Wukong Thrice Foils Bai Gujing, upgrading and reconstruction*

## 1. Introduction

The Piying play (Chinese shadow play) is one of the oldest folk arts of the Chinese nation and an important intangible cultural heritage of China. A series of Piying-based animations such as *Pig Bajie Eats Watermelon* and *Princess Iron Fan* is deemed as important achievements in the nationalization of Chinese animation, with some of their design elements becoming symbols of Chinese animation schools. However, despite having traditional Chinese cultural characteristics, these animations have gradually disappeared in the market due to inefficient production and a limited audience. With the development of the times, digital technology has opened a new stage for Piying animation. As a good example of digital Piying remakes, *Sun Wukong Thrice Foils Bai Gujing* has successfully realized the combination and symbiosis of art and technology, and inheritance and innovation based on traditional Piying animation, which not only inherits and disseminates excellent traditional culture but also promotes the healthy development of the industry.

## 2. Digital Technology, Animation Media and Piying Art

Based on *Journey to the West*, one of the four famous Chinese classics, the 2D animation *Sun Wukong Thrice Foils Bai Gujing* tells the following tale: A Buddhist monk named Xuanzang and his three disciples are journeying to India when Bai Gujing, the White Bone demon, dwelling on Mount Baihuling attempts to trap and kill them. The ferocious crafty demon good at disguise turns country girl, old woman and old man successively for the purpose of swallowing Xuanzang. Only one of the pilgrims, Sun Wukong, is able to see through the demon's disguises. He hits and seemingly kills the demon in each disguise, but Xuanzang scolds and expels him from the group for killing what appear to be innocent people. Finally, Sun Wukong reluctantly goes back to Mount Huaguoshan.

Other than just following most original narratives, *Sun Wukong Thrice Foils Bai Gujing* adopts realistic reproduction of the old Piying performance, which allows it to have a distinctive Chinese cultural style. Such a combination of narrative and symbolic representation undoubtedly indicates that the core objective of the work is to promote traditional Chinese culture.

In terms of production, this work makes full use of 2D digital technologies which by now can realistically reproduce the visual effects and character movements of the original Piying performance. In terms of character/scene production, character modeling, action design, etc., all kinds of efforts were made to digitally reproduce the "puppet" style performance of traditional Piying art. The production of

old Piying art is extremely complicated and consumes a lot of manpower, material resources and time. With the help of computer software, artificially created digital character models (including digital images of body parts such as heads, upper limbs, and lower limbs at different angles) can be used repeatedly in different shots, eliminating the need to repeatedly draw similar pictures. At the same time, motion simulation based on frame processing makes the movement of digital Piying characters much more coherent than that of those in traditional Piying plays. However, effects of real Piying plays are shown in a sense of depth between different shapes and the traces of characters turning and fighting.

By using Piying as an intermediate medium and imitating Piying performances, *Sun Wukong Thrice Foils Bai Gujing* becomes a "paperless animation" that looks and feels quite similar to a "hand-made" traditional animation, indicating the perception of and longing for the ontological aesthetics of animation media. As a digital animated remake of the original Piying play, *Sun Wukong Thrice Foils Bai Gujing* serves to put the ontological aesthetic expression of animation media under the spotlight and highlight the "nature of animation". The subjective creative choice clearly indicates that the production team wanted to simultaneously expand the scope of cultural expression of Piying art and highlight the intrinsic aesthetic value of animation media. Such a practice reflects something that can be deemed as a creative concept that goes beyond narrative structure and technical means.

Professor Wu Guanying pointed out that "human thinking cannot be realized through programming, because it contains many complex elements including feelings, emotions, etc., and sometimes it can even be illogical, like in artistic creation."[1] AI can imitate some works, but it cannot create anything unique. While using 2D digital technologies to imitate and restore Piying performances, the production team of *Sun Wukong Thrice Foils Bai Gujing* also intentionally highlighted and expanded the elements constituting Piying as an art style. In the end, they have created a new "ontological art" that integrates digital technology and traditional media and reflects a close interplay among digital production, animation and Piying art. Although not produced using real Piying materials, this work shows that creators can actively explore multiple ways of expression by the selective application of digital technology, animation media, and Piying art.

As digital technology and "paperless animation" gradually becomes a mainstream today, new approaches to new media and traditional arts, as well as to means of production and purposes of creation, have spontaneously sprung up, all of which would promote new changes and development in the animated remake of old Piying in China. Taking Piying animation *Sun Wukong Thrice Foils Bai Gujing* as an example and by exploring the interactive relationship between digital technology, animated remake, and Piying art, this paper attempts to identify the possibilities and conditions for creative thinking beyond image styles and narrative themes in digital Piying animation.

## 3. The Animated "Upgrade and Reconstruction" of Traditional Art "Models"

*Sun Wukong Thrice Foils Bai Gujing* is a digital Piying animation based on three important models. The first model is a classic work of literature as the animation is adapted from a classical story in *Journey to the West*, one of China's four great classic novels. As an artistic creation, the story itself is highly subjective and creative in nature, but the digital animated remake allows it to have an objective form. The classic work is very important for *Sun Wukong Thrice Foils Bai Gujing*. The story has long been widely circulated among the masses and known to every Chinese. Therefore, despite the fact that animation is not as good as movies and TV shows in terms of length and rich plots, the audience have no trouble understanding and accepting the storyline and might even be pleased to see a familiar story play out in a different from.

Another model for this animation is Piying art, an objective entity that actually exists in the real world, all physical features of which can be used as design elements of digital 2D animation [2]. During production, the production team tried their best to reproduce the shape, style, and movements of "real Piying plays". For example, in terms of performances, software features were employed to realize "puppet-like" movements of real Piying characters. In model design, they adapted models from traditional Piying plays in Shaanxi, Sichuan, Hebei and other places, and learned from facial makeup and costumes of traditional opera, to better portray the personalities of different characters. In addition to highlighting the unique modeling beauty of Chinese Piying, light and shadow toning during post-production was strengthened to reproduce the unique transparency feel of carved out Piying figures, so as to more prominently present the unique style and expression of Piying art.

The recompilation and upgrading of the performance space of the Piying model is another highlight of *Sun Wukong Thrice Foils Bai Gujing*. In *The Eastern Capital: A Dream of Splendor*, it is said that

"on festivals and holidays, either opera stages or small sheds for Piying performances are set up at almost all lane entrances to attract local children so that they won't wonder off and get lost." It can be seen that the traditional Piying play is a stage art displayed in a fixed space. In *Sun Wukong Thrice Foils Bai Gujing*, the performance space of the original Piying play has been recompiled and upgraded, with the play itself virtualized and digitized, so that it obtains the digital properties of free flow and change without being bound by the constraints of physical existence. By means of digital creation, including the shooting of the simulated stage scenes, and the addition of appropriate close-ups, middle shots, long shots, and "push, pull, shake, slide" and other moving shots, the animation can give the audience a refreshing multi-angle viewing experience, including close-up shots showing Monkey King using his piercing eyes on the Bone Demon, close-up shots showing features of a character, and moving shots depicting the fight between the Monkey King and the White Bone Demon.

"Puppet-like" character movements and flat character design are clear indications of the animated upgrade and reconstruction of the original model by *Sun Wukong Thrice Foils Bai Gujing*. While gaining a wider creative space through digitalization, it is also necessary to retain the characteristics of the original art in order to give the animation more artistic connotations so that it can stand out from other 2D digital animations. *Sun Wukong Thrice Foils Bai Gujing* has realized the interconnected combination of various models (2D digital animation technology, Piying art and a classic work of literature) in the three aspects of respecting the narrative logic of the classic story, presenting an exaggerated but interesting performance style through 2D digital animation characters, and making a digital animation look like an old-style Piying play through choreography of "puppet-like" movements.

In summary, in terms of its character modeling, spatial processing, artistic expression and storyline, *Sun Wukong Thrice Foils Bai Gujing* is a good example of diversified treatment (upgrading and refactoring as well as replication) of traditional art models. In this way, possibilities for more expansive artistic expression are explored without losing the essence of traditional culture and art. The symbiosis of all the aforementioned elements supported by digital technology shows the innovative potential of creative expression of traditional Piying art, as well as the multifold interactive relationship between digital image technology, animation media and content production based on traditional cultural and art.

## 4. Digital Animation and its Unlimited Creative Space

Through the above analysis of *Sun Wukong Thrice Foils Bai Gujing*, we can see that traditional folk art can be upgraded and reconstructed, and the development of digital technology has significantly expanded the creation space for 2D paperless animations based on traditional folk art. "Cinema has existed as a kind of visual art since its birth, and images are its core expressive elements." Before the emergence of digital technology, almost all animated images were obtained by camera. However, ever since the introduction of digitalized animation, reliance on the camera has ended as animated images can be generated or drawn with corresponding software on the computer. [3] Early movies were stored on films which might be lost or suffer various degrees of damage with the passage of time, and traditional animation also requires drawing tens of thousands of paintings with precisely matched contours and colors in studios. From *The Monkey King 3D* to *Big Fish & Begonia* and then to *Nezha: Birth of the Demon Child*, we can see that digital technology can help improve the artistic expression of animation almost infinitely. The spatial construction and realistic visual effects brought by digital technologies have elevated the aesthetics of animations to a brand-new level. With the help of 2D digital technologies, Director Wang Yumin has explored aesthetic characteristics different from those of traditional Piying performances and given Piying art a brand-new aesthetic look. [2] Although not a Piying production in the traditional sense, *Sun Wukong Thrice Foils Bai Gujing* can make the audience feel like they are watching an old style Piying play with the help of digital technology. In other words, the application of digital technology in traditional folk art has two effects: bringing expression power of a new animated form to the traditional art which was difficult to reproduce and promote and allowing the audience to have a new viewing experience with domestically made Piying animations. To a large extent, these two effects are the main reasons why many animators would prefer digital technologies.

After realizing and understanding the benefits of innovative changes brought about by digital image technology, it is not difficult to see how digital technology can significantly promote the development of traditional folk art and related animation. In the digital age, technology and art are interdependent and mutually supportive. However, while continuous technological innovation has indeed brought more possibilities to animation, the subjectivity of such creation cannot be lost due to excessive reliance on technology. Basic attributes of the digital upgrading and reconstruction of traditional cultural and artistic models are in tandem with the ontological characteristics of animation media because they are

both works of art created by giving full play to the subjective initiative of the creators, rather than video works that rely on mechanized image reproduction by cameras and other machines. While using digital image technology, *Sun Wukong Thrice Foils Bai Gujing* also emphasizes the characteristics of artificial production. With this method, the application potential of digital technology in both Piying and animation can be explored.

The continuous development of digital technology is bringing more possibilities and great opportunities to animation in China. During the era of the "Chinese Animation School", domestic animation artists created many excellent works that incorporate traditional art and culture, including many good examples that are centered on traditional cultural elements. For example, excellent works such as *Peach Blossom Spring* and *Autumn Fruit* were created by combining digital technology and unique Chinese cultural arts such as "Piying" and "ink painting". It can be said that traditional culture and art provide Chinese animation creators with many conventional and well-known models in areas such as emotions, material, artistic conception, and cultural connotations, and the boom of "Chinese school" animations would not be possible without the diversified combination of animation media and Chinese cultural elements.

As the mainstream production method of modern animation, digital technology is bound to break new ground when it encounters traditional Chinese cultural elements such as Piying art and classical novels. Digitalization offers creators unlimited freedom in terms of creative thinking and means to realize their ideas, and all elements of traditional Chinese art and culture can become models for animation. In *Sun Wukong Thrice Foils Bai Gujing*, for example, by combining digital technology means with the artistic expression based on the intrinsic characteristics of animation, the production team has successfully realized the 2D animation of a story from a classical novel and created a Piying animation with a unique traditional Chinese art style. The direct combination of a classic storyline, digital animation, Piying "puppet style" performance, and virtual stage building in this animation indicates that the combination of digital animation technology and traditional culture and art models can provide Chinese animation creators with a steady stream of inspiration and almost unlimited creative freedom. By reviewing the production process of *Sun Wukong Thrice Foils Bai Gujing*, we can see that classical novels, Piying art, and animation media can be seamlessly integrated in an interdependent manner. "In the era of digital animation, while rapid development of technology is expanding the creative space for artistic expression, the liberal development of artistic thinking is also guiding the way for technological development." When we think of *Calabash Brothers*, the great fights between good and evil always come to mind. When recalling *Havoc in Heaven*, we always remember the wonderful transformations of Monkey King. In the era when digital technology drives animation, we need to pay more attention to the cultural connotations and national characteristics of the works, and explore more creative possibilities in traditional Chinese culture and animation media.

By studying the creation of *Sun Wukong Thrice Foils Bai Gujing* and other similar works, we can see that with the development of digital technologies and the mature application of these technologies, the creation of animations by the "Chinese school" enjoys unprecedented broad prospects, which might even be limitless if we can continue to reconstruct and explore the relationships between digital technology, traditional Chinese culture and art, and animation media. However, as Liu Xie from the Southern Dynasties said in *The Literary Mind and the Carving of Dragons*, "Sometimes certain clear and obvious truths can only be realized after going through a great deal of detours", and the "correct path" of animation in the age of digital technology is not that easy to find [4]. To do that requires thinking beyond technical means when faced with continuous advancement of technology and refraining from simply copying and reproducing traditional cultural and art elements. What needs to be done includes having a unique and clear understanding of digital technology, animation media, and the aesthetic values and rhetorical devices of Chinese traditional culture and art, as well as actively exploring and studying the connections between the three. Only by having these understandings can we truly create great animations with Chinese characteristics, and the key objective in the process is to go beyond any single purpose such as interpreting the existing reality and mechanical copy and paste, but to use the existing objective facts to construct a brand new concept and new direction.

## 5. Conclusions

Eric Larson, an animator and one of Disney's "Nine Old Men", once said that if you are not sincere, the audience won't believe you, but neither will they believe you if you try to show sincerity.[3] To create good animations with Chinese characteristics that incorporate elements of traditional Chinese art and culture such as the Piying art, we cannot rely solely on the use of digital technology, or the desire

to present certain traditional art, otherwise the outcomes of animation would be reduced to pure form without profound connotations. When predicting the development trend of science and art, the French novelist Flaubert once said, "Science is becoming more and more artistic; the two would part ways at the foot of the mountain and eventually meet again at the peak."[4] In the digital age, digital technologies are applied in almost every procedure of animation production, and its development also enables the animation industry to have a broader development space, more diversified artistic expressions, better audio-visual effects and more creative freedom. However, we cannot exaggerate the advantages of digital technology so much that the noumena of animated images and traditional culture get buried. In digital Piying animation, for example, in order to "take something majestic without losing its true essence and admiring the flower without damaging its fruit" (Chapter 5, *The Literary Mind and the Carving of Dragons*)[3], what we should do is to identify the multifold connections between digital technology, Piying art, and animation media, and to achieve mutual support of technology and art, and the syntonic integration of on-screen spectacles and sincere wishes. Due to its active exploration of Piying animation, *Sun Wukong Thrice Foils Bai Gujing* is of certain significance to other types of digital animation based on Piying art.

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