

Research on Color Management and Color Grading Applications in New Media Movies

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Abstract. This article studies the color management and color grading of new media movies, mainly studying the impact of color balance, stylized color grading and high dynamic range image adjustment on the visual effects and emotional expression of the film. However, there are currently not many specifications and requirements for the color requirements of new media movies. New media movies still have deficiencies in color aesthetics and artistry. They often pursue visual stimulation and alternative themes while ignoring artistic expression. Due to limitations in cost and production experience, online movies often have less investment in color aesthetics, and the production level is still far behind traditional movies. The research significance of this article is to emphasize the importance of color management and color correction technology in new media movies, and to propose solutions to color inconsistency problems caused by color management and cross-platform playback. Through scientific color management and delivery settings, new media movies can be ensured to present the best visual effects on different devices, improving the artistic value and enjoyment of new media movies. In general, the research in this article has reference significance for the standardization development and technological improvement of the new media film industry.

Keywords: Color management, color grading, new media movie.

1. Introduction

As a supplement and innovative form in the development process of traditional films, new media movies have the characteristics of diversified content forms, great media compatibility, and strong interactive experience. Therefore, the requirements for color management and color grading are also more diverse and creative. The importance of this study lies in exploring the importance of color management and color grading in the digital development of film technology, as well as analyzing possible color problems in the production process of new media films and proposing reasonable solutions. It is of great significance to the artistic expression of new media films, promoting technological innovation to improve production levels, and promoting industry standardization. This article will discuss the participation of color in composition, modifying characters, expressing emotions, and regulating rhythm, etc., and come to the issue of the lack of artistry in new media movies. And the color consistency problem of new media movies on the playback side is analyzed. There are also corresponding problems in color management and color grading. Currently, under the processing of different systems, the performance of the same image on different devices and playback terminals is quite different, lacking consistency. Therefore, by understanding the psychological characteristics of color and the characteristics of space, we can explore the impact of color grading on emotional expression and audience perception in movies, and by understanding the content related to color management, we can achieve visual consistency in different systems as much as possible.

2. Current Application Status of Color Management and Color Grading in New Media Movies

2.1. The role of color management and delivery settings in the final presentation of the film

Color management refers to the management and control of color throughout the film production process to ensure that maintain consistent color effects when viewed on different devices and platforms [1].

Delivery setup refers to the settings and adjustments that are made during the process of delivering a film from the production environment to the audience. It involves the choice of movie format, compression algorithm, resolution, color gamut, etc. to adapt to various playback platforms and devices. Through correct delivery settings, new media movies can be adapted and optimized according to the characteristics and requirements of different devices, ensuring that the movies present the best visual effects on different devices.

Through correct color management and delivery settings, the color consistency of new media movies on different devices can be ensured, and the continuity of artistic creation can be maintained in the early stage of production. For example, the process of conforming and batch approval requires editing and delivery settings. The color grading department, after color grading, undergoes scientific color management and delivery settings before returning it to the editing department for further fine editing. If color management and delivery settings are not done well in this process, color inconsistency and device compatibility problems will occur (especially in pre-production when different software is working together. Failure to do a good job in the final delivery settings will cause other software to be unable to recognize the file. The format is such that the next step of production cannot be carried out. If the different equipment and playback platform requirements of the playback end are ignored, it may lead to problems such as the inability to play the movie on some platforms, the inability of the audience to watch on specific devices, the degradation of visual quality and even the distortion of artistic expression. Therefore, scientifically. Color management and delivery settings are effective means to ensure the final presentation of the film.

2.2. The application of color tone to convey the emotion of the plot in new media films

In the development of films that have experienced silent films and black-and-white films, color and sound not only endow the film. In addition to being closer to the reality of real life, it has also become one of the means of artistic expression in movies. In the American movie "Forrest Gump", which inspired countless people, Lieutenant Dan was injured and lost his legs and was admitted to a nursing home. The curtains in the nursing home are pink due to the soldiers' anxiety. When Jenny returns to her hometown, there are also pink curtains and pink roses in Forrest Gump's room. Pink always gives people emotional comfort. Storaro once said: In the color film language part, we use color to express sympathy and feelings, just like using light and shadow to symbolize the conflict between life and death; Zhang Yimou once said in an interview with a reporter: I think color, the visual element of movies, can evoke people Emotional fluctuation factors... I personally believe that color can immediately arouse people's emotional fluctuations from a physiological perspective. Color also plays an important role in many of Zhang Yimou's excellent works, which contain rich national colors. In "High Hanging", the three colors of red, white and gray constituted the dull and suffocating atmosphere of that feudal era; in "My Father and Mother", the three colors of black, white and red flowed between the sky and the earth, in a bright and bright scene. The color tells the story of the love of the fathers, "singing an elegy with a sense of nostalgia for the end of the century that rejects true love and true love."

A film with good colors, even if the profound content is obscure, the plot may be difficult for you to understand, but you can still clearly feel the thoughts and feelings it wants to express. This is the emotional expression of color.

2.3. The unique color style is reflected in the expression of visual language in the film

Color runs throughout the entire film. In the film, color plays an important role in participating in composition, modifying characters, expressing emotions, and regulating rhythm.

Participating in composition means that when processing movies, we pay attention to the color composition in the picture, and use the configuration of different colors to shape and organize the picture. Using color to help composition can use visual rules to place the audience's visual center point on the subject, keeping the Points of interest in the picture attract the audience's attention [2]. The little girl in red in "Schindler's List" is the only color in the film. Using a visually impactful color like red accurately draws the audience's attention to the little girl. At the same time, red also symbolizes Fresh life also symbolizes the hope and hope of life. The appearance of the little girl in red is a turning point for the protagonist in the movie, and also pushes the plot to a climax.

In addition to the actor's performance, color is also an important factor that helps shape the character of a movie. By designing different colors for the characters, the audience can classify different characters, thereby forming a clue composed of colors to hint at the character's personality and ending. This has been reflected not only in movies, but also in traditional opera art and facial makeup. Characters with different colors of facial makeup correspond to different personalities. The simplest and most common application in movies is to use the contrast of light and shadow to show opposing conflicts, express different positions of characters, hint at the murderer, etc. It is often seen in movie posters that some characters are in the light and some characters are in the shadows, forming a contrast between light and dark. This hint exists in the poster of "Let the Bullets Fly".

In terms of controlling the rhythm of the film, unlike the connection between shots (or montage), the control of the rhythm of the film by color is more reflected within the shots. In a shot, the stronger the color jump, the stronger the rhythm, while the black and white or single color, the rhythm will be more gentle. "Oppenheimer" directed by Nolan cleverly combines narrative rhythm and color. Different tones are combined with non-linear narrative techniques. The contrast between black and white and color combines the interests of Oppenheimer and Lewis Strauss. The relationships and conflicts are vividly displayed, and the multi-line narrative is clear and not confusing. While I admire the director's amazing narrative skills, the addition of color contrast is also indispensable. Although "Oppenheimer" was shot entirely on film and is a typical traditional film, this kind of color control has important reference value and learning significance for the creation of new media films.

2.4. The impact of color balance and contrast control on the plot content in the film

In new media movies, color balance and contrast control are key color management and color correction technologies, which have a profound impact on the plot content. They create different visual atmospheres and emotional expressions by adjusting the distribution of colors and the intensity of contrast, thereby enhancing the attraction and emotional resonance of the plot, and also promoting the plot. When the color of a paragraph changes significantly from the previous style, it usually means that the character's emotions, story content, etc. will also change accordingly. Color expresses this change in a simple and intuitive way [3].

Color balance refers to the adjustment of the relative intensity and proportion of different colors in a film. By controlling color balance, different tones and color atmospheres can be created, which in turn affects the plot content. On the other hand, color balance can also be used to convey visual meaning and plot information. Different colors can visually guide the audience's attention and hint at the development of the plot. For example, in a suspense film, using cool tones and a high-contrast color balance can heighten tension and uncertainty, alerting the audience to possible dangers or secrets. In a romantic film, using warm tones and soft color balance can enhance the emotional resonance and romantic atmosphere.

Contrast control also plays an important role in new media movies. Contrast refers to the degree of difference between light and dark parts of a film. By adjusting contrast, you can enhance or weaken the contrast between light and dark in a scene, thereby affecting how the plot is presented. High-contrast images usually have sharp black and white and strong visual impact. In action movies or

horror movies, high-contrast processing can enhance the tension and impact of the scene, making the audience more involved in the plot. On the contrary, low-contrast images create a soft and warm atmosphere, which is often used in romantic films or some tender plots to create a warm and friendly feeling. In addition, contrast control can be used to guide the viewer's eye and convey plot information. By adjusting the contrast between light and dark, you can highlight or hide specific elements, directing the viewer's eye and attention.

3. Innovative Development of Color Management and Color Grading in the Application of New Media Movies

3.1. The role of post-production color grading in film and television in promoting the development of new media films

Post-production color grading in film and television can repair color problems during shooting. During the shooting process, due to the influence of environmental light, camera settings and other factors, the color of the image may be distorted or inconsistent. Through post-production color correction, these problems can be repaired, making the image color more realistic and natural, and reducing the jumping feeling during viewing. Film and television post-production color grading can also help directors and photographers achieve precise control over the color style of new media films. New media films provide more creative space, allowing directors and photographers to explore and experiment with various unique color styles. Through post-production color grading, the creative ideas of directors and photographers are perfectly presented to the audience, enhancing the artistic expression of new media films. For film and television expression, post-production color grading can extend the storyline and strengthen the expression of emotions. Different scenes and plots require different color expressions.

Clever color adjustments can enhance the narrative effect of the film and allow the audience to better understand and feel the story. The optimization of color management workflow and enhanced multi-platform adaptability further improve the production efficiency of new media movies and reduce labor costs. The digitization and automation of the new media film production process has also optimized and improved the color management workflow. Modern color management tools and software make color adjustments more accurate and efficient, reducing learning costs. New media movies are not only shown in traditional cinemas, but also need to be played using various digital platforms, such as streaming services, social media and mobile devices. Therefore, color management and color grading should take into account the screen display characteristics and color capabilities of different platforms to ensure consistent visual effects on each platform. By using a color grading system, producers can maintain consistent color representation across multiple platforms, whether for traditional cinema screening or viewing on mobile devices.

The powerful emotional and psychological influence of color in images makes new media also have to pay attention to the impact of color on content expression. Color psychology studies the impact of different colors on people's emotions and psychological states. In new media movies, color management and color grading can use the principles of color psychology to consciously use different colors to guide the audience's emotional experience and plot understanding.

3.2. Integration with virtual reality technology brings new visual experience

Virtual reality (VR) and augmented reality (AR) technology provide a new creation and viewing experience for new media film production. Among these new media forms, film color grading can be combined with virtual reality and augmented reality technologies to create more immersive and interactive color experiences. Virtual reality technology itself is also one of the important development directions in the new media field. It can bring an immersive audio-visual experience to the audience. More accurate color grading in virtual reality technology can further enhance immersion and make virtual reality scenes more realistic. In virtual reality, viewers can experience various scenes

immersively, such as forests, oceans, universes, etc. In terms of interactive experience in virtual reality, it can not only provide a viewing experience, but also allow the audience to actively participate in it, provide real-time feedback on the audience's interactive behavior, and increase the audience's sense of participation and interactivity. Innovations in new media film color grading can also be used to enhance emotional expression in virtual reality. Using different colors to induce different emotional responses from the audience can create a variety of emotional atmospheres in virtual reality and enhance the audience's emotional experience.

3.3. The application of high dynamic range imaging brings more shocking visual effects

High Dynamic Range (HDR) imaging is an imaging technology with a wider brightness range. It can simultaneously show bright highlights and detailed shadows in images, bringing more shocking and realistic visual effects [4].

In new media film applications, the application of high dynamic range images can bring multiple innovative developments. Through high dynamic range imaging, image colors can be made more vivid and lifelike. The transition between light and dark in traditional imaging technology is abrupt, which may cause the image to lose its sense of reality. High dynamic range images can better restore lighting conditions in the real world and make images more natural. High dynamic range images can also provide more detail and texture. In traditional images, even after post-production color correction, it is often difficult to perfectly display the details of dark and bright parts at the same time. High dynamic range images can retain more details, making the film tones richer. The audience can see subtle changes and material textures in the picture more clearly, enhancing the immersion of watching the film. High dynamic range images can create richer visual effects. By adjusting the parameters of high dynamic range images, you can produce more eye-catching light and shadow effects, making the picture more vivid and attractive.

These innovative developments have brought new media movies to a new level in terms of color expression and visual experience, presenting a more exciting visual feast to the audience.

3.4. Combining with AI technology for a win-win future

Many people call 2023 the first year of AI, because various artificial intelligences led by ChatGPT are becoming popular, and AI painting and even AI video are also following closely behind. Nowadays, many AI technologies have passed. After several months of development, it has become more mature, and a new AI algorithm has been added to DaVinci to help us adjust colors. For example, there are AI video lighting in DaVinci 18.5, and plug-ins for semi-automatically solving skin color problems, as well as the new features AI tracking, chroma segmentation, and film simulation in the just-launched DaVinci 19. New algorithms bring new experiences and more convenience.

We also look forward to the day when AI can automatically do color management when we deliver videos, so that we no longer need to manually make multiple different color settings when outputting videos. You only need to tell AI where you want to play it and it will automatically do a good job in color management, although it seems a bit wishful thinking now, but if one day the online platform to play videos really achieves a unified color standard, then why not leave it to AI for color management? Looking forward to this day coming.

4. Conclusion

As an emerging media form, new media movies have broad development prospects. By improving color grading technology, new media movies can further enhance their recognition and influence among audiences and expand their market and business prospects. At the same time, the development of new media movies will also promote the innovation and development of the entire film industry. HDR images have brought visual impact to the audience. I believe that the integration with virtual reality technology will bring a more shocking visual experience, and the widespread use of AI large models can greatly improve the efficiency of color grading in new media movies. The power of AI

It's worth everyone's expectations. In general, the color management and color grading of new media movies are developing towards professionalization and standardization. The increase in people's attention will also further promote the attention of creators to the color grading of new media movies. The future of new media movies is promising.

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