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Analysis of the Application of Digital Color Calibration Technology in Film Post-Production:Take the Short Film "Return to Oasis" as a Case Study

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Abstract

As one of the indispensable visual elements in film and television art, color plays a key role in the visual expression and audience experience of the film, and whether the color is used properly directly affects the expression of the content of the film and television works. Through proper adjustment and control of color in film and television post-production, the film can better convey the story emotion and enhance the audience's visual feeling of the film. Therefore, digital color correction is a very important link in film and television post-production. In the creation of short films, screen color can be said to be one of the more intuitive and powerful means of expression, and the application of digital color correction technology plays a key role in the presentation of short films. The primary color correction can make up for the deficiency of the previous shooting materials, such as correcting exposure and color deviation, and the secondary color adjustment can give the short films a unique visual style and create a specific emotional atmosphere. In addition, adjusting the color of the picture in line with the story plot can directly affect the emotions and feelings of

the audience, which not only makes the short film more appealing, but also helps the creator to better convey the theme of the film. This paper mainly combines the application of digital color correction technology in the post-production of the graduation project short film "Return Oasis", firstly introduces the basic principle and application scope of digital color correction technology, and then describes in detail the specific application and influence of digital color correction technology in the production process of "Return Oasis" short film, as well as the problems encountered in the production process and solutions. Finally, the design process of "Return to Oasis" is briefly described, and the design process of the work is reflected and summarized.

Keywords: digital color correction technology, film and television post, color

1. Introduction

1.1 Design the Source of Topics

The special effect short film "Return to Oasis" is inspired by the reality of today's environmental pollution. In today's rapid development of science and technology, human society has more and more significant impact on the natural environment, environmental pollution, climate change and other problems are increasingly emerging, and protecting the earth's ecological environment has become a top priority. If we still lack awareness and actions to protect the environment, In the future, the environment of the earth will be more severe, and it may even affect the survival and development of human beings. Therefore, we made this special effect short film on the theme of environmental protection, hoping to convey the urgency and severity of environmental issues to people through this short film. The story is set in the future world, showing the scene of the desolate and barren earth environment caused by human waging destruction, so that the audience can feel the seriousness of environmental problems more directly and arouse people's awareness of environmental problems. The protagonists in the story seek the legendary oasis with firm determination and fearless courage, and make efforts to rebuild the new home of the earth. It is intended to show the important role of individual responsibility and teamwork in the cause of environmental protection. Everyone has the responsibility and obligation to protect our home. Only by working together can we maintain the oasis we currently have. The short film is named "Return to Oasis", which not only implies the desire to protect the green home, but also expresses the call for environmental protection and sustainable development. In today's highly developed industry, we can return to the true green while asking for resources from Mother Earth, and protect our common oasis.

1.2 Source of Topic Selection

The color style of film and television works is crucial to the development and dissemination of the film and television works, and color has a certain impact on the emotional tone, artistic conception and visual expression of the work. Reasonable use of digital color toning technology to adjust the color of the picture in post-production will not only help improve the quality of the short film, but also help improve the quality of the film. You can also give the video a visual style that fits the theme.

With the continuous development of technology, especially the maturity of digital film production and post-processing technology, digital color correction has broken the limitation of traditional film color adjustment and gradually become an indispensable part of film production. The use of digital color correction technology to process the whole film's color and tone has become the most important creative means to control the visual tone of the film. In the production process, the digital color correction technology can better control the color, contrast and saturation of the picture, so that the film presents a better visual effect, providing more possibilities for the production of the film. This technology also helps us solve many problems encountered in the post-production of short films. The use of digital color correction technology in post-production can not only improve the overall quality of short films and enhance the visual quality of the picture, but also improve the efficiency of short films post-production, achieving the effect of twice the result with half the effort. At the same time, in the short film "Return to Oasis" with science fiction color, digital color correction technology can create a unique atmosphere for different scenes, making the whole short film more science-fiction. In some pictures with special effects of scientific and technological elements, special effects can be better integrated into the scene by adjusting the color of the picture, so as to maintain the overall visual consistency of the picture.

To sum up, digital color correction technology is chosen as the research direction of this short film creation report because of the rapid development of digital color correction technology and its important role in the creation process. This report will combine the professional knowledge and problems encountered in the creation process of the short film "Return to Oasis". This paper analyzes the application and influence of digital color correction technology in film and television post-production, aiming to accumulate valuable experience for future creation.

2. Principles and Basic Concept of Digital Color Calibration Technology

2.1 Principles and Basic Concept of Digital Color Calibration Technology

Digital color correction technology refers to the use of digital technology to image or video color correction and adjustment process. In the fields of photography, film and television production, digital color correction technology can fine-adjust the color parameters of images or videos through professional software and hardware equipment to achieve more accurate and more in line with the requirements of the color effect.

With the continuous development of the film and television industry and the improvement of the public aesthetic level, digital color correction technology is playing an increasingly important role in the field of film production. Film and television color adjustment is based on computer image processing technology, through the color adjustment of each frame of film material, so that the whole picture can achieve the ideal color effect. Good use of color can not only express the connotation and meaning of the film in a rich and profound way, but also clearly reflect the visual language characteristics .In film and television post-production, colorists will make overall color adjustment according to the requirements of directors and photographers by using professional digital color correction software, such as DaVinci Resolve, Adobe Premiere, etc., mainly through primary color correction and secondary color

adjustment to eliminate color deviation and ensure color coordination between shots. At the same time, it gives the film a unique visual style and personalized picture effect. The application of digital color toning technology makes the production method of image and the creation of artistic effect more convenient, helps to improve the aesthetic sense of film and television works, and makes the picture more expressive.

The emergence and popularization of digital color correction technology has subverted the traditional film and television production process. In the traditional light distribution technology, the color adjustment of film and television is mainly achieved through the control of light in the early shooting process, the selection of film types and the control of printing technology. These methods have great limitations, and it is difficult to achieve accurate processing of the whole and part of the picture. The digital color correction technology can not only accurately control the color parameters of each frame, but also extract shadows, highlights, intermediate tones and areas that need to be adjusted again for modification. The colorist can also preview the final effect of the picture in real time with the help of corresponding hardware and software, which greatly improves the production efficiency and shorters the production cycle of the film. It creates more possibilities for the development of film and television, and also provides a broader creative space for creators.

2.2 The Application Scope and Influence of Digital Color Calibration Technology

As one of the key technologies in the field of film and television post-production, digital color correction technology not only enhances the visual effect of film and television works, but also enhances the emotional expression and artistic value of the works. The technology is currently in the stage of wide application in the field of film and television post-production, mainly reflected in the following aspects.

In terms of color restoration, digital color correction technology is often used to restore real colors in post-production, mainly by adjusting the exposure, contrast, color and color temperature of the picture, and retain the details in the picture as much as possible, so that the picture can return to its original color, or create a "memory color" in line with the audience's daily life experience. Make the picture color of film and television works more realistic.

In terms of light source reshaping, digital color correction technology is used to uniformly adjust the light and shadow effects of all materials. In the actual shooting of film and television works, the light and shadow effects presented by the picture are often different due to shooting time, light, Angle and other factors. The use of digital color toning technology can not only solve this problem without damaging the picture quality. Moreover, digital color tuning can also increase the virtual light that is not available in the picture, and simulate the effect of the combined effect of the increased virtual light and the real light of the real shooting. In this process, through reshaping the light source, the picture can be more in line with the effect envisaged in the early stage, so as to further enhance the visual effect of the film.

In terms of light and shade adjustment, digital color correction technology can unify the brightness and shade of different pictures. In film shooting, it is inevitable that some factors

will affect the relationship between light and shade in each scene, so it is necessary to use digital color correction technology to adjust the light and shade of the picture. In the actual color mixing process, the whole picture can be divided into dark, light and middle tone, and the colorist needs to deal with the three areas of the picture respectively according to the situation. Make a group of facial visual effect to achieve harmony and unity. In addition, through the local adjustment of the light and shade relationship of the picture, the picture forms a strong contrast effect, so as to create a picture with contrast effect.

In terms of emotional expression and color style shaping, color is an important means for film producers to build emotional tone, render atmosphere and express emotions, and the overall color style of a film is usually consistent with the emotions expressed by the film. Through digital color correction technology, the unique style characteristics of the film can be shaped according to the theme content of the work itself. Moreover, through the adjustment of colors, an ideal visual atmosphere can be created, which helps the audience feel the emotion expressed in the film more intuitively.

3. The Application and Performance of Digital Color Calibration Technology in the Short Film Return to Oasis

3.1 Application of Digital Color Calibration in Short Films

The short film "Return to Oasis" tells a story that takes place in a fictional future world. Therefore, realistic feasibility should be taken into account in both the early plot planning and shooting and the later production. For our student crew with limited ability, it is inevitable that we will encounter various problems during the creative process. For example, in the shooting process, due to factors such as weather and time, the ideal picture effect cannot be shot, as well as the lack of lighting experience in relatively complex scenes, resulting in certain differences in the light and shadow effects of each material completed by shooting due to the impact of many factors such as shooting Angle, shooting light and shooting objects. However, due to the limitation of time and space, it is difficult to adjust these problems one by one in the shooting. However, the application of digital color correction technology has provided us with great help, making us make up for the shortcomings of the early shooting in the post-production to the greatest extent, and greatly improving the efficiency of our post-production.

First of all, we used digital color calibration technology to unify the basic colors of the picture. When shooting the laboratory scene in the early stage, there was a reflective screen in the picture. If the on-site lighting was not adjusted according to the shooting Angle of the lens, it would cause the phenomenon of overshooting. Some pictures are cold colors, so in post-production, we use digital color correction technology to adjust the color of different materials, first by adjusting the exposure to ensure that the picture is in the appropriate brightness, and then by adjusting the white balance to eliminate the color of the picture, and finally the contrast, saturation, color temperature and other parameters of different materials for the overall adjustment. After adjustment, as shown in Figure 1 and Figure 2, it can be seen that the color of the picture is more consistent, so that the whole short film is more visually unified.

Secondly, digital color correction technology also plays a key role in the rendering of the atmosphere of the short film. Different scenes and plots in the short film can be expressed with different colors to create a specific atmosphere. In the uninhabited mountain scene, by adjusting the color balance, hue and saturation of the picture, we reduced the saturation of green and yellow, and increased the blue hue, so that the picture looked more in line with the desolate atmosphere, as shown in Figure 3. In the final scene of rebuilding a beautiful home, we increase the saturation and brightness of warm colors and reduce the proportion of cool colors to make the picture brighter and more vivid, creating a beautiful and hopeful picture, as shown in Figure 4. Through the above different color adjustment, to create a different emotional atmosphere, can help creators better convey emotions.

In addition, the digital color correction technology has also improved the unsatisfactory picture effect caused by the influence of the light in the early shooting location and the shooting environment. When shooting the shot in the oasis, the light of the whole scene is very dark due to the late sky, and the picture details and colors are not well displayed. In the post-production, we enhance the exposure of the dark material through the primary color correction, improve the overall brightness of the picture, and make local adjustments to the highlight, shadow and other parts of the picture, increase the layer of the picture, but also reduce the impact of the dark light of the picture.

3.2 The Influence of Digital Color Calibration on The Visual Effect of the Short Films

In the creation process of "Return to Oasis", the influence of digital color correction on the visual effect of the short film is very significant. First of all, color, as one of the important visual elements in the short film, can directly affect the psychological feelings of the audience. For example, warm colors usually make people feel warm and comfortable, while cool colors have a feeling of coldness and loneliness. In the clips recalled in the short film, we use the color of the picture with low saturation to form a clear difference from the main clip, so as to help the audience better understand the plot. In addition, through the regulation of color, different atmosphere can be created for different scenes, so that the audience can intuitively feel the emotional effect brought by color, which is conducive to the emotional expression of the short film.

Secondly, the application of digital color correction technology is conducive to the establishment of the overall tone and visual style of the short film. Before the color adjustment of the picture, it is necessary to determine the color tone that conforms to the entire style of the short film according to the theme, and then make specific adjustments to the short film on this basis. For example, the short film Return Oasis is a special effects film with science fiction color. Usually, cool colors are chosen to create a sense of future science fiction, and the texture of the short film can be improved by enhancing the contrast of the picture, and on this basis, appropriate special effects are added, as shown in Figure 5, so that the picture of the short film looks more in line with the setting of the future world and the style characteristics of science fiction films, giving the short film more unique and eye-catching visual effects.

In addition, digital color correction technology has a positive impact on the overall quality of

the film. Through color correction, it can make up for the shortcomings of the early shooting of the short film, and solve the difference in tone caused by the subtle differences between the exposure of the picture and the influence of the light in the shooting location. Before the color correction of the short film, even after careful editing, the picture still cannot be well connected. This will not only affect the presentation effect of the short film, but also affect the audience's viewing experience. Through appropriate color correction processing, the picture quality can be improved and the overall perception can be enhanced. Let the film present a more professional, exquisite visual effect.

3.3 Problems and Solutions Encountered in the Process of Creation

The creation of the short film was not smooth sailing. Due to the lack of practical experience, we encountered various problems in the actual creation process of Return Oasis, especially in the middle shooting process. Because we did not make sufficient preparations and were not familiar with the use of lighting equipment during shooting, the effective role of lighting was not played in the initial shooting. As a result, the color of the shooting picture is single and cannot highlight the key points. Frequent adjustment of the lighting position during shooting also leads to problems such as inconsistent tone of the shooting material picture and inability to highlight the key points. As shown in figure. 6, the color deviation of the two pictures can be clearly seen.

To solve this problem, we immediately consulted relevant professionals, understood the basic principles of lighting, learned the operation method of lighting equipment, and adjusted the shooting status as soon as possible to ensure the normal follow-up shooting. For some materials that could not be re-shot, we chose to adjust the color parameters of the picture through digital color correction. To a great extent, the problem that some material pictures are too dark and the tone does not meet is solved.

Although digital color correction technology can solve these problems to a large extent, we should still make adequate preparations before shooting, and the lighting arrangement during shooting is also an important factor affecting the color of the picture. Different types of lights, intensity and color temperature directly affect the presentation effect of the picture. As shown in Figure 7, when shooting the mysterious man segment, we use high-saturation red light. This conveys an aggressive and aggressive picture atmosphere, making the role representing the evil forces in the short film more distinct. Therefore, the appropriate lighting arrangement should be selected in advance according to the scene and storyline before shooting. If conditions permit, a professional lighting engineer can be invited to provide lighting guidance for shooting, so as to ensure that the short film can achieve the expected visual effect during the shooting stage, which can not only reduce the workload of late color correction to the greatest extent. It also improves the overall creation efficiency and the quality of the film.

4. Discussion

Through the creation of this short film, I not only realized the important role of digital color correction technology in the visual effect of the film, but also deeply felt that shooting a good film is not easy, and it needs to spend a lot of energy and time to think about how to achieve a

better presentation effect of the short film. During the creation process, we met a lot of difficulties and challenges, but also gained a lot of valuable experience.

First of all, adequate preparation should be made before shooting, and a detailed shooting plan should be formulated. Because the shooting time and cost are very limited for the student crew, if they do not plan well in advance, they may encounter all kinds of problems during shooting, resulting in a decline in shooting efficiency. Before shooting, we should make a detailed shooting script to determine the composition and shooting Angle of each shot, etc. Only in this way can we ensure that we can effectively complete the shooting of each shot. In addition, the investigation and layout of the site in advance is also very important. It is necessary to determine the shooting site in advance, arrange the shooting scene in advance according to the situation of the site, including space, light and other factors. At the same time, it is also necessary to consider the influence of weather and time on the light to determine the sequence of scene shooting. Reasonable arrangement can improve the efficiency and quality of our short film shooting, and ensure the smooth progress of the shooting.

Secondly, post-production is also important in the creation of the film. After the film is shot, post-production takes a lot of time and energy. In my opinion, the arrangement of shooting materials is a very important step, which can facilitate our subsequent editing and processing, and also affect the final quality of the film. In post-production, we should also learn the corresponding production techniques and editing techniques according to the types of works, and constantly strive for the final presentation effect of the film.

Finally, through the creation of this short film, I learned that every link of film and television production is crucial and indispensable. Only by taking the creation of each link seriously can the short film achieve the ideal presentation effect, and only by constantly practicing and learning can we improve our professional quality and create better works.

5. Conclusion

Film and television, as an audio-visual language and an art, is the result of the cooperation and joint efforts of various departments. Each of these parts is indispensable. As one of the important technical means of film and television, digital color correction technology can create more abundant visual effects through the use and adjustment of screen color, and create more possibilities for film creation. With the continuous development of digital film equipment, digital toning will play an increasingly irreplaceable role in the future development. In the creation process of this short film, the application of digital color correction technology has a positive impact on the overall visual effect of the short film. Through the processing of the screen color in the post-production, the overall visual style of the short film is endowed and the overall visual quality of the short film is improved. Through this practice, I have fully realized the important role of digital color correction technology in short film creation, and gained a lot of valuable experience in practice. I believe this experience will have a positive and far-reaching impact on my future creation, and help me create better works.

References

Tian, N. (2020). Application of digital color blending technology in film and television. *Media forum.*

Ma, C. (2016). Analysis of the digital color blending technology in post-production. *Art technology.*

Liu, X. Y. (2022). Research on digital color blending technology in post-production. *China Media Technology.*

Liu, T. (2017). On the construction of digital color blending for cross-cultural film language. *Contemporary film.*

Wang, J., & Wang, X. Y. (2014). On the important role of digital color blending in film post-production. *Modern film technology.*

Ye, W. N. (2022). Exploration of digital color blending technology in post-production. *Writing.*

Xie, P. J. (2018). On the digital color blending technology in the post-production. *Intelligence.*

O, Meara. J. (2021). Digital Color Technologies: Color grading, restoration, archives and criticism. *Teaching Media Quarterly.*

Koskinen, M. (2015). Color Grading a Feature Film for Digital Cinema.

Kennedy, A. J. (2014). The effect of color on emotions in animated films. *Purdue University.*

Figure 1. The picture color is the same

Figure 2. Visual unity

Figure 3. Beautiful and hopeful picture

Figure 4. Different emotional atmosphere

Figure 5. The style features of science fiction films

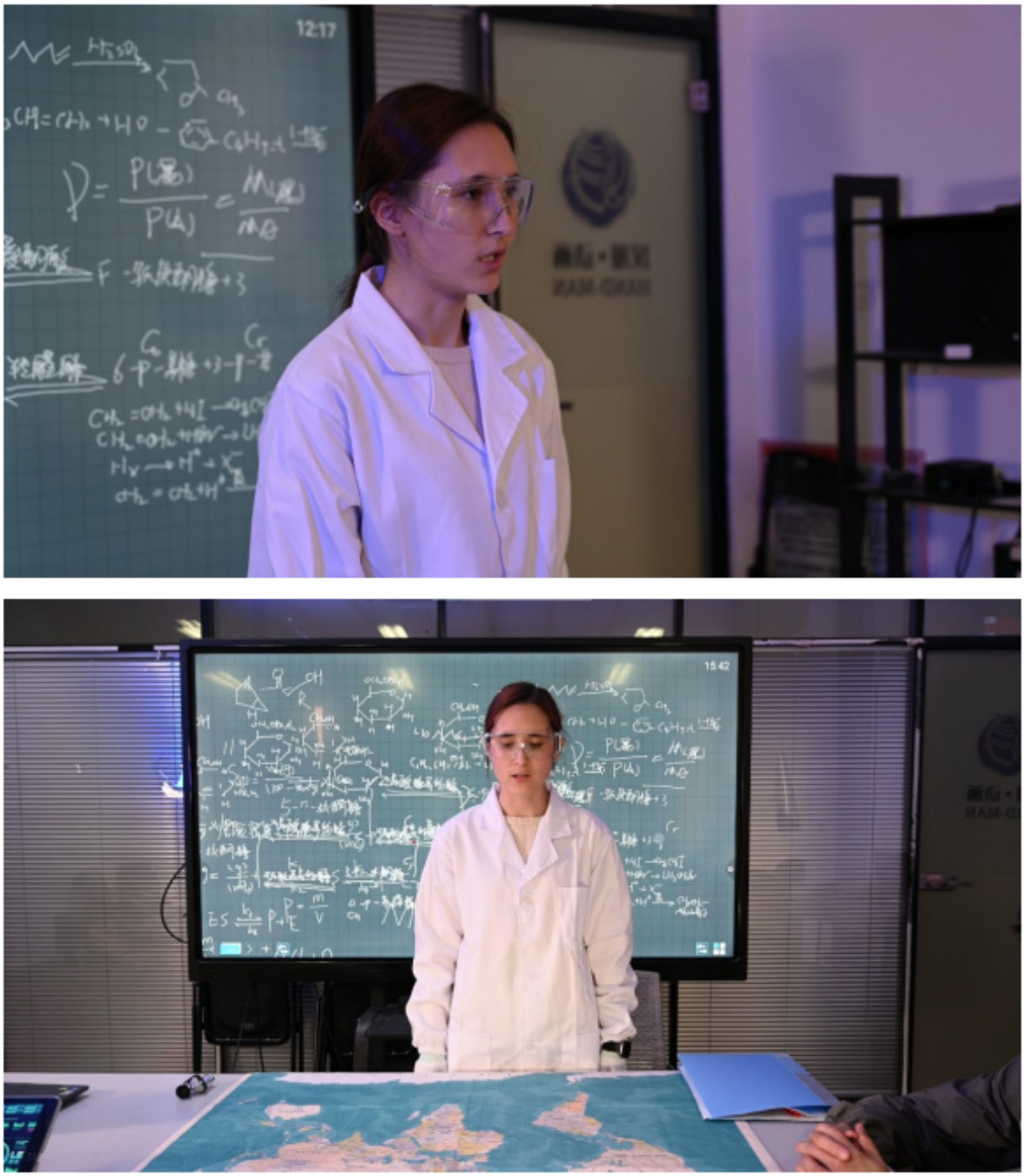

Figure 6. The deviation on the color

Figure 7. A pictorial atmosphere of aggression and aggression

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Authors contributions

Mengting Huang was responsible for study design and revising. Mengting Huang was responsible for data collection. Dr. Jun Dong drafted the manuscript and revised it. All authors read and approved the final manuscript.

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