Research on the Current Status of Digital Preservation of Intangible Cultural Heritage: A Case Study of Han Opera Culture

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Abstract: The advancement of technology is reshaping human life and concurrently transforming the transmission of cultural heritage. Digital technology serves not only as a medium for cultural dissemination but also embodies the technologization of culture itself. This paper, based on an analysis of the current state of digital preservation and inheritance of Han Opera culture, addresses profound internal issues arising from the intersection of intangible cultural heritage and digital technology. It delves into how traditional culture, in the context of marginalization, can harness technology to enhance its tangible 'productive' capabilities.

Keywords: Technology and Culture, Digitalization, Intangible Cultural Heritage, Han Opera

1 Introduction

The entire history of human civilization has progressed and been shaped alongside the development of technology. Technology provides crucial support in connecting human life with the world. Its advancement has also rejuvenated culture throughout the ages. Since the dawn of civilization, technology has broken the limitations of the physical body and determined the modes of knowledge production. The persistence of culture forms the common memory of humanity. For culture, technology is both an eternal premise and backdrop for development. In such a context, the dilemma arises: should we leverage technology to promote the essence of culture, or use culture to showcase technological advancements? This calls for a further balance and in-depth exploration.

2 Digital Preservation of Han Opera Culture

Throughout its history spanning over four centuries, Han Opera has become a symbol of regional operatic art. Recognized in 2006 as one of the first national-level intangible cultural heritages in China, Han Opera represents a significant cultural legacy. In 2015, the Chinese government underscored the vital role of the internet in the inheritance and development of opera, aligning with the concept presented in "Digital Existence" by Glotz: "Computing is no longer just about computers, it dictates our existence."[1] In this era, advanced technologies like internet, computing, and digital techniques have emerged as new pathways for the

preservation and evolution of Han Opera culture, integrating this traditional art form into the modern digital world.

2.1 Theoretical Support for Digital Preservation of Han Opera Culture

The UNESCO "Memory of the World" program, aimed at preserving and making accessible documentary heritage globally, includes a significant focus on digital cultural heritage. This encompasses documents in any language and field of human knowledge or expression, converted to digital formats from existing materials. Increasingly, it also involves 'born digital' documents, which have no non-digital original. Digital cultural heritage includes texts, databases, static and moving images, audio, graphics, and related software from around the world, both online and offline. This shift to digital preservation is not just a matter of safeguarding cultural heritage; it fundamentally affects the nature of the emerging "knowledge society"[2] highlighting the evolving relationship between technology and culture.

The relationship between culture and technology is one of mutual progress and coevolution. Digital technology expands possibilities in the storage, dissemination, and teaching of culture. As Wang Yaoxi points out in "Digitalization of National Cultural Heritage" digital technologies transform cultural heritage into shareable, renewable digital forms. They involve digital collection, storage, processing, display, and distribution, offering new interpretations and methods of preservation".[3]Han Opera's digital protection, predominantly manifesting through digital images, videos, and audio narration, exemplifies this. These technologies, characterized by interactivity, virtual simulation, and shared resources, integrate technology into culture, fundamentally influencing cultural evolution and preservation.

2.2 Technical Support for Digital Preservation of Han Opera Culture

The application of digital technology in Han Opera culture enables better preservation, inheritance, and innovation. Key technologies include remote sharing, virtual display, augmented reality, immersive interaction, and innovative information visualization design. The main strategies are: 1) Collecting, categorizing, digitally storing Han Opera documents, and establishing comprehensive databases. 2) Innovating based on research in Han Opera's scripts, vocal styles, and costumes using computer-aided design. 3) Using virtual reality and augmented reality to create virtual scenes, immersively showcasing the charm of Han Opera and updating its production, usage, and dissemination methods. 4) Utilizing virtual reality to transform the consumption and circulation of Han Opera culture, reshaping its existence. Furthermore, other digital methods and technologies include digital scanning, photography, animation, restoration, exploration, archaeology, virtual music, theater, reality, multimedia databases, digital content retrieval, copyright, publishing, content management, and distribution[4], providing robust technical support for the digital study and preservation of Han Opera.

3 Current Status of Digital Preservation of Han Opera Culture

At the historical intersection of China's two centenary goals, General Secretary Xi Jinping emphasized"the fusion of various artistic genres, the integration of different forms, and the role of the internet, big data, and artificial intelligence in innovating artistic expressions and

expanding the artistic realm."[5] This highlights the significance of leveraging emerging technologies to strengthen the inheritance and innovative development of Han Opera culture. This topic has garnered attention from local governments, leading to practical efforts in digitalizing Han Opera. Additionally, many universities are conducting in-depth discussions and research from diverse professional perspectives, interpreting the cultural significance, social role, and spiritual essence of inheriting Han Opera.

3.1 The digital preservation and inheritance of Han Opera culture

The Wuhan Han Opera Theater has revamped its website using digital media technology, offering concise information through text, images, and video clips about news, performers, repertoire highlights, and artistic exchanges. The Ziyang Lake Han Opera Museum, in addition to displaying traditional Han Opera costumes, roles, musical instruments, accessories, biographies, and ticket stubs, employs QR codes for audio introductions（Figure 1.）, enhancing visitor engagement and expanding the knowledge presented. Xu Xiaoran's research, "Digital Preservation Study of Han Opera – A 3D Digitalization Example of the Top Ten Roles of Han Opera" from an information and interaction design perspective, establishes a web-based digital archive of 3D models of iconic Han Opera characters（Figure 2.）, aiming to preserve and promote the art form. Additionally, from a costume design perspective, Zhao Yan's work suggests creating a digital teaching resource encompassing Han Opera costume styles, accessories, embroidery techniques, and production processes. This approach allows for a comprehensive 3D display, collaborative platform operations, and space-transcending updates, thereby actively preserving and inheriting the art of Han Opera costumes.

Fig. 1. Ziyang Lake Chinese Opera Museum, female costume of Chinese Opera

Fig. 2. Webpage Design for the Ten Major Roles of Han Opera

3.2 Digital Innovation Design in Han Opera Culture

In addition to the digital transmission of Han Opera's intrinsic cultural forms, the application of Han Opera elements in design intimately connected with everyday life is a crucial strategy for its digital preservation and inheritance. Within the cultural and creative product store located on the third floor of the Ziyang Lake Han Opera Museum, a variety of creative products such as jewelry, earrings, fans, a series of dolls, and LEGO toys (Figure 3) are displayed. These items represent the essence of Han Opera culture through information visualization design, transforming abstract cultural elements into tangible goods that integrate seamlessly into daily life.In the research titled 'Application Study of Information Visualization Design in Han Opera - Case Study of 'Erdumei'' Fang Zheng, a student specializing in visual communication design, undertakes an in-depth exploration of the Han Opera piece 'Erdumei'. This exploration encompasses divergent thinking and investigative analysis, focusing on the narrative background, character archetypes, costume and instrument design, as well as vocal and musical scores. Subsequently, these elements are synthesized into a comprehensive visual design, thereby enhancing the accessibility and engagement of Han Opera culture and contributing to its ongoing evolution and dissemination.Moreover, the development of Virtual Reality (VR) technology-based products related to Han Opera culture, such as the VR rendition of 'Sanchakou' showcased at the 7th Wuhan 'Ximaotou' Art Festival, introduces a modern and stylish format of Han Opera to younger audiences. This VR experience offers an avant-garde, immersive cultural engagement with Han Opera. Find a visual design of the clown's information on the website . It designs the characters of Han Opera and introduces the knowledge and information of Han Opera clowns. Introduce the steps and performances of clowns in the form of graphics and text. Information visualization design is a combination of graphics and text to help the public understand the clown's profession in stage performances, and use rich visual language to accurately convey information; By contrasting blue with orange red, it has a strong visual impact and attracts the audience's attention to traditional opera culture. Guide the audience to understand the cultural and theoretical knowledge behind stage performances through shallow stage performances.Overall, these practical implementations not only exemplify the digital conservation and transmission of Han Opera culture but also effectively realize its potential for economic utilization.
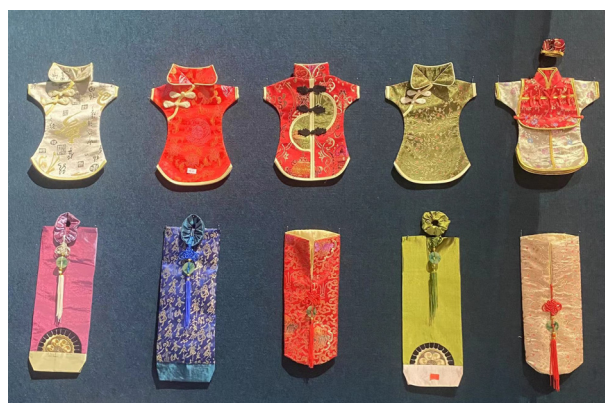

Fig. 3. Ziyang Lake Chinese Opera Museum Cultural and Creative Products of Chinese Opera.

4 The digital preservation of Han Opera culture faces both challenges and opportunities

The arrival of the digital era has given rise to new spaces and methods for cultural and artistic display. The emergence of new technologies and media offers fresh possibilities for the contemporary expression of traditional cultures like Han Opera. However, this expansion of digital spaces and media innovation also brings challenges to the inheritance of Han Opera culture, necessitating a balance between preserving traditional art forms and embracing modern technological advancements.

4.1 The digital preservation of Han Opera culture offers several opportunities

Compared to traditional media, digital technology possesses both material and spiritual characteristics, offering ease of preservation, shareability, and sustainable development. Its value enhances over time with continued application. The digitalization of Han Opera culture primarily benefits in two ways:1）Facilitating the storage and documentation of national culture, aiding the protection and inheritance of Han Opera, ensuring it does not vanish with the loss of practitioners. It also pushes forward the creative transformation and innovative development of Chinese traditional culture, providing new perspectives for researchers.2）Utilizing the internet for showcasing and spreading Han Opera culture. As a new medium for cultural exchange, digitalization helps to integrate Han Opera into everyday life, fostering interest among the young, and overcoming limitations in visual design and presentation formats, thereby also enhancing its commercial value.In the future of "digital existence", modern technology will be key in preserving, documenting, and disseminating traditional culture, becoming an essential tool for cultural continuity, national development, and revival.[4]

4.2 The digital preservation of Han Opera culture faces several challenges

The digital age, while offering new life to Han Opera culture, also poses inherent risks. The authenticity and vitality of Han Opera must be carefully infused into its digital representations. Glotz, in "Digital Existence", discusses the expansion of human life spaces through digitalization but warns of the "loss of subjectivity" and "death of the subject"[1]. In the digitalization process of Han Opera, the influence of dominant cultures, such as Peking Opera, has been noted. Deng Wenting, in 'Analysis of Han Opera Costumes,' points out that under the influence of Peking Opera, the differences in patterns between Han Opera and Peking Opera costumes are subtle. Presenting culture merely in a material form reduces it to a mere collection of materials, leading to a homogenization that strips away its unique characteristics. Digital technology, serving as a superficial medium for Han Opera culture, risks reducing the intangible cultural heritage displayed in visual media to fragmented cultural elements lacking in production process and deeper meanings.[6]In the era of technological reproduction, the production of intangible culture is detached from its native cultural ecology, entering a process of 'alienation' where it is produced and constructed, thus stripping away its unique existential world.[7]Therefore, in the context of Han Opera culture, traditionally transmitted through an 'oral and heart-to-heart' model, the intervention of digital technology raises the question: Will it lead to a metaphysical framework detached from the essence of both culture and technology?

The digitalization of Han Opera is not merely a technologization of culture; it necessitates a deeper exploration and practical engagement with Han Opera culture.

5 The value orientation of the digital preservation of Han Opera culture

Max Weber's distinction between "value rationality" and "instrumental rationality" [8]is significant in the context of Han Opera's digitalization. Value rationality, focusing on objectives, governs instrumental rationality, which is more about practical application. Han Opera's digital preservation reflects the integrated use of digital technology for cultural dissemination and innovation, encompassing cultural confidence and interdisciplinary collaboration. The essence of Han Opera, as highlighted by Zhang Geng, lies in its poetic expression through song and dance[9], emphasizing authenticity and creative exaggeration. Balancing the essence and technological aspects is crucial to prevent the decentralization of Han Opera's art form in the digital age. As Shen Kuo said,"Having mastered the teachings and achieved completeness in rules and measures, one is still but a slave to the script. However, it is essential to start from this point. Beyond this path lies the realm of the marvelous, where no traces can be discerned. Only then does one enter the divine."[10]Creatively, digitalization allows contemporary themes to enrich Han Opera, blending modern aesthetics with traditional narratives, ensuring its timeless relevance.Han Opera culture can thus "become familiar yet new, new yet familiar, enduring through hundreds of generations."[11]

6 Conclusion

The century-long development of Han Opera, with its rich cultural heritage, diverse repertoires, major roles, and various schools, is a significant part of Chinese theatrical history. Rooted in the unique cosmology of the nation, it carries the cultural spirit of its people and has been passed down orally through generations. The advent of modern technology offers convenient tools for Han Opera's dissemination, yet it raises questions about maintaining the true spirit and authenticity of this traditional art. Art has lost the principle of reality between truth and representation, and has formed a 'conspiracy' with contemporary marketing mechanisms, profiting in a rootless state.[12]Finding a balance between digital technology and traditional culture, preserving the genuineness and living nature of Han Opera, and the principles of reality in representation are ongoing topics for deep reflection.

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