Analysis of the Impact of Digital Media Technologies on Animation Design (Postprint)

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Abstract

As China' s socio-economic informatization deepens, new information technologies and digital new media have become inseparable, laying a solid foundation for future industrial upgrading. New media and information art are widely disseminated across various information media, including e-books, films, animation, the Internet, cameras, etc. The deep integration of digital media technology with traditional cultural video content has emerged as a crucial digital culture convergence industry. Digital multimedia animation, serving as an auxiliary driving force in modern animation design processes, has found extensive application. Essentially, it fosters closer interaction and coordinated development in animation design.

Full Text

Preamble

Title: Analysis of the Impact of Digital Media Technology on Animation Design
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Abstract: With the deepening of socio-economic informatization in China, new information technologies have become inseparable from digital new media, laying a solid foundation for future industrial upgrading. New media and information art are widely disseminated across various platforms, including e-books, film, animation, the internet, and digital cameras. The deep integration of digital media technology with traditional cultural video content has become a crucial digital-cultural convergence industry. Digital multimedia animation, serving as an auxiliary driving force in modern animation design processes, has seen extensive application that fundamentally promotes closer interaction and coordinated development in animation design.

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1. Introduction

Digital technology and modern media form the foundation of digital media, representing an inevitable trend of integration. For developers, digital media makes the production process more convenient and vivid while effectively improving content quality. In general animation design, digital media technology offers distinct advantages, including scene diversity and content richness. It represents the most dynamic form of expression, evolving from traditional 2D animation to 3D and CG animation, endowing works with unique artistic styles. Initially, China' s domestic animation industry faced considerable challenges, with obvious lag and a primary focus on 2D animation. However, 2D animation could only serve as a production foundation, satisfying background image needs but failing to meet audience demands for strong realism. The application of digital media in animation has enabled the production of 3D and CG animation, enhancing visual imagery and restorability. For audiences, this stimulates various emotions, evokes resonance and immersion. In essence, digital media technology has propelled domestic animation design toward higher-level development.

In recent years, digital media technology has rapidly advanced across numerous fields, including animation design. Currently, digital media animation exhibits pronounced realistic characteristics, widely applied in various films to enhance artistic appeal while optimizing production costs, ultimately expanding the economic space of the animation industry. Conventional 2D animation struggles to satisfy audience cravings for realism, making the fulfillment of this demand a key reason for the immense development potential of 3D animation.

In animation design, digital media technology first plays a role in the creation of animation data sequences, with animation technology and fundamentals at its core. Compared to traditional temporal arrangement, digital media technology handles images differently, focusing primarily on relationships between elements on screen. After mastering basic animation design principles, it can be applied to all animation works, influenced not only by time but also incorporating numerous communication theories. The application of digital media technology in animation design mainly divides into two aspects: production, which plays a crucial role in animation creation, and game preparation, where players typically appear on game interface screens. When animation design adopts digital

media technology, the final results are displayed as separate file formats.

2. Overview of Digital Media Technology

In the information age, new and high technologies have gradually emerged across all domains of life, attracting increasing attention and widespread application. Under the primary influence of the perfect combination between digital media technology and cultural artistic creation, it has produced critical utility and impact on the digital media industry. Digital media technology primarily refers to the acquisition, registration, analysis, and dissemination of binary information, using sensory and presentation media such as audio, video, text, images, and animated hieroglyphs as carriers for specific information [**?**]. In daily life, animation refers to "animation time sequences." In essence, most drawings remain static and are then combined sequentially with conceptual objectives; all accumulated materials are collectively termed animation technology. Its important characteristic is the complete recording of dynamic images. Under the influence and control of time sequences, dynamic images change over time, fully demonstrating scene diversity. The primary reason for graphical dynamic change lies in transformations of certain key points on the screen, causing variations in graphic and key point layout parameters. These can be said to play a crucial role in animation image formation and directly affect image structure to a certain extent.

The so-called digital media method is essentially a processing and registration procedure. The distribution and acquisition of binary-format media typically include text, images, audio, video, animation, encoding, and some natural media. Traditional workflows and presentation forms are fully integrated into media art, simplifying previously cumbersome creation processes. The transformation of characters and the shaping of design images constitute a lengthy process; traditional animation design typically employed hand-drawing, wasting manpower and material resources. The emergence of multimedia technology has transformed the roots of animation design.

2.1 Specific Concept of Digital Media Technology

The application of digital media technology in animation design begins with the creative process. Animation design using digital media technology fundamentally differs from image-driven animation and other general "temporary animations." Animation frames are formed based on changes of targets within the same frame. For animation design, modifications to the same screen must be made for different purposes while controlling the entire animation. This polynomial differs significantly from continuous functions; design principles can be planned with reasonable and extensive engineering applications while achieving expected design effects. Animation design based on digital media primarily consists of two components: production, which plays a vital role in animation creation, and player presentation, where the player' s main purpose is the effective display of animation or game scenes. Therefore, it is evident that the

relevant application of digital media in animation design ultimately facilitates the effective formation of two independent document formats.

2.2 Specific Types of Digital Media Technology

Media Storage: When digital media technology requires storing certain information for practical application, mobile storage media such as CDs are needed to provide a solid foundation for subsequent work.

Sensory Media: So-called sensory media primarily refers to stimuli in daily life that affect human senses—visual, olfactory, tactile, and auditory—enhancing their sensitivity, such as text, photos, sound, and animation.

Presentation Media: This typically comprises printers, projectors, displays, audio-visual equipment, keyboards, mice, and other components for input and output.

Media Transmission: In modern digital media applications, media transmission plays an extremely important role, primarily conducting information transmission through carriers such as optical fiber and cable to improve the utilization efficiency of relevant information. Media exhibits strong personalization tendencies in practical applications, mainly through remote storage or transmission of digital code information. In daily life, media typically includes Holmes codes, image coding, barcodes, and QR codes to enhance convenience in people' s lives.

3. Origin of Animation Design

In modern animated film production, not only are diverse image acquisition methods required, but overall image unity is also necessary, combining scenes and storylines through different character actions and scripts. The artistic origin of animation can be traced back to the magic lantern period. The so-called magic lantern involved placing a red candle in an iron box, creating a circular hole in a glass box on the opposite wall with a circular lens, placing an aperture with images behind the lens, and using a spotlight to project the images displayed in the lens onto a wall for "animation."

4. Impact of Digital Media Technology on Animation Design

4.1 Simplifies Animation Design

Traditional animation design required considerable time, from initial design to production processes. For developers, digital media is more convenient and vivid, effectively improving content quality. For general animation design, digital media technology offers obvious advantages in animation, including scene diversity and content saturation. It is the most dynamic form of expression, evolving from traditional 2D animation to 3D and CG animation, endowing works with

unique artistic styles. Initially, domestic animation industry development was not smooth, with obvious lag, focusing primarily on 2D animation. However, 2D animation could only serve as a production foundation, satisfying background image needs but struggling to meet audience demands for strong realism. The application of digital media in animation has made 3D and CG animation production possible, enhancing animation imagery and restorability. For audiences, this stimulates various emotions, evoking resonance and immersion. In a sense, the application of digital media technology has propelled domestic animation design toward higher-level development.

4.2 Changes Animation Design Expression Methods

Digital media is formed on the basis of digital technology and emerging media. Therefore, the rational application of digital media technology in animation design and production enables it to fully recognize and realize the charm of animation works. Compared with traditional animation design, digital media technology makes design more attractive with more vivid animation content. Overcoming the limitations of traditional 2D animation, 3D modeling and animation have gradually emerged. Furthermore, animation schools created by combining animation design with new media technology have become more unique. Precisely because of the integration and interest of the aforementioned digital media technology, modern animation design can enrich animation content and combine multiple elements into the design, distinguishing it from traditional animation design. It can combine sound, graphics, text, and other forms without being limited by traditional animation methods and techniques. Current animation design has significantly improved auditory and color design visual impact, making today' s animation development extremely attractive and providing audiences with better visual experiences [**?**].

4.4 Makes Animation Design Expression More Profound

Currently, employees in China' s animation industry have opportunities to master multimedia technology application. Skillfully using multimedia technology to create mature animation works is merely subordinate to backward technology and expression methods; animation creators may be unable to accurately express their ideas. Animation design is not so saturated, sharing the same ideological connotation. Many scenes with fantasy or romantic colors cannot be conveyed through traditional media. After multimedia technology emerged, developers believe they can use digital technology to properly handle design, enrich expression and presentation forms, shape character images, and convey creative thinking.

4.5 Benefits of Reducing Animation Production Costs

With the rapid development of new media, the animation industry is closely related to all sectors of society, and animation design is no exception. Currently, against the backdrop of digital media technology, animation creation and design

possess certain credibility and reliability. Simultaneously, digital media technology is widely applied in film production, making films more attractive while reducing production costs compared to previous traditional animation production methods, promoting stable industrial development. From the perspective of previous 2D animation, audiences found it difficult to experience realism. 3D animation produced with digital media technology can effectively change this problem, allowing audiences to feel realism during viewing, which is a crucial factor for audience preference for 3D animation.

4.6 Promotes Higher-Level Development of Animation Industry

The combination of digital media technology and animation design can effectively promote the development of Chinese animation to a higher level. Against the new media backdrop, Chinese animation has broken through the limitations of 2D animation. 3D animation forms have gradually emerged in animation design and production, appearing in people' s vision with the most realistic images and gradually evolving into CG animation. It is evident that the future development prospects of China' s animation industry will be broader. Animation we frequently see in life belongs to "animation time sequences," which means people believe screens are basically static and adjusted according to sequential order. The most obvious aspect is recording dynamic trajectories according to time, defining them according to central position parameters of images. To change basic point parameters, drawing, transition, and matching software can be used to ensure natural harmony of the entire picture. However, in practical time animation design, animation often depends not only on time sequences but also on core logic [**?**].

5. Conclusion

The society we now live in is undoubtedly an information society. High and new technologies are applied across various industries, most commonly in photography, animation, entertainment, and other fields. It is evident that the combination of digital media technology with cultural and artistic industries is conducive to the development of animation design toward digital technology. For the specific application of new media technology in animation, besides ensuring animation quality, it is necessary to provide animation development potential, animation theory, and technology.

Over time, China' s animation industry has made considerable progress. However, quite a few people lack sufficient understanding and appreciation of animation design works, leading to declining quality of some animation works and affecting the entire industry' s operation and development. To change this situation, relevant units and personnel need to strengthen the application of modern technology and equipment, such as digital media technology, to improve the production level and quality of modern animation design and stimulate the entire animation industry' s development.

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