

# The Function of Techniques Is to Convey the Dao

## Study of Chinese Stop-Motion Animation Techniques From the Perspective of Dao-Qi Relation

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### ABSTRACT

Stop-motion animation is one of the expressive forms of art that can best reflect the interest of handwork and the feelings of creator. At present, the research involved is still limited to the experimental study of ideas and appearances and the exploration and application of materials. It is indisputable that stop-motion animation is inherently experimental, but it is inappropriate to stagnate in the stage of material experiment exploration and experimental theory of artistic language. The research on the production technique of each link of stop-motion animation is scarce. With the improvement of digital technology in the new era, the technical breakthroughs in stop-motion animation are also in urgent need of demonstration. The authors hope to attract the attention of the modern society to the research of stop-motion animation techniques through analysis on the culture valuing Dao over Qi that has developed during the past thousands of years.

**Keywords:** *Dao-Qi, stop-motion animation, technique*

### I. INTRODUCTION

In his government work report in 2016, Li Keqiang, then China's premier, first mentioned the striking term craftsmanship, stressing the need to "cultivate craftsmanship who strives for perfection". This is the first time that the model strategy of craftsmanship has appeared in government document relating to the governance of the state, indicating China's expectation of "cultivating craftsmanship", which has become the new direction of national strategy and national attention and efforts.

### II. THE RELATIONSHIP BETWEEN IDEAS AND TECHNIQUES IN TRADITIONAL CULTURE

The weather is limited by the season, the land by the climate, the craftsmen are divided into skilled and unskilled, and the materials into good and bad <sup>1</sup>. In the long history of China's farming culture, the opposite of "diabolic tricks and wicked craft" in traditional Chinese philosophy is "excessive attention to plaything saps the will". However, the technology developed to a certain

level will seriously damper the progress of science and bring a relative "conservatism" to the society.

"Craftsmanship" refers not only to technology, but also to the technology with artistic elements. The original meaning of "craftsmanship" in the pre-Qin period was very complicated. In the spring and autumn and warring states periods, the development of the productive forces made craftsmen who represented the advanced productive forces occupy a prominent position in the historical stage. The core of the contention of all schools of thought is the discussion on the relationship between people, people and things, as well as the relationship between Dao and Qi, righteousness and interests. It can be seen that the relationship between Dao and Qi in the pre-Qin period was that between man, nature, artificiality and art, while relation between righteousness and interests discusses the ethics of justice in human society and the benefits derived from the exchange of man-made creations. Much of this is illustrated by examples relating to techniques. In the spring and autumn period and warring states period, the bronze casting technique was endowed with more significance than the technique itself, becoming the important instrument representing the great events of a state. The textile industry was developing rapidly, and many archaeological discoveries show that cord wheels and jacquard machines were already in existence. The official book

\*Fund: Shanghai Planning of Philosophy and Social Sciences:

"Organization and Research of Stop Motion Animation after the Founding of the People's Republic of China" (2015EWY002).

<sup>1</sup> Postscript of Chinshihui regards the craft with appreciation and aesthetic value as "the gold stone" and "antiques".

of the summary of handicraft technology, *The Record of Craftsmanship*, also records the achievement of craftsmanship, which still has great reference significance in today's traditional material creation of stop-motion animation.

As in the west after the Renaissance, many techniques became technology. There were already many such examples in the pre-Qin period. multiplication table, Pi and the Pythagorean theorem are achievements of mathematics, while physics deals with motion and mechanics, motion and rest. Great achievements have been made in optics, astronomy, biology, medicine, and geography. As for water conservancy, there is the Dujiangyan Irrigation System. Urban construction was highly developed, and Lu Ban and Mo Di were revered, which made it possible for artisans with skills to enter the political arena. The important position of craftsmen in this period could not be viewed in isolation. The free identity of craftsmen gave them a place to use force, even causing fear in the ideological circle. Skilled people in the pre-Qin period had a special social status because they represented the most advanced productive forces of their time. The story of the jade of the He family also shows that the concept and identity of works of art have been established at that time. It can be seen that the worship of the skilled was a universal value in the society at that time.

Since the Han Dynasty, the emphasis on craftsmanship has gradually declined, mainly because Confucianism has become the mainstream in China. After a long time span of China's feudal society, Confucianism and Taoism still have great influence in the contemporary era. That is why the ideological constraints on the arts have unconsciously moved in the other direction. Technological advancement is not the ultimate goal, but rather a set of "magic-like theories". Such a requirement greatly influenced the craftsmen in China, and the well-known skilled and magical craftsmanship is of such guiding significance. Confucianism advocates righteousness over profits. In ancient times, most of the profits were made by craftsmen with skill and then realized by merchants. So it is not surprising that people who engaged in industry and commerce had a low status in feudal times. The literati in Song Dynasty enjoyed high position in the political life. When they noticed the high aesthetic value of the arts, they separated the traditional practical arts from those of appreciation and aesthetic value, which pushed the emergence of "the gold stone" and "antiques".<sup>2</sup> It is only here that the worship and pursuit of art can be preserved. But its status and influence are already less limited.

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<sup>2</sup> Peter Mark Roget. Persistence of Vision with Regards to Moving Objects [M]. 1824.

Confucian orthodoxy led to the decline of artisans. With the integration of Taoist thought and literati thought, the problem of skills became more and more serious in the late Qing Dynasty. Both music and art have rejected art, and the science of instrumentalities related to the national economy and people's livelihood has died out. It is hard to imagine that the agrarian society, which used to be in the forefront of the world with highly developed astronomy and instrumental measurement, fell behind in a certain period of time. The reason, it turns out, is that people can't get into office by virtue of their superior skills. Due to the overemphasis on practicality and people's livelihood, the pursuit and innovation of skills never became the mainstream in the feudal society of China for thousands of years. This, in turn, had a profound impact on Chinese attitudes.

### III. THE MODERN PROCESS OF STOP-MOTION ANIMATION

Stop-motion animation is a film art form with a long history, which can be traced back as far as the origin of the film itself. In the 17th century, Athanasius Kircher invented the magic lantern. This refers to a special iron box with a small opening inside, covered with a lens, and then placed inside the iron box a lamp that can shine and is bright enough. This allows light to be projected through the reserved opening. Finally, a piece of glass with a good design is placed behind the lens. When the light penetrates through the glass and the lens, a pattern will be projected on the wall in proportion to the distance. Slides are still used in everyday teaching to show valuable materials. At that time, magic slides had become a common projection tool. After continuous improvement and optimization, the magic lantern became popular in France in the 19th century, and the variety of manifestation became more and more abundant. Due to the abundance of light, the projected images can be interwoven to form a sense of layers. In addition, some auxiliary props can be added. After adjusting the lens, a faint ghost illusion will appear. The device, which was both recognizable and imaginative, fascinated people at the time. It is well known that shadow puppetry originated in the Tang Dynasty of China. The principle is "back cast": that is, the curtain is in the front, the luminous body light source and the leather character are in the background, so that the projection light source penetrates the half transparent leather character to the screen to play a shadow play. It may seem that the magic lantern and the shadow puppet show, one using orthography and the other using back projection, are in opposite directions, but what is interesting is that civilizations on both sides of the globe are equally fascinated by shadows and are equally willing to try and improve. In addition, both civilizations can control the virtual reality of projection and make it serve for creation and

increase interest. Shadow puppetry was introduced to European countries for touring, and it was also welcomed by western civilization. The sharpness and delicacy of the images were comparable to the magic slides of the same period. So when the projection problem (whether it's orthographic or back projection) is solved, what does it have to do with animation? The publication of *Persistence of Vision with Regard to Moving Objects* has prompted many animators to conduct rounds of animation experiments. While creating a large number of animation experiments, the company not only produces a large number of cartoons for the places with great demand in Europe and North America, but also makes a large number of experimental technical inventions and creations based on the temporary characteristics of vision. Imaging tools with a dynamic trend, such as "magic lens" and "peepshow" (rotary drawing tube), draw continuous pictures with the same size and different contents according to the imaging hole, then connect them in order, and make each frame move at a constant speed to view or project images through the hole in turn. Similar inventions include "practical mirrors", "magic pictures" and "hand-turning books", in which fast pictures appear in sequence and the visual effect of continuous movement is seen or felt by virtue of the visual retention principle. In 1902, Georges Méliès applied various imaging techniques to the short film *A Trip to The Moon*, which was the earliest video work with stop-motion animation features. It can be clearly seen that the progress and application of technology have promoted the gradual evolution and development of art.

It needs to be clarified that although the production method of animation, even in theory, has many similarities with the film, such as the media material of exposure of film at the beginning and the way of projection on the curtain at the end, the concept of animation is fundamentally different from the film, just like subjective and objective. The imaging method of a film determines its purely objective recording. Movies break down the limits of time and place. Before, people could only see something at a fixed time and place, but movies could make people see what happened before at any time and place, which was very shocking at that time, just like people's reaction when they saw photos. The creation of animation is like other art requiring subjective initiative. Even the objective creation of things is a subjective act. For example, a combination of painting, sculpture and other popular art. Animation, which inherits the creation mode of early human art form, attracts creators to create for it without restriction. Stop-motion animation is the most similar image form to film among animation. Stop-motion animation is easy to learn and available to all. At the same time, stop-motion animation can cover most of the art at the present stage, showing these arts with the technical means of making by case. The creation of stop-motion

animation requires strong technical support and high artistic quality.

The increasing power of computer application has seriously affected the living environment and space of stop-motion animation. From animation to special effects, computer animation has squeezed stop-motion animation out of reach. However, the appearance of camera also greatly squeezes the space of painting. When people think carefully about why they paint, painting has made a new breakthrough. The most basic of human feelings, the pleasure brought by shaping, will not disappear because of boredom, and the feeling when the will of devotion is reproduced through the material can hardly be forgotten with the passage of time. The character modeling of stop-motion animation is mostly made by hand, because it satisfies one of the basic philosophical attributes of human being. The camera has gone through many iterations, from fussy to dumb, to film to digital, and now it's being squeezed out of space by something new: the mobile phone. However, painting has been moving forward steadily with different methods and experimental ideas to satisfy the basic human demand of expressing emotions. Similarly, stop-motion animation, which has survived the computer boom, has taken a new turn. With the development of digital technology, stop-motion animation no longer regards virtual digital technology as a rival, but makes use of it on the basis of fully retaining its own advantages. After completing the digital non-linear shooting, people can immediately watch the action that has been filmed, find out the problem and make timely adjustment. The producer can make use of the "onion skin effect" of stop-motion animation software to better predict and adjust the motion rules of posing, adjust and control the motion control, and realize the free push, pull and shift of the motion lens. The new material provides stop-motion animation which always values material experiment with more artistic experimental carriers. 3D printing materials enable rapid prototyping of products, as well as mass and repeatable production. The efficient production of industrial system will greatly shorten the production cycle of stop-motion animation. Nonlinear editing and digital post-production effects make the production of a digital stop-motion animation no longer as complicated and uncontrollable as it used to be in the film period. The shooting ideas and technological process of the creators are also greatly expanded. In a way, the computer animation has opened up a new track for stop-motion animation, enabling the two to interact and stimulate each other in a beneficial way.

#### **IV. CHINA'S STOP-MOTION ANIMATION SKILLS**

Chinese translation of stop-motion animation is different. At the infancy stage of Shanghai Animation

Film Studio, there were two-dimensional group, paper cutting group and puppet group in the department. In China, stop-motion animation is usually translated into case-by-case animation, also known as material animation. After the founding of the People's Republic of China, the Chinese stop-motion animation was developed from scratch, mainly benefiting from Western achievements. China has experienced a golden period and consciously created cartoons with Chinese national characteristics. Unfortunately, the development of stop-motion animation stagnated when computer animation flourished. It seems that Chinese stop-motion animation rarely inherits its predecessors in production, let alone development and innovation. Nowadays, the biggest problem is that the techniques of stop-motion animation have not been effectively inherited, and the basic materials have been in a weak state with no successors. Relevant articles on academic research in China are even rarer. The reasons are as follows. First, the objective reason is that it is difficult to adapt to the market changes after the marketization of film and television, and there is a lack of inheritance of skills. The gap between traditional skills and the current era results in the thinking mode of "traditional skills being backward and outdated". Second, the development of stop-motion animation in the West has stepped up in digitalization. Both the techniques and the degree of integration and industrialization of the disciplines have reached a higher level. Third, most people regard materials as carriers or media for artistic creation. Third, most people regard material as the carrier or medium of artistic creation, which is an inertial cognition derived from accumulated and repetitive work. It cannot be compared with "art", the essence of the evolution of the upper spirit. As a result, technical research was put in a secondary position, which eventually led to the general neglect of the producers in the industry. After the reform and opening up, the development of the Internet makes a large number of foreign modern stop-motion animation works flood into China in different forms. Material breakthrough brings the greatest impact, foreign works of various material styles do bring about aesthetic satisfaction and diversification. On the contrary, although China's domestic stop-motion animation has made great progress, there are still some unsatisfactory aspects: too much attention was paid to the addition of experimental animation features to the material.

However, the research on materials usually focuses on the discussion or arrangement of the unique advantages of a material in modeling, especially the physical classification of the material's texture characteristics, color expression, light refraction and reflection.

The application and development of integrated materials have brought infinite possibilities for the innovative development of stop-motion animation. This

is why some people are now willing to call stop-motion animation "material animation". The artistic or formal beauty of the material is recognized by most people and applied to practice, but there is very little information about the technical aspects of stop-motion animation. There is no agreement on the materials used in a large number of stop-motion animations, and there is a lack of research on the technical means used. Whether the techniques used to show materials have the potential and importance of conveying "ideas" also requires consideration and research.

The field of culture and art has always paid attention to the consciousness and confidence of its own cultural innovation and development, and one of its starting points is to observe the deficiencies of the fine arts education system, which is too dependent on and attaches importance to Western, humanistic and academic systems. But do the animations that don't focus on traditional art have nationalization? Or is it impossible to combine nationalization and "modernity"? In fact, the traditional art skills are more or less ignored. Can it be called "nationalization" if the image and pattern of traditional art are cut and pasted in the works of today? It is necessary to understand the formation of image patterns and its evolution to craftsmanship.

After experiencing the market economy, the main force of Chinese animation production focuses on the processing in the middle and later stages of animation, which enables Chinese animators to learn the international process of animation production and lays a solid talent and material foundation for the development of the animation field in the future. However, it is clear that most of the processed films are two-dimensional and three-dimensional animations, which also bring problems such as originality and stylization. This is also why the development of stop-motion animation will be halted. Therefore, it is more necessary to establish the industrial production process and mode of stop-motion animation and open up a way of China's own stop-motion animation.

## V. CONCLUSION

The research on global stop-motion animation works shows that the excellent animation works outside China always have the spirit of industrialization in a consistent line, and constantly explore and summarize, and bring forth the new on the basis of the achievements of the predecessors. Predecessors such as Jan Svankmajer, Brothers Quay, Norman McLaren and others have a profound influence on later animators and filmmakers. From the perspective of comparison, many animation companies, including Shanghai Animation Film Studio, have inherited and carried forward the "path of national style" from the founding of the People's Republic of China to the reform and opening

up. Relying on development and innovation, combining with the new ideas and technologies at that time, they developed ink paper-cut, hair paper-cut and other techniques, showing a unique artistic style. The spirit of self-reflection and the bearing of skills is the power of the creation and development of stop-motion animation. Thanks to such power, matter, technology and virtualization are bound to be closely linked and interact profusely. Then they should try their best to inherit the work of their predecessors, apply it to practice, give it a new vitality, and bring back the exciting charm of Chinese stop-motion animation.

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