

The Application of Digital Technology in Documentary Creation (Postprint)

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Abstract

Special effects, defined as extraordinary visual outcomes, are increasingly employed through digital means to realize scenes that cannot be captured through direct cinematography. With the advancement of contemporary societal technology and the continuous evolution of cinematographic techniques, digital special effects have evolved into a fundamental element—and indeed an audio-visual language—for cinematic and televisual expression. The effective integration of digital technology with documentary production not only fosters the robust development of the visual arts inherent to the documentary form but also enriches its repertoire of creative expressive techniques. The question of how advancements in digital technology can facilitate the application of sophisticated creative methodologies—including virtual reality and cinematic special effects—within documentary production has emerged as a subject requiring urgent consideration and in-depth investigation. This study primarily undertakes an analytical exploration of digital technology applications in documentary production and outlines the fundamental principles governing such applications.

Full Text

Abstract

Special effects refer to extraordinary visual elements, and many scenes that cannot be directly filmed today are accomplished through digital effects. With the continuous advancement of modern social technology and film production techniques, digital effects have become an essential element and a form of audio-visual language for expressing cinematic and television narratives. The effective integration of digital technology with documentary creation not only enhances the visual artistry inherent in documentaries but also enriches their creative expressive techniques. How the development of digital technology can facilitate the application of advanced creative methods such as virtual reality and

cinematic effects in documentary production has become a critical topic requiring serious consideration and in-depth research. This paper primarily analyzes and explores the application of digital technology in documentary creation and outlines the principles governing its use.

Keywords: digital technology; documentary creation; application

1. The Role of Digital Technology

As a film production technique, digital technology excels at creating authentic visual experiences. As a creative tool, it has pioneered an entirely new cinematic narrative style within the film industry. Consequently, digital technology has become integral to filmmaking as a primary means of image realization. Filmmakers utilize audiovisual language to narrate stories and evoke emotional responses from audiences. Digital technology has significantly enhanced the artistic expressiveness of cinema. Today, numerous Hollywood blockbusters are replete with digital effects, and digital technology has become as essential to film as editing, mise-en-scène, and music and sound design. For instance, the film *The Matrix* would not have achieved such success without digital effects; neither would its distinctive narrative structure have emerged, nor would the now-classic bullet-time rotating camera shots have become possible. When writing *The Matrix*, the Wachowski brothers approached storytelling and visual conceptualization through a digital effects mindset. The film's success consequently established a narrative style that could only be realized through digital effects.

2. Documentary Creation

Documentary refers to a film and television art form that uses real life as raw material to present authentic representations. Documentaries can be categorized into television and film formats, though no clear-cut classification or fixed standard exists between TV documentaries and film documentaries. They are primarily classified according to subject matter and expressive techniques into various forms, including current affairs reportage, political commentary documentaries, life documentaries, historical documentaries, cultural geography films, stage performance documentaries, and biographical documentaries [1]. Political commentary documentaries employ authentic imagery for argumentative purposes; life documentaries record various aspects of people's daily existence; current affairs reportage covers recently occurring news events; cultural geography films document natural conditions of specific regions or introduce local social customs; biographical documentaries chronicle individuals' life stories or experiences during particular periods; stage performance documentaries capture live theatrical performances; and historical documentaries reconstruct past historical events.

The documentary creation process is highly complex, involving numerous creative stages. Consequently, the workflow is typically divided into pre-production

and post-production phases. Pre-production primarily includes topic selection, conceptualization, outline development, shooting plans, and footage acquisition, while post-production mainly comprises editing and review. Figure 1 [Figure 1: see original paper] illustrates the documentary creation workflow.

2.1 The Relationship Between Digital Technology and Documentary Forms

The application of digital technology in documentary creation has significantly transformed realistic techniques, and its transcendence of visual limitations has generated considerable visual impact. However, current applications of digital technology in documentaries differ from those in fictional films. Therefore, digital technology must be integrated with the inherent form of documentaries, meaning it can only function effectively under the precondition of adhering to documentary authenticity.

With continuous innovation and development, digital technology—once reserved for high-end film production—has become an extremely common tool in film and television creation. Technically, it can be applied to various other cinematic forms, including documentaries. The expanding use of digital effects in television dramas has largely drawn inspiration from cinematic production methods. However, the application of any technical method must be combined with specific artistic forms to develop application modes that align with those forms' characteristics. Digital technology provides film and television creation with numerous techniques, including two-dimensional virtual scenes, three-dimensional virtual scenes, atmospheric rendering, digital matte painting, digital character animation, and digital color grading, all tailored to meet specific film requirements [2]. Digital technology shares many similarities with traditional production techniques, and its application in documentary creation remains in a continuous stage of exploration and practice. Moreover, documentary success is directly related to digital technology techniques. For example, *Journey to the West: The Great Tang Dynasty* (as shown in Figure 2 [Figure 2: see original paper]) is China's first hand-drawn documentary, produced by CCTV's Science and Education Channel. Due to its complex historical figures and scenes, conventional shooting and production methods could not satisfy the artistic goal of "recreating the dreamlike Tang Dynasty." Consequently, the documentary's visual core was ultimately presented through an innovative hand-drawn effects technique, which succeeded after countless trials by the production team. This novel visual style generated enthusiastic audience response.

2.2 The Relationship Between Digital Effects and Documentary Subjects

The application of digital technology in documentary creation has influenced documentary subject selection. Among various documentary genres, digital effects are most extensively used in science exploration documentaries. Documentary forms are divided into television documentaries and documentary

films, and digital technology has accelerated the convergence between these two forms, aligning their creative concepts, production techniques, and aesthetic effects. Since documentary films have a much longer history than television documentaries, the latter has learned extensively from the former. Television documentaries, combined with television's dissemination characteristics, have significantly enhanced documentary value and continuously expanded the documentary field. Consequently, contemporary documentaries feature rich variety and broad subject matter, with different subjects directly determining distinct styles [3].

First, the abstract nature of certain documentary subjects necessitates the use of digital technology. Many documentary topics, such as human evolution or celestial mechanics, present insurmountable challenges for cinematographers even with cameras in hand—digital technology effectively resolves such issues.

Second, when dealing with abstract content, digital technology can create visual enjoyment in documentaries. The application of digital effects serves not merely to compensate for insufficient archival footage but also to enhance documentary watchability and coherence. In science exploration documentaries, the “scientific spectacles” created by digital technology can attract audiences and become a prerequisite for documentary success.

Finally, the institutional stability of documentary “conventional” elements depends on successful commercial operation. Most Chinese documentaries are produced by official film and television institutions, whereas foreign documentaries of this type possess a highly professional commercial operation model. This is primarily because foreign productions target global international markets. Contemporary documentaries remain relatively niche, and relying solely on domestic markets is unsustainable for long-term operation; therefore, they aim for global markets. Additionally, “standardized” production and “universal” subjects enable documentaries to achieve strong international resonance.

2.3 The Principle of Visual Authenticity

Documentary is an art form that exists to record reality. Authenticity is the prerequisite for documentary creation, and the pursuit of aesthetic beauty in documentaries must be grounded in authenticity. This encompasses three dimensions: authenticity of visual representation, authenticity in revealing the essence of life, and authenticity in factual presentation [5]. Visual authenticity means that what appears visually real constitutes documentary truth. The application of digital technology in documentary creation has expanded and extended the scope of documentary authenticity in both form and content. However, digital technology is a creative technique that cannot exist independently of documentary authenticity requirements. Therefore, the prerequisite for applying digital technology in documentary creation is adherence to visual authenticity [6].

2.4 The Principle of Dynamic Balance

When applying digital technology in documentary creation, creators determine its application methods based on documentary form characteristics and actual circumstances, while also considering the balance between special effects footage and live-action footage—this constitutes the principle of dynamic balance. Current digital technology has gradually matured, and its application scope in documentary creation shows a clear upward trend, with the balance ratio between effects footage and live-action footage continuously shifting. Consequently, this balance is both dynamic and relative.

Even before digital technology was applied in documentaries, the balance principle functioned in the use of documentary technical and artistic methods. The term “documentary” derives primarily from “documentation,” which effectively encapsulates the fundamental nature and creative methodology of this cinematic art form [8]. The essence of documentary lies in using cinematic language to record and present authentic historical moments, figures, and events. However, the question of how to “document” —whether to apply artistic processing based on real life or to reflect pristine reality in exhaustive detail—has been debated for years. Current trends in documentary development have answered this question: documentaries “provide facts through art.” As a cinematic art form, documentary creation requires creators to possess the same artistic expression space as fiction filmmakers, enabling them to truthfully present story content rather than merely superficial authenticity [9].

Consequently, contemporary documentaries have begun employing various high-tech techniques during filming, such as high-speed photography, Motion Control (as shown in Figure 3 [Figure 3: see original paper]), and Steadicam, to enhance documentary expressiveness and watchability. However, this introduces new problems: unreasonable use of technical means or over-reliance on advanced technology during filming may cause documentaries to deviate from their documentary nature, creating a “crisis of trust” among audiences. Therefore, when creating documentaries, creators must fully consider the advantages and disadvantages of “technical processing” and conduct profound analyses of the rational and irrational factors inherent in various technical methods. By selectively applying advanced techniques according to the essential requirements of documentaries, creators can achieve harmonious unity between artistic quality and rationality [10].

In summary, digital technology serves documentary authenticity while simultaneously functioning as a form of documentary expression. Although excessive use of digital technology may cast doubt on documentary authenticity, it can still be harnessed in service of authenticity, provided this does not violate the essential nature of documentaries.

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Note: Figure translations are in progress. See original paper for figures.

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