

Symbiosis of Digital Technology and Real Economy: “Building Digital Humans with Culture” Aesthetic Shaping of Virtual Digital Humans and Its Concrete Practice

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ABSTRACT

In recent years, with the sweeping wave of technologies such as 5G, artificial intelligence, big data, blockchain, and virtual reality, Chinese film and television have embarked on a new upgrade under the background of traditional formats, taking great strides into a new journey of digital development and transformation. The importance of aesthetic shaping and connotation derivation of virtual digital humans in the era of cultural digitization is increasingly prominent. The article discusses the aesthetic shaping and connotation derivation of virtual digital humans from two aspects, and analyzes the impact of the appearance, clothing, and image design of virtual digital humans on aesthetic perception, as well as the cultural connotations and story plot construction behind them. Virtual digital humans are not just digital avatars, but also convey unique cultural values through cultural symbols and storylines. Therefore, aesthetic shaping and connotation derivation are important aspects of virtual digital humans, which together construct the image and cultural connotation of virtual digital humans, bringing new aesthetic experiences and ways of thinking to the cultural digital era.

Keywords: *Virtual digital humans, “Building digital humans with culture”, Aesthetic shaping, Concrete practice.*

1. INTRODUCTION

In 2022, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued the "Opinions on Promoting the Implementation of the National Cultural Digitalization Strategy", proposing the "Implementation of the National Cultural Digitalization" strategy. "Cultural digitalization" has become an important starting point and strategic choice for building a socialist cultural power and realizing Chinese path to modernization. It is necessary to use digital technology to transform, store, disseminate, and consume cultural information. The significance of cultural digitization is that it can combine traditional culture with modern technology, innovate cultural expressions and dissemination methods, and promote the inheritance and innovation of culture. At present, virtual digital humans and applications

have become an important driving force for the development of the digital economy, and the starting point and foothold of cultural digitalization development, as well as the important power for entering the digital ecosystem, embracing digital changes, and inspiring a new era of creativity in the film and television industry.

1.1 Technical Medium for Virtual World Interaction

The development of film and television technology is advancing rapidly, and the integration of virtual and real has become a major trend in the development of the film and television industry. Building a diversified immersive path for film and television is constantly refreshing application scenarios in new fields such as medicine, agriculture, industry, environment, and energy. It is also possible to promote the globalization of the digital industry through head mounted displays,

related new technology display devices, virtual digital humans, digital cultural tourism, and metaverse education. Virtual digital humans are immersive interactions, virtual digital humans mimic companionship, psychological presence, and identity recognition, breaking down professional barriers.

1.2 AI Empowering Digital “Intelligent” Humans to Move Towards Various Industries in the Future

Virtual digital humans originated in the film and television industry, and as AIGC (artificial intelligence content production) entered a period of explosive application, they were empowered with powerful functions in various industries. The era of true interconnectivity has quietly arrived, and digital humans will become a crucial role. Through virtual reality technology, it can accelerate the integration of online and offline across time and space, and achieve real-time computing for all things. In the future, digital humans will gradually exist in all aspects of social life. The application of digital humans in animation, accompanied by the maturity of computer and motion capture technology, is widely used in the film and television industry, and deeply coupled with application scenarios. It is gradually approaching real human characters, and having more new applications, new models, and new formats. “The Report on the Impact Index of China's Virtual Digital Humans” also points out that virtual digital humans are the “key” to the next generation of Internet.

1.3 The Landing and Transformation of Digital Humans

With the development of virtual reality (VR) and augmented reality (AR), platforms such as Facebook's Horizon Studios aim to make virtual reality meetings more immersive. Nowadays, AI has had a significant impact on fields such as media, film and television, art, e-commerce, entertainment, and gaming. Virtual digital humans have also extended various research fields, including digital avatars, deepfake technology, and digital representations of individuals in virtual and augmented reality spaces.

At present, with the empowerment of digital humans through AI, more and more virtual digital humans with traditional Chinese cultural characteristics are presented to the public. They

interact through technologies such as speech recognition, natural language processing, and image recognition, and can provide relevant cultural knowledge, stories, artistic performances, etc. according to user needs. They can answer users' questions about traditional Chinese culture, explain the background and connotation of ancient Chinese literature, show traditional Chinese painting, music, dance and other art forms, and firmly grasp the cultural presentation of Chinese path to modernization.

2. “BUILDING DIGITAL HUMANS WITH CULTURE”: CONTEMPORARY AESTHETIC SHAPING PARADIGM OF VIRTUAL DIGITAL HUMANS OF HISTORICAL FIGURES

2.1 Development and Transformation: Introspection and Decentralization

The Chinese traditional culture virtual digital person is a virtual entity with Chinese traditional culture as its theme, integrating traditional cultural elements into the virtual digital person to give it Chinese cultural characteristics and intelligent attributes, and promote the digital dissemination of traditional culture. At present, the technology of digital humans is developing towards diversification, intelligence, and refinement. However, there are few high-quality digital humans, and the overall image of digital humans in the market tends to be singular, flat, and labeled, which cannot clearly convey the aesthetic and connotation of digital humans. So, how to endow digital humans with rich cultural connotations, create a group of high-quality images that combine Chinese cultural character and “traffic code”, and meet people's growing demand for high-quality digital content, are the questions that need to be considered for the development of digital humans.

2.2 Aesthetic Construction: Achieving Creative Breakthrough by Type Blending

In recent years, the rise of virtual idols in Japan, the application of virtual movie characters, the creation of virtual museums and virtual historical figures, and other creative trends have made it possible to explore the value and significance of cultural virtual digital humans in cultural inheritance and innovation. Virtual digital humans

can become carriers and propaganda windows for historical culture, and may also provide new ideas and ways for cultural innovation. The Beijing Cultural Tourism Cooperation Promotion Platform released the first batch of historical and cultural celebrity digital human creations in 2022, making it possible to study how the virtual digital character images of Chinese historical and cultural celebrities are presented, or explore the re-creation of mythological characters in the virtual digital world, in line with contemporary aesthetic needs, personalized customization of behavior, language, and interactive experiences. These digital humans will serve the dissemination of Chinese civilization and generate cultural power through culture.

2.2.1 Technology Activating the Digital Life of Virtual Idols

At present, the digital human industry has taken shape, but the market lacks consensus on digital humans. It is widely used in the film and television industry, gradually expanding to multiple fields, such as virtual characters in the Avatar, Iron Man, and Avengers series. Due to the broad concept of "digital humans", from virtual characters in animated works, to virtual anchors, virtual idols, to Teresa Teng who was "resurrected" through holographic technology, and even allowing photos to "speak", they have all been put into the pockets of digital humans, as well as digital characters in games, virtual tour guides, virtual commentators, virtual commercial images in the cultural and tourism industry, and so on. With the development of digital technology, how to skillfully use digital technology to serve good stories, and enhance film and television narrative and character emotional experience, is the true way for the film and television industry to treat the dialectical relationship between digital technology development and artistic creation.

2.2.2 Traditional Chinese Aesthetics Shaping Cultural Perception IP

Chinese traditional art and aesthetics have distinct styles, characterized by artistic conception, balance, and harmony. It is necessary to incorporate aesthetics into the design of virtual characters, including their appearance, facial expressions, and body language.

The shaping of traditional Chinese aesthetics, the concept of aesthetics is not limited to art, but permeates into various aspects of daily life. Virtual

digital humans based on traditional culture are not only cultural symbols with distinct recognition, infectiousness, and "popularity". In traditional aesthetics, nature and harmony are the most important elements. Therefore, in the design of the Chinese style virtual digital character "Wen Yaoyao", it can be seen that it is inspired by fans, filled with soft lines, harmonious color combinations, and poetic elements. Virtual digital humans rely on cultural talent to innovate and produce more high-quality content. Exploring the past and welcoming the new through storytelling is the long-term and dynamic source of development for digital humans.[1] It is necessary to attract young consumer groups and unleash innovative imagination of cultural IP.

Regarding the aesthetic shaping of digital humans in traditional Chinese culture, there are various ways to influence the aesthetic views of virtual digital humans. For example, character design can reflect traditional aesthetic standards and values, such as the aesthetic standards of the Tang Dynasty or the simplicity and elegance of Song Dynasty painting. Clothing accessories, and even the behavior of characters, can reflect traditional Chinese clothing, accessories, and etiquette. These virtual digital human interactive buildings and natural environments can replicate the design elements of Chinese classical gardens or royal architecture.

2.2.3 Diversified Presentation of Cultural Experiences in the Context of Digitalization

In traditional Chinese culture, there are rich symbols and contexts that carry specific emotional connotations. Cultural symbols of traditional Chinese art such as traditional Chinese painting, ink painting, ceramics, as well as traditional clothing, language, ethnicity, etc., should be understood and integrated into the design and behavior of digital humans, creating virtual characters with visual appeal and cultural significance, and enhancing emotional resonance with the audience. As a narrative subject carrying cultural significance, traditional Chinese-style virtual digital human conveys collective knowledge and ensures cultural continuity through youthful and modern visual performances. This not only awakens the cultural memory of the audience, making them more deeply aware of their cultural identity, but also provides them with a solid emotional support and a sense of historical belonging.[2]

2.2.4 *Chinese-style Communication and the Construction of National Image of China*

Humility and courtesy are virtues of the Chinese nation, and the core elements of traditional etiquette, such as the beauty of language and sincerity, respect, humility, and concession, are integrated into the shaping of digital people, inheriting and promoting this excellent tradition. Through cultural construction from the inside out, it can serve as an important window for the dissemination of Chinese culture, showcasing the excellent qualities of the Chinese nation to the world. Emotions can be expressed through symbolic gestures and body postures. It is also necessary to explore how to express emotions through virtual digital humans, reflect prototype characters in Chinese mythology or history, such as historical figures, mythological figures, scholars, or warriors, and inject cultural significance and narrative depth, allowing users to deeply immerse themselves in traditional Chinese character interaction experiences.

2.2.5 *Chinese-style Narrative Thinking and Artistic Conception*

Telling stories through culture, integrating traditional Chinese myths, legends, or historical narratives into the background stories or dialogues of virtual humans, can help users establish connections with cultural backgrounds. These stories can be introduced into the characters of virtual humans, giving them depth and resonance. The virtual digital figure Su Shi has activated people's emotional resonance and cultural aspirations towards the history of the Northern Song Dynasty. By combining the refinement of Chinese cultural connotations with innovative expression of digital art, the growth of digital art is aligned with contemporary aesthetic grammar, spanning from tradition to the present and from classical to contemporary, creating the image of a "digital person" with Chinese cultural charm and inherent "flow", and continuously enhancing the vitality of digital art. Through the use of digital human forms, original IPs with distinct Chinese cultural characteristics can bring excellent Chinese culture to more young audiences, which is also the source of innovative and upright culture. It is important to avoid perpetuating stereotypes or distorting culture.

3. NEW IDEAS DERIVED FROM THE EMOTIONAL CONNOTATIONS OF HISTORICAL VIRTUAL CHARACTERS

3.1 *Contemporary Aesthetic and Normative Guidance Based on Traditional Culture*

It is not only an aesthetic paradigm, but also a methodology that enables us to think about problems in the digital media age. Traditional Chinese art emphasizes emotional expression, which is not only a way for artists to express their inner emotions, but also a bridge for audiences and artworks to establish emotional resonance. These emotional elements make traditional Chinese art deeply loved by audiences and inherit the rich cultural connotations of the times.

3.2 *Emotion Recognition System*

The facial expression generation and emotion recognition of virtual humans are key technologies in the field of virtual artificial intelligence, which can enable virtual humans to interact and express emotions more naturally with humans. Emotion model is an algorithm used to generate emotional expressions. These models can map emotional states to parameters of facial expressions, allowing virtual humans to change their expressions based on their emotional states. Technically speaking, although machines cannot truly possess emotions, emotional simulation can make them highly similar in form, spirit, and soul. When emotional fulfillment becomes a prerequisite, creating a unique persona is easier to gain popularity. By carefully crafting the persona around personality design, image building, voice production, and historical stories, it can not only promote the rapid emergence of virtual anchors, but also enhance their commercial value.[3]

3.2.1 *The Construction of Aesthetic Concepts*

Different cultures have unique aesthetic preferences for the appearance of characters. Satisfying the spiritual and cultural needs of the people is the starting point and foothold of cultural digitization development, with a people-centered creative orientation, continuously innovating cultural expressions, and promoting cultural digitization development. On the aesthetic level,

emotions can be conveyed through culture and connect them with the intended audience. On the path of integrated development of technology and art, creators should return to art itself and give digital people wings of digital technology to their creativity and expression of ideas.

3.2.2 *Symbols and Semiotics*

Cultural symbols and semiotics have a profound impact on the design and perception of virtual characters. Combining important elements of excellent traditional Chinese culture can make virtual humans more attractive to users from specific cultural backgrounds. Integrating Chinese language and communication methods into the interaction of virtual digital humans can enhance their cultural identity, such as the use of idioms, proverbs, dialects, or elements of classical Chinese language.

3.2.3 *Narrative Strategy*

It is essential to understand the influence of culture on the design and perception of virtual digital humans, especially in applications such as video games, virtual reality experiences, educational simulations, and marketing campaigns targeting different international audiences. By considering cultural factors in the design process, developers can create virtual humans that resonate more deeply with users and enhance their overall experience.

4. CASE STUDY AND TEACHING PRACTICE OF VIRTUAL DIGITAL HUMAN CREATION

In the creative teaching process, it is necessary to establish an interdisciplinary talent training system under the background of the new era, increase talent training efforts, strengthen digital system construction from the fields of artistic creation, project operation, artistic creation, exhibition and broadcasting, enhance the application and practice of key technologies, strengthen digital knowledge management, and improve the efficiency and quality of digital talent training. At the same time, it is also necessary to increase the construction and renovation of teaching facilities, provide better performance venues and equipment, provide better material conditions for digital talents in film and television, and cultivate professional digital talents.

4.1 *Application Scenarios of Virtual Digital Humans in Cultural Digitization*

The development and application of digital humans will accelerate the industrialization of film and television, and accelerate to become a new interactive portal of 3D Internet with the help of AI-driven technology. The industrial application scenarios will be more diversified, including virtual theaters, virtual museums, virtual game rooms, virtual theme parks, and virtual social platforms. Therefore, by using digital technology to enhance and improve the ways and methods of protecting, inheriting, and promoting culture, there is a must to improve the efficiency of cultural management and further enhance cultural confidence. In terms of the inheritance of cultural heritage, virtual museums and the re-creation of virtual historical figures can reproduce and present disappeared historical scenes through virtual technology.

4.2 *Exploration of Content Creation and Application of Virtual Digital Humans*

The creation of virtual digital humans presents diverse ways and forms, creating new content creation and entertainment experiences for film and television, and taking an important step towards promoting the development of cultural digitization. It is necessary to strengthen the cultivation of students' digital thinking and continuously and deeply develop the digital application of teaching resources. Integrating traditional Chinese culture into the digital space brings opportunities for cultural preservation and global cultural exchange, making Chinese culture more easily accepted and understood by local and global audiences, and potentially stimulating the interest of the younger generation in traditional Chinese culture. However, it also presents challenges, including avoiding stereotypes and maintaining cultural and social sustainability. In the construction of virtual images, multidimensional scenario analysis should be conducted to consider the unified and systematic development of virtual digital images from the perspectives of market development applications and their own audiences. Therefore, there is a must to continuously innovate the connotation and expression forms, and inject more vitality and creativity into the cultural digital era.

5. CONCLUSION

The aesthetic shaping and connotation derivation of virtual digital humans in the era of cultural digitization are of great significance. From the perspective of aesthetic shaping, the appearance, clothing, and image design of virtual digital humans play an important role in our aesthetic perception, and may also affect future aesthetic concepts. In the process of cultural digitization, virtual digital humans provide new scenarios and presentation methods in terms of connotation derivation, allowing traditional culture to be better understood and accepted, and conveying unique cultural values through cultural symbols and storylines. In the future, cultural digitization will further accelerate, and various new cultural formats and models will continue to emerge. People will explore the connotation and value of culture more deeply, promoting the inheritance and innovation of culture.

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