

The Basic Theory and Production Process of Digital Animation

Shu Yang

Wuhan Vocational College of Software and Engineering, Wuhan, Hubei, 430205, China

Email: 267271998@qq.com

Keywords: Digital Technology, Digital Animation, Application

Abstract: Human Beings Have Entered the Era of “Digital Survival of the Fittest”. Digital Technology Has Greatly Changed the Way We Work, Live and Play. in the Field of Animation, Digital Technology for Animation Production Has Also Begun. Digital Technology Adds Wings to Animation Art. Their Combination Produces Digital Animation. Compared with Traditional Animation, Digital Animation Has a Great Leap in Creative Methods and the Expressiveness of Pictures. the Purpose of This Paper, in the Digital Technology and Current Application of Animation, the Analysis of the Impact of Digital Technology on Animation Production, the Characteristics and Advantages of Digital Animation, Summarized as the Digital Technology of Animation Production, Better Use.

1. Introduction

Animation is One of the Most Popular Types of Art. It Attracts People of All Ages in the World with Its Unlimited and Implicit Photos and Story Content. People Who Grow Up from Preschool Children Will Have Some Favorite Cartoon Characters and Promising Cartoon Stories. Many Classic Animations Have Become Works That Grow Up with a Generation, and the Characters in the Films Have Become “Good Partners” That Grow Up with Them. for Example, Anime in the Evergreen Japanese “Robot Cat” (Doraemon, Doraemon, Known as the Name of Japan. the Characters First Appeared in 1970 and Were Introduced to China in 1991. Also Almost Loved by Everyone, in Order to Accompany the Generation, the Real Animation Work. There Are Several Animation Works That Have Caused a Huge Echo and Impact Phenomenon Called “Social Phenomenon”, Such as “the Gospel Warrior of the Next Generation” and “Mobile Disguise” Series in Japan. Animation Industry is Now a Global Rising Industry. Europe, the United States, Japan and South Korea Are All Very Important to the Animation Industry, Which is At the Forefront of the World. among Them, Animation Industry is One of the Economic Pillar Industries in Japan. the United States, the World's Largest Exporter of Entertainment Products, Produces 5 Billion Us Dollars of Animation and Derivative Products Every Year. Japan, through the Business Combination of Comics, Comic Books and Video Games, Has Become the Largest Animation Country with an Annual Sales Volume of More Than 9 Billion Us Dollars. Even the Rising Star of South Korea Has the Value of Animation Industry Only after the United States and Japan. the Volume Accounts for 30% of the World, 30 Times That of China. in the Field of Chinese Animation Art, There is a Glorious History, But Many Excellent Works Like “Afanti”, “Xiaao Xun Find Mother”, “Mu Di”, “Mig Di”, “Big Trouble”, “Three Monks”.

However, for Historical Reasons, the Chinese Animation Industry Has Almost Led to the Development of Time, and Our Animation Industry Has Hardly Been Developed in Its Early Childhood. Considering the Great Influence of Animation Art on People's Spiritual and Cultural Enjoyment and Its Huge Economic Benefits, Our Country is Vigorously Supporting the Development of Animation Industry. the State Has Put Forward Many Policies to Promote the Development of China's Film and Television Animation Industry, and Has Made Arrangements for the Development Funds of China's Film and Television Animation Industry. in the Past Two Years, the State-Owned Management of Radio, Film and Television Has Established the Production of Excellent Original Animation Products and Technical Support Services Based on the Film and

Television Animation Industry in 15 Countries, Which Has Been Allocated for a Special and Huge Fund. Beijing, Shanghai, Hangzhou, Hangzhou, Hangzhou, Hangzhou, Suzhou, Suzhou, Wuhan and Other Places Have Formulated Priority Policies for the Development of Animation Industry. Most of the Derivatives of Domestic Comics Have Also Withstood the Test of the Market. Brand Authorization Can Be More Than 16 Million Yuan a Year. in Order to Produce Better Animation Works and Meet People's Needs, the World's Animation Forces Continue to Train and Develop Excellent Animation Talents and Improve Animation Production Technology. under This Opportunity, Digital Technology Will Undoubtedly Become the Most Powerful Tool for Making Animation Art.

2. Domestic Research Background

Due to the late start of domestic animation and all aspects of bad conditions, it can be said that digital technology is the most important magic weapon for rapid development of animation industry. Traditional animation production needs expensive equipment, boring programs and a large number of digital technology applications to reduce the threshold of animation technology. Computers can replace almost all the expensive and troublesome machines. Advanced animation software greatly optimizes animation production. In addition, the traditional high threshold animation is also very little experienced Animation talent. In the digital age, the number of talents who master animation production technology has increased significantly. These advantages of digital animation are especially suitable for the current situation of Chinese animation. Chu Jun, deputy director of Shanghai fine arts film studio, pointed out. "To achieve revolutionary changes in Chinese animation, we must rely on digital technology." So far, there are also some excellent cartoon works in China, such as happy goat and big gray wolf, which are produced in a completely digital environment. The software platform is flash. Digital technology has greatly reduced production costs and difficulties. In addition, "pig man", "strange didi", "8 turtles", etc.

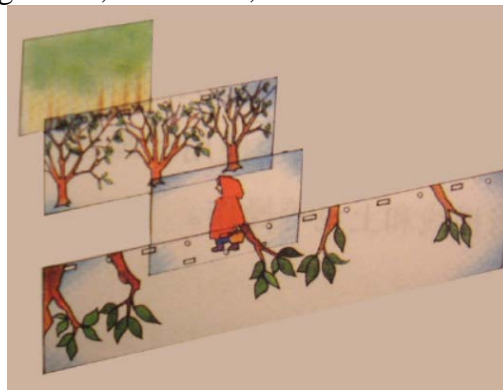


Fig.1 Principle of Celluloid

3. The Application of Digital Technology in Animation Creation

There is no doubt that, just like "productivity determines production relations", the development of technology provides a continuous impetus for all kinds of art creation and activities, "animation art, with the rapid development of science and technology, especially digital technology, radiates vigorous vitality and strong momentum[1]. No science has ever had such an important impact on an art creation: since digital technology has been widely studied and applied, the field of animation has changed dramatically. In 1964, K. Knowlton of Bell Labs first tried to use computer as a tool to make animation, which announced the beginning of the era of computer-aided animation. Since then, due to the rapid development of computer science and technology, especially the continuous in-depth study of computer graphics, animation production efficiency and film quality have been greatly improved, and in the production process, artists are given full freedom. Digital technology has the following applications in animation creation: changing the storage and transmission mode of traditional animation; using computer and other hardware and animation related software to replace

the traditional equipment and processes in the traditional animation production process; realizing three-dimensional vertical space; realizing interactive effects, etc[2]. Thus forming what we call “digital animation”, according to the The degree of application of digital technology in animation creation, digital animation can be roughly divided into several main types: digital, paperless or semi paperless animation of traditional animation works, new type of digital animation - three-dimensional animation, interactive animation, and other traditional animation types.



Fig.2 The Heroine of Final Fantasy

4. Application of Digital Technology in Other Animation Types

At present, two-dimensional animation and three-dimensional animation are relatively mainstream animation types. In addition to them, the relatively common ones are freeze frame animation [3]. For example, the famous Edelman company has always insisted on freeze frame animation as the main theme, and the animation works produced are familiar and loved by the majority of the audience, such as chicken run, super invincible leader dog, etc. in the early stage of China, there were many people “Avanti” and “magic pen Ma Liang” and “Coraline”, which are very popular recently, are rare masterpieces. One of the biggest characteristics of freeze frame animation is the screen full of manual traces. The characters, scenes, props, etc. appearing in the film, ranging from the whole scene to a local detail, are actually produced by hand as much as possible[4]. In addition, the character movement needs to be manually arranged and photographed step by step, while some special movements and effects need to be produced in large quantities. Therefore, the freeze frame animation not only tests the creator's animation production ability, but also greatly tests the creator's mechanical design ability and hands-on ability[5]. However, there is a limit in the effect of manual physical shooting. With the continuous improvement of our requirements for the picture, this means can not fully meet our requirements. Therefore, the current freeze frame animation is inevitably more or less assisted by digital technology to achieve a richer picture effect.

5. Digital Animation Production Process

5.1 Application of Digital Technology in the Preparatory Stage

Script creation is the soul of the short film. This script is completed in the script writing software “final. Draft”. The format template of final[6]. Draft, the function of rapid modification and editing, provides great convenience for script writing, and the script in digital format is more convenient for sharing and discussion in the team, and can be directly printed out if necessary. In the early stage, the modeling setting is directly completed in the computer with the help of hand-painted board, pressure sensitive pen, painter and Photoshop software. There are many advantages in computer modeling. Pressure sensitive pen and hand-painted board provide us with almost the same painting experience as in traditional paper and pen[7]. Before the actual painting performance, with the help of digital cameras and cameras and other digital equipment, we collected a large number of related figures, animals, scenes, textures and other materials for modeling design reference, as well as for the mapping materials for the later 3D production and other links. In painter and other painting software, we can not only draw a large number of modeling sketches quickly for comparison and selection, but also use the filter and other tools of the software, or even in 3D sculpture software to

quickly deform the existing modeling, find inspiration, and then draw and adjust.

5.2 Model

All models are completed in the digital 3D animation software 3ds max, mainly using the manual polygon modeling technology. In 3D software, we can fully use our imagination to create any role or scene modeling - provided, of course, that the modeling ability of the modeler is strong. When creating a scene model, we try our best to make full use of the characteristics of digital software, first create several basic building models, and then copy them in large quantities. On this basis, we can fine tune them manually, or quickly adjust them directly through the corresponding modifiers of 3ds Max to get a large number of different scene models.

5.3 Materials, Lights and Rendering

In the number 3 D software, the model, we can use any material: cotton, cloth, gauze, worn or metal clothes, etc. the words of clothes have nothing to do with the words. In the process of your body movement, his words can be filled[8]. We can prepare houses made of brick and houses made of stone. Or your job needs money. Similarly, lighting settings are almost unlimited. It provides a broad platform for our creative development.

6. Conclusion

“Future world” is a society constructed by the real physical world composed of atomic and digital media culture. The virtual world after information digitalization can break through the limitations of traditional vision and bring artistic creation to the new creative thinking field beyond time, space and video experience[9]. The two-way provided by digital technology creates new possibilities and broad creative space for new media art creation. With the popularization of broadband and the upsurge of a new generation of “Internet new human”, the new media era of art design has come.

References

- [1] Jiaqi Lin, Guocheng Su, Wenjin Su,. (2017). Progress in digital PCR technology and application. Sheng wu gong cheng xue bao = Chinese journal of biotechnology, vol. 33, no. 2, pp. 170-177.
- [2] Wiana W. (2017). Application Design Of Interactive Multimedia Development Based Motion Graphic On Making Fashion Design Learning In Digital Format, vol. 6, pp. 102-108.
- [3] Zhaoyang Chen, Chuncai Luo, Xiao Shang,. (2017). Application progress of digital technology in auricle reconstruction. Zhongguo xiu fu chong jian wai ke za zhi = Zhongguo xiufu chongjian waikē zāzhì = Chinese journal of reparative and reconstructive surgery, vol. 31, no. 9, pp. 1135-1140.
- [4] Zhaoyang Chen, Chuncai Luo, Xiao Shang,. (2017). Application progress of digital technology in auricle reconstruction. Zhongguo xiu fu chong jian wai ke za zhi = Zhongguo xiufu chongjian waikē zāzhì = Chinese journal of reparative and reconstructive surgery, vol. 31, no. 9, pp. 1135-1140.
- [5] Yongzhi Wang. (2017). Application Research on Urban Cultural Landscape Heritage Protection Using Digital Technology. 2017 International Conference on Robots & Intelligent System (ICRIS). IEEE Computer Society.
- [6] Xing Xie, Xiaoying Tang. (2018). The Application of Augmented Reality Technology in Digital Display for Intangible Cultural Heritage: The Case of Cantonese Furniture.
- [7] Yootthapong Tongpaeng, Pradorn Sureephong, Mongkhol Rattanakhum,. (2017). Thai dance knowledge archive framework based on Labanotation represented in 3D animation. 2017 International Conference on Digital Arts, Media and Technology (ICDAMT). IEEE.

[8] Černochová M, Jeřábek T, Vaňková P. (2017). DIYLab as a Way for Student Teachers to Understand a Learning Process.

[9] (2017). RESEARCH ON THE ARTISTIC EXPRESSION OF DIGITAL ANIMATION ADVERTISEMENT IN VISUAL COMMUNICATION.