Research on the Production Path of Film and TV Special Effects Based on Modern Technology

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Abstract: With the development of modern science and technology, special effects of film and television have brought more and more shocking experience to audiences. At present, the status of special effects production is becoming more and more important. From the perspective of the innovation and development of modern digital technology, this paper explores the evolution of film and television special effects production, and discusses the film and television special effects production path. This has great significance for modern film and television production.

1. Research background

1.1 Literature review

The application of digital technology constantly changes people's life style. Work is becoming easier because of the help of computer network and office equipment. In the entertainment industry, especially in the filmmaking and animation field, the new digital control system meets the audience's fine and critical vision, and the ultimate sense of vision and hearing has become the audience's constant pursuit of film expectations (Ma, 2019). Back in film and television production, special effects play an indispensable role in presenting visual wonders (Xiao, 2016). As a derivative industry of modern commercial movies, special effects technology team studio plays an important role in the development of the film and television industry (Guo and Li, 2018). In the modern highly efficient and rigorous film production process, the production of high-quality film works needs the efforts of various production departments (Sun, 2018). Only by turning fantastic and magnificent imagination and fantasy into visible pictures with the help of special effects of digital movies and television, can we finally bring satisfactory service experience to the audience (Wang, 2016). This will inevitably lead to the elimination of old and backward film and television production technology (Su, 2019). New norms, new processes and new tools have created a film and television special effects production system, which has promoted the gradual upgrading and optimization of film and television special effects production methods based on modern science and technology (Ma and Chen, 2019).

1.2 Research purposes

This paper summarizes the meaning of special effects of film and television, which are promoted by the development of modern science and technology, and traces back the development of traditional special effects of film and television and three-dimensional special effects of film and television. The necessity of using special effects technology in film and television production is analyzed. As well as special effects production and film and television synthesis after the tremendous impact. How to realize the special effects of film and television in three ways is given. Ultimately, we can make better use of modern technology, serve the theme of the film, and create higher quality special effects film and television art.

2. The meaning and development of film and television special effects

In film and television works, the artificial virtual reality and the illusion created by surreal scenes are called special effects or special effects (see Figure 1). Filmmakers use them to reduce

production costs, adjust the rhythm of the film, and make the picture more powerful and exciting. Special effects can avoid putting actors in a dangerous situation, and can also save the time investment of traditional setting and modeling. To some extent, the transformation of the production process of special effects is also of great significance to the development of special effects production.

Figure 1. Film and television effects

2.1 Special effects of traditional film and television

With the growth of the film, special effects of film and television developed together. At first, props were used to produce various scenes, which facilitated the camera to shoot refreshing shots. Such shooting requires a combination of natural conditions, performances by actors, artificial chemical reactions, physical collisions and other scenes. In traditional film shooting, the existing techniques of film re-exposure, inversion, stitching, setting, etc. are unintentionally used into the film and become the earliest special effects. With this new feature, a series of sci-fi short films have been shot, which has won great praise from the audience. Subsequently, the introduction of model animation production, color shooting technology, large-scale scene model building, promote the development of special effects films, but also built a monument in the history of film development.

2.2 Three-dimensional special effects

The emergence of computers has greatly expanded the path of the development of special effects of film and television. With the help of computer software, virtual images can be materialized and visual and auditory functions can be processed on the same platform at very low cost. More importantly, the performance of the film has been upgraded to several levels, and then developed into three-dimensional special effects animation, which has been widely used in film and television, industry, medical, construction, military and other fields. During this period, accumulated a lot of innovative shooting technology, production process, modeling valuable experience, creating a thriving scene of three-dimensional animation movies blooming all over the world. It has become common to use computer to generate false and real pictures. The audience's demand for film pictures is more combined with the appreciation expectation of art and culture. And three-dimensional special effects technology is still developing rapidly.

3. The necessity of special effect processing technology of film and television based on modern science and technology

3.1 Show fictional scenes

Sci-fi movies and TV works are born synchronously with the development of special effects. The description of scenes that do not exist at all in classical science fiction, such as the future, distant outer space galaxies, alien life bodies, all need the help of special effects, so that they can be displayed in the film and TV pictures, so that the audience can appreciate the unique charm of the works. While helping to express the theme of the story and the feelings of the characters, it also brings people a shock that they have never felt before.

3.2 Complete an impossible action

For many action movies with fighting scenes, it is difficult to avoid accidents completely because of the traditional real person acting in dangerous scenes and displaying difficult limb movements. It is difficult to use disaster scenes and war scenes to show injuries, pains and sacrifices in a short time. Nowadays, with the help of special effects of film and television, it can achieve the premise of satisfying the audience, ensure the safety and performance effect of the actors, at the same time greatly speed up the shooting progress, save time and effort. It can also show time to stop, retrospect history, create fantastic scenes, transcend the constraints of the laws of real physics, and let imagination run wild.

3.3 Scenarios that cost too much to implement

When describing the macro scenes of film and television works, relying on computer technology, as long as designers fully understand the requirements of work and combine with their own excellent software technology, they can perfectly present a huge building complex, magnificent landscape, spectacular interstellar space and exquisite instrument structure. It can also quickly shuttle the camera to different lenses with high altitude, underwater, micro-perspective and long time span. Create the linguistic experience of lens full of change and personality. Especially when describing the detailed change process of the rupture, explosion and damage of expensive goods, cultural buildings and well-known landscapes, we can simulate the corresponding operation by establishing a highly simulated reduction model in the computer. It can completely achieve the real effect of the real environment, thus avoiding a large amount of capital investment.

4. Movie and tv special effects production path based on modern science and technology

4.1 3D effect technology

It has experienced steady technological upgrading and exchange precipitation. Nowadays, in the production of film and television works, three-dimensional special effects are generally added. Three-dimensional special effects technology has become the main technology of film and television special effects production. Usually used to set off the role of shaping, as well as the scene of a large number of stories to build layout, detail decoration. In sports scenes, a large number of object movements, perspective changes of scenery, including the temporal evolution of climate, need to use various professional design software in advance to establish three-dimensional models, simulate real object attributes, and give physical characteristics for calculation. Therefore, it can be said that three-dimensional special effects technology is the most difficult to achieve in film and television special effects technology, the most need to constantly surpass themselves, and the challenge is more difficult. The most common application scenarios are alien monsters, future plants, catastrophic landscapes and prehistoric landscapes. In addition, in the modern human cultural environment, drastic war scenes and famous events in history are reproduced. All of them need excellent special effects to solve all kinds of difficulties and satisfy the increasing desire of the audience. The general production process of three-dimensional special effects is divided into several key steps: model making - material lighting - binding skeleton - Animation - final rendering.

Commonly used tool software, professional design software Maya, 3D Max mainly, supplemented by other small plug-ins.

4.2 Synthetic special effect technology

In the early days of synthetic special effects technology, it was common for the martial arts masters in Chinese martial arts movies to make free leaps between tree tops, water surfaces and buildings. The principle of realizing these pictures is to photograph people and backgrounds separately combined with synthetic special effects. First, put the blue or green curtain, put the actors in front of the curtain, decompose action by action, shoot martial arts action. With the help of Weiya, we can achieve some difficult movements such as taking off the air and getting rid of gravity. The empty lens inserted in the middle, such as the sky, can be photographed in addition. Then, through computer post-processing software such as AE, we delete the blue, green screen and Via in the material. Adjust the overall time rhythm and add the elements of the sky to the scene. In short, it means disassembling first and then synthesizing.

4.3 Digital Scenery Technology and Conceptual Design Technology

Sometimes the film needs an ideal picture, but in reality it takes a lot of time and energy to find, and finally it may not meet the requirements. It is easy to make audiences feel too fake and lose the sense of authenticity, and the cost of labor, materials and site rental is also a big expense. But the use of digital landscape technology requires only a professional, sitting in front of the computer, using digital brushes, conceptual design drawings in the form of collection into the computer. Adjustment generates design elements that can be freely modified and dynamic, and the final effect of the film can be seen in front of the screen. On the other hand, when the image in the concept is actually produced, the director needs to depict the image changes of different scenes with a single picture, which can be achieved by the conceptual design of three-dimensional special effects. Film and television designers can then combine the central content of the work, deal with the film and television materials that need special effects, and present the buildings, landscapes, characters, animals that can not be achieved in real life in front of the audience.

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