

Using digital technology to protect the traditional cultural heritage of Laosicheng Village

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Abstract

In today's increasingly modernized and globalized world, people are paying more attention to and cherishing cultural heritage. With the innovation and development of technology, modern digital technology begins to provide new ways of information collection, preservation, transformation and dissemination for cultural heritage. Laosicheng is the largest Tusi cultural relic in Southwest China and one of the world cultural heritages of China. However, with the passage of time, Laosicheng is facing the danger of disappearing. The goal of this study is to use digital technology to protect and disseminate the cultural heritage of Laosicheng in China. The research discussed the value of the cultural heritage of Laosicheng, the main problems currently faced, and what new and effective digital technologies can be used to protect and disseminate the cultural heritage of Laosicheng. In an actual case, this study uses digital technology to vividly and intuitively display the cultural heritage of Laosicheng to the whole country and even the world, reinterpret and interpret the cultural heritage, and endow it with new cultural and era connotation. It is hoped that this study will inspire people, especially the new generation, to learn to adopt new technologies to promote the excellent cultural heritage, and eventually realize the comprehensive utilization and sustainable development of cultural heritage.

Keywords:Cultural heritage; Digital technology; Preserve and Disseminate; Cultural and Creative Products

1. Introduction

1.1 Background of the Study

With the development of technology, "digital survival" has become a trend, and the fire at Notre Dame in Paris on April 15, 2019 has brought us profound thoughts on how to use digital means to protect cultural heritage, which is not only the direction advocated by UNESCO for many years, but also a measure of the adequacy of a country's cultural heritage protection infrastructure and facilities. The use of digital means for cultural heritage conservation is not only a direction advocated by UNESCO for many years, but also a measure of the adequacy of a country's cultural heritage conservation infrastructure and facilities.

Along with the deepening development and application of computer technology, Web2.0 technology and other emerging information technology, digital technology based on virtual reality technology, big data analysis technology and other support gradually from the

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stage of technology integration to the stage of system application, cultural heritage digital conservation is an important application area of this transformation stage. Digital conservation technology has more obvious advantages than traditional conservation theories and methods, such as easy storage, easy management and easy dissemination.

Based on the status and value of Laosicheng as a world cultural heritage, this study investigates the digital conservation technology and dissemination channels of its cultural heritage from the perspective of digital technology, proposes a new way of digital conservation of Laosicheng cultural heritage, and provides new ideas for the conservation and dissemination of Laosicheng cultural heritage.

1.2 Statement of Problem

As an important bearer of the original ecology, original site, original culture and original people, the heritage of Laosicheng in Yongshun, western Hunan Province, with its complete pattern, large scale and rich remains preserved to date, is the most typical ethnic cultural heritage and the rare preserved site of the royal city established by the ruling minority regime. Laosicheng was the political, economic, cultural and military center of the Tujia regime from the fifth year of Shaoxing in the Southern Song Dynasty (1135) to the second year of Yongzheng in the Qing Dynasty (1724), with a history of urban development of more than 600 years. 48th World Cultural Heritage Site in China (as Figure.1). Although the inscription has been successful, the ruins and buildings of Laosicheng are still facing the danger of gradual deterioration of the living environment and even on the verge of disappearance with the passage of time and the advancement of urbanization. How to adapt the protection and dissemination of related tangible and intangible cultural heritage to the development of science and technology, introduce new technical means and enrich the protection methods has become the focus of academic circles.

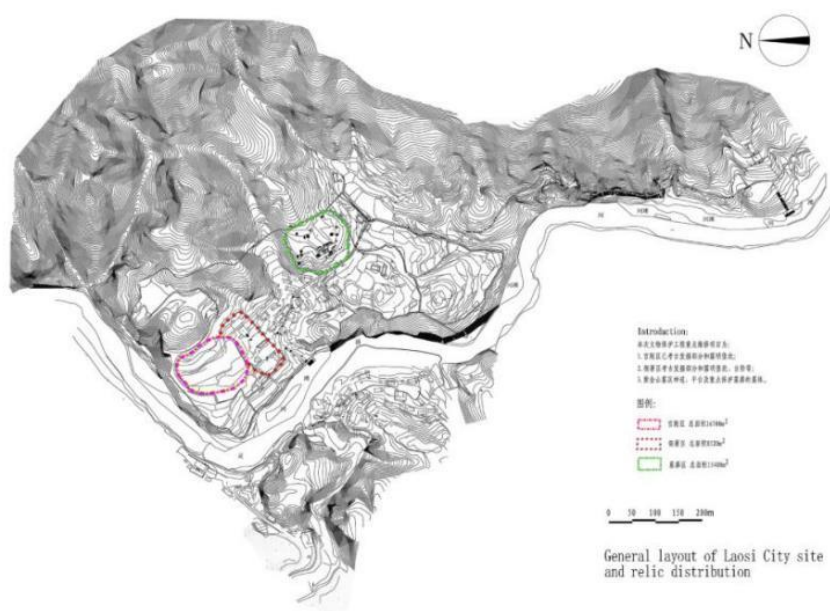


Figure.1 General plan of the distribution of the remains of the Laosicheng site

1.3 Research Questions

- 1) What are the current problems faced by traditional village conservation?
- 2) What are the current means to protect traditional villages?
- 3) How digital technology should play a role in preserving traditional villages?

2. Objectives of the Study

2.1 Technical specifications and standards for digital protection of cultural heritage of Laosicheng

The digital design of cultural heritage in various places currently lacks a scientific and standardized construction system and planning, and each family sweeps the snow in front of its own door, forming a silo of information resources, fragmenting information and not sharing resources. Therefore, the study of digital technology specification and data standard of cultural heritage database is one of the problems to be solved in this study.

2.2 Research on the display and dissemination system of cultural heritage based on new technical means

It is necessary to systematically sort out various digital technologies and extensively explore their applicability, trying to establish its unique digital display and dissemination technology system. In terms of audience experience, cultural heritage protection is easily aesthetically fatigued by audiences through text, picture and video pushing only. Without the participation of multi-dimensional senses such as all-rounded and interactive sight, sound, touch and smell, the characteristics and charms of cultural heritage are difficult to realize an immersive and deep experience. How to integrate the virtual environment construction technology based on virtual reality (VR) and augmented reality (AR); human-computer interaction technology based on perceptual devices and tracking devices and the integration of reality and reality is also a problem to be solved in this study.

2.3 Constructing the design case of digital protection of Laosicheng

This paper is based on digital conservation theory and sustainable development theory, and tries to conduct research through practice and empirical evidence on the basis of theory in order to make a breakthrough.

3. Conceptual Framework

The main research framework of this study is the theory and method of effective protection of cultural heritage of Yongshun Laosicheng and its display and dissemination for digital technology, and to promote the digitalization, informationization and intelligent protection and management of cultural heritage of Laosicheng on the basis of exploring the method and mechanism of digital protection of cultural heritage. The research framework of this paper is as follows:

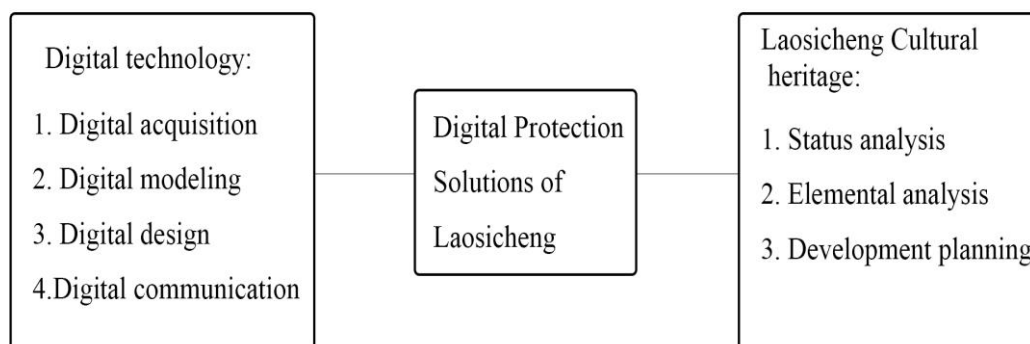


Figure.2 *Conceptual Framework*

4. Research Methodology and Experiments

This chapter examines how digital technology intervenes in the protection and dissemination of cultural heritage, and explores the connotation and formation path of cultural heritage digitization, taking the development and promotion of digital cultural creation products in Laosicheng as an example.

4.1 Value of Cultural Heritage Cultural and Creative Products of Laosicheng

The cultural and creative products of Laosicheng should make secondary creative development of the cultural heritage of Laosicheng, so that the culture of Laosicheng does not only exist in Laosicheng, but goes to the whole world. On the other hand, the development of cultural and creative products is conducive to promoting supply-side structural reform, cultivating new economic growth points in Laosicheng, promoting local economic development and improving people's living standards.

4.2 Types of cultural and creative products of Laosicheng

The information carried in cultural heritage can then be obtained through research. The various qualities of cultural heritage include contents related to age, craftsmanship, shape, ornamentation, and context, which can be digitally collected from artifacts and reproduced on other carriers. Cultural heritage information is stable and reproducible, and the recorded information does not change easily. Based on this historical and cultural information, it can be transformed into various cultural commodities. This digital information and its storage and reproduction technology provide the basis and guarantee for solving the problems of creativity and reproduction of cultural and creative products from the operation level.

4.2.1 Derivative Products

Derivative products are commemorative products derived from resources extracted from cultural heritage, together with creative design, life aesthetics and popular elements. They are usually products that maintain the stylistic qualities of the original objects but are made with different materials and specifications; or, they are products that draw on the expressive characteristics of the original objects and combine them with other functional products to form new cultural and creative products, such as bookmarks, USB flash drives, group fans, cups, stationery, umbrellas, clothing, etc.

Usually, cultural relics and artworks are very distant to the public, the former because of ownership restrictions and the latter because of high prices, so the public can only stay at an appreciative distance. Derivative products allow cultural relics and artworks to enter the daily life of the public, and also in the process of achieving creative design transformation and sales, the potential value of cultural relics and artworks is explored, and the educational function of cultural heritage is widely promoted.

4.2.2 Published products

Publications are publications that showcase cultural heritage propaganda and research results, including various types of books, printed materials, CDs, audio-visual multimedia, etc. These products have obvious and positive educational purposes.

4.2.3 Digital application products

Digital application products are products based on mobile terminals and Internet platforms, such as: digital collections, apps, etc. The Metropolitan Museum of Art in New York, the American Museum of Natural History, the Louvre in France, the British Museum in the UK, the Museum of Modern Art in New York, the Prado Museum in Spain, the

Guggenheim Museum in the Netherlands and other world-famous museums have launched practical apps one after another after entering the Internet era, which can make detailed navigation for visitors on the one hand, and expand their own brand value with the communication influence of the Internet on the other. brand value. Such apps can have a complete list of exhibitions, events and itineraries, as well as a members' area for announcing events and special offers. It can also be an electronic encyclopedia with pictures of the collection, background information and a map of its distribution for easy navigation.

4.3 The combination of Laosicheng's cultural creation and Internet+ "New Value Network"

Now, Internet+ has become a new direction for all industries to fit in. Internet+ is also a new development trend for cultural and creative industries in Laosicheng. The traditional value chain of cultural creation can no longer meet the public demand for cultural creation products, so it is necessary to seize the opportunity brought by the progress of Internet figinformation technology and the new technological revolution to bring the Internet into Laosicheng's cultural creation and apply it to the development of Laosicheng's cultural creation products, so as to develop a new value network for cultural heritage.

The "new value network" is to break the traditional chain of thinking with the powerful ability of Internet and new media, open source the development of cultural creation in Laosicheng, and thus mobilize more resources to enter, so that the single chain of cultural creation development can be adapted into a network.

The new value network includes four major segments: cultural excavation, creative design, product production, and product sales. These four segments are like skyscrapers towering on the big platform of Laosicheng. The four "skyscrapers" are independent of each other, but are tightly connected by culture and creativity. The powerful Internet, VR technology and the communication function of self-media bring consumers into the "building" of cultural excavation, while culture and creativity slowly lead consumers into the "building" of creative design, making the product production "building". The creative products produced by the "building" become more exquisite artworks, and the styles and types of creative products become numerous, while consumers enter the "building" of product sales. In this new value network, consumers are transformed into creators and gather around Laosicheng culture in a cluster, which not only brings different innovation to Laosicheng, but also promotes Laosicheng culture out.

The new value network formed by these two main lines and the four "high buildings" directly makes Laosicheng culture and creativity diversified, and all the subjects involved in the development of culture and creativity have changed. The creators, producers and sellers have all changed.

4.4 Internet+ marketing strategy:Independent APP and carry the promotion strategy of new media

4.4.1 Independent product development APP

For the unique customization nature of Laosicheng cultural and creative products, we can make the required cultural and creative products according to the photos and pictures of cultural elements. We aim to develop an APP that allows customers to learn about Laosicheng culture, exchange Laosicheng creative ideas and purchase their favorite cultural and creative products on the APP. APP Introduction: The team has developed its own APP through independent research and development, including a digital museum, social media, a design platform for public innovation awareness and a sales platform for cultural and creative products. This app aims to create a new a communication platform between cultural and

creative producers and consumers in Laosicheng, taking the needs of consumers as the entry point and focusing more on the quality services that consumers perceive together(as Figure.3).

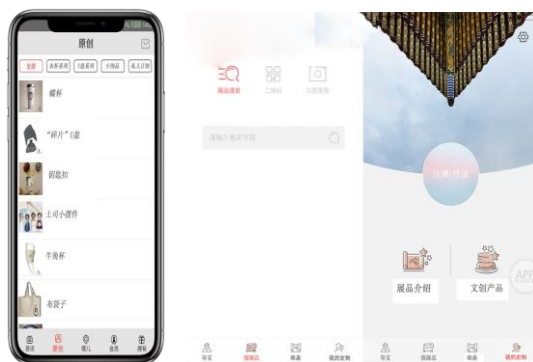


Figure.3 Laosicheng Cultural and Creative Industries APP

Digital Museum: a new type of museum realized based on the Internet. This feature allows the Laosicheng Museum, which is originally in the real world, to be brought into the virtual world of the Internet. When you are at home, you can use this function to understand the structure and scenes of the museum and increase your knowledge of the museum. The museum is recreated in panoramic mode in all directions(as Figure.4).

Social media: This function provides an effective communication channel between consumers and producers. So that producers can better understand the psychology of consumers and produce cultural and creative products that are more in line with their consumption concepts. At the same time, it also allows consumers and consumers to communicate with each other. They can send some small videos of their own creations, so that their thoughts can collide with each other and thus get some novel design ideas to improve the company's creative design system. At the same time, consumers who have their favorite design ideas on social media can communicate with designers through the app's popular creative design platform. This not only makes it possible for consumers to get the products they desire, but also raises their awareness and enthusiasm for innovation and promotes the development of mass creativity.

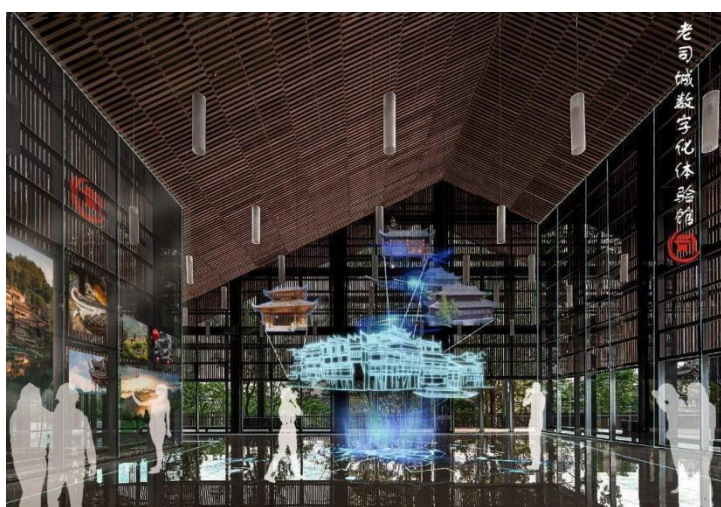


Figure.4 Laosicheng Digital Museum

Mass Creative Design Platform: This is a kind of platform created for consumers and small creative teams. This belongs to an important component of the new value network. With this platform as the lead, the public is added to the development of Laosicheng culture and

innovation. In this way, taking Laosicheng culture as the starting point, creators and producers can be included in the development of culture and creativity through this innovative platform, and at the same time, through the public's participation, the development of Laosicheng culture and creativity can create greater value - cultural value and economic value - in the value chain at the beginning. In this way, the public's own value can also be realized in the cultural and creative development. It not only brings new ideas for the development of Laosicheng culture and creativity, but also taps a large number of cultural and creative talents to join the large team of Laosicheng culture and creativity industry.

Cultural and creative products sales platform: This function is for consumers to choose their preferred cultural and creative products more quickly and quickly. When you select the cultural and creative products, the virtual assistant Xiaohu can provide you with comprehensive cultural and creative introduction and information about the corresponding cultural relics.

4.4.2 WeChat Marketing Strategy

As a contemporary Internet information technology, WeChat is the most widely used in the present day. We spread the unique cultural and creative products of Laosicheng through this platform of WeChat, which makes people's cultural needs better satisfied and makes the development of cultural and creative products in line with the trend of social informatization.

With the full application of WeChat's peer-to-peer push function, people who pay attention to the official WeChat will be able to get the marketing dynamics of cultural and creative products at the first time, and if they want to get their favorite cultural and creative products, they can also use WeChat to pay directly to complete the transaction. At the same time, the establishment of an official WeChat microstore to showcase the physical museum on the Internet not only increases the ease of access to information, but also reduces certain expenses for the operation of our physical store.

WeChat communication type is similar to its microblogging, but organized by two groups, both to strengthen the competition, but also to increase the forward momentum.

4.4.3 "SoLoMo" and "O2O" marketing

"SoLoMo" was first proposed by John Doerr in February 2011, and its main direction is the major trend of the future development of the Internet industry. "SoLoMo" integrates the three key elements of Social, Local and Mobile. Simply put, "SoLoMo" is the combination of social media, local search and mobile search in the online world, and provides the ultimate user experience. O2O" (Online to Offline) is applied to the field of cultural products, which means to bring the online public to the offline physical experience hall. From the perspective of Laosicheng's cultural heritage, it provides an innovative way to market cultural products, i.e., the public can freely choose products through mobile terminals, pay for them, and then directly pick them up from the store in the field. The public can choose to pick up their own products, wait for delivery, and touch the products offline to decide whether they want to make the final transaction; this approach not only makes the physical storefront no longer limited, but also stimulates the public's desire to spend extra money when they come to the physical store to pick up the products. The biggest advantage of the "SoLoMo" and "O2O" model is that it allows for socialization of operations, a more effective feedback mechanism, a more accurate understanding of people's buying psychology and preferences, and a shift in localization. ensures that the company can have a more accurate grasp of its own characteristics as well as advantages. Therefore, in addition to the development and design of creative products using

the Internet, the company can also use the precise positioning of creative products to develop differential cultural services, so that the company has more ways to obtain economic benefits(as Figure.5).



Figure.5 Laosicheng offline handicraft experience hall

5. Research conclusion

As an important part of Chinese culture, the cultural heritage of Laosicheng is facing the situation of imminent extinction, and there is an urgent need for its rescue collection and protection. Based on the review of domestic and foreign cultural heritage protection research, the article takes "cultural heritage of Laosicheng" as the object and studies it based on digital protection mode. It analyzes its characteristics and problems, proposes feasible solutions, and proposes digital conservation methods by combining digital applications, digital museums, and Internet+ technologies, etc. The main conclusions are:

5.1 Cultural heritage protection needs technological innovation

With the innovation of technology and the progress of society, the protection of cultural heritage has been elevated to a national strategy. However, in the new era, cultural heritage conservation is facing various complex situations such as changing needs, shortage of funds, and spatial conflicts. In addition to theoretical and institutional research and solutions for cultural heritage conservation, a new conservation model needs to be explored from the perspective of technological innovation. Fortunately, with the rise of computer technology and the update of network technology since the 21st century, there is a new technological breakthrough point for cultural heritage conservation, namely, high-precision digital conservation technology. Digital technology is essentially a symbolic formal logic reasoning, and with the innovation of computer and network technology, digital technology began to penetrate into all fields of human production and life. Digital technology is not only a technical change, but also a renewal of the way of thinking and living. For example, the combination of digital technology and cultural industry has formed a dynamic digital museum, which has overturned the traditional cultural industry's view of time and space, changed the form and structure of traditional cultural preservation and display, and given rise to new, automated and personalized products and services. Digital technology has become an important symbol of modern society as it meets the need for improved management efficiency, the desire for personalized consumption, and the need for diverse displays. In recent years, digital technology has been applied in an increasingly wide range of fields, especially in the field of cultural heritage conservation in China, which is gradually being

emphasized and promoted. On the one hand, the existing technical means of cultural heritage conservation in China are backward and cannot meet the real needs of society and residents; on the other hand, in order to enhance China's cultural soft power, it is necessary to spread the essence of Chinese traditional culture intuitively and quickly to the world with the help of digital technology and network technology. In short, technological innovation in conservation is not only a need for the protection of our cultural heritage itself, but also an important means for the country to demonstrate its cultural self-confidence, and a trend for human beings to record civilization and spread positive energy.

5.2 Digital protection of cultural heritage must be combined with industrial development

As an important part of the national cultural revitalization strategy, cultural heritage needs certain industrial support. The natural and cultural resources in cultural heritage can be explored in depth, digital presentation and dissemination technology can be used to develop cultural creative industries, promote the deep integration of cultural creative industries with traditional industries, promote the transformation and upgrading of cultural heritage industries, and realize the beautiful needs of rich life and ecological livability of cultural heritage sites.

6. Research shortage and outlook

Due to the limited level and ability, it is found in the study that there are still some conceptual misunderstandings in the digital protection of cultural heritage, and the digital technology is also faced with imperfect technical system, non-uniform technical standards and non-standardized operation procedures. In this context, we need to clarify the basic concept of cultural heritage digital conservation from the perspective of departmental cooperation and disciplinary integration, realize the cognitive transformation, and focus on the two core issues of digital preservation technology system and technical standard development.

Digital preservation of cultural heritage is a lasting and perpetual undertaking, and new media and new platforms are constantly changing and continuously injecting vitality into digital preservation. Therefore, the article is only a stage study based on the current situation, and it is necessary to keep abreast of the times and introduce new media, new technologies and new platforms to promote the sustainable development of digital preservation of Laosicheng.

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