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RESEARCH ON THE APPLICATION DESIGN OF NEW MEDIA IN MODERN MUSEUM INTERIOR DISPLAY

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Abstract. *This paper introduces the research results of new media application design in modern museum interior display. The purpose is to explore a feasible use of new media technology to better promote the exchange and mutual learning of human civilization museum interior display design scheme or design concept. In the study of the development history of museum display design and the realization trend of cultural value, it is determined that using new media to design narrative virtual tour can attract people who hate passive indoctrination to explore actively. In the study of museum participation in culture and modern social culture, the construction of social museum is determined. The necessity, feasibility and realization of cross-regional resource co-construction and sharing are determined in the study of the current situation of museum community interconnection.*

Key words: *interaction, socializing, cultural exchange, individual contribution, connectivity, co-construction and sharing*

Introduction

With the continuous development of society and the rapid progress of science and technology, people's spiritual and cultural needs are becoming more and more rich, and the cultural exchanges in the world are becoming more and more close. As an important carrier of human civilization, museums shoulder the important mission of scientific communication and cultural inheritance. In the Report on the Work of the Chinese Government [9], it is clearly proposed to "strengthen the construction of new infrastructure and develop the new-generation information network". The construction and development of new infrastructure, 5G network, cloud computing and other facilities and technologies will certainly promote the innovation and development of all industries in an all-round way. In the Guidance on Promoting the Reform and Development of Museums issued by the State Administration of Cultural Heritage of China [10], it is pointed out that communication services should be optimized, cloud display and cloud education of museums should be vigorously developed, and a museum communication system integrating online and offline should be built. At the same time, it is also suggested to adhere to the principle of openness and sharing, create an open and inclusive development environment, promote the orderly flow of museum resource elements, optimize the allocation of resources, and revitalize museum collection resources through collaborative innovation, social participation, cross-border cooperation, cross-regional Internet communication and other means.

Throughout the development of museum display design, from the 14th to the 16th centuries AD, cultural treasures were only for collection and study, and were not open

to the public. In the 18th and 19th centuries, taxonomic display and restoration display were born. After the end of the 20th century, the progress of science and technology has changed the concept of exhibition from isolation and stillness to relevance and dynamics. Exhibition design no longer focuses on the spread of exhibits and knowledge, but also provides a space for the audience to participate and stimulate their spontaneous thinking [6]. In addition, in today's highly developed information technology, people's demand for information is no longer limited to passive indoctrination. Instead, they hope to realize input and output through active exploration and expression of personal thoughts, participate in cultural transmission and inheritance, and complete personal value contribution. Nowadays, new media technology develops rapidly and is widely used in the field of cultural communication because of its flexible, open, sharing, convenient and real-time characteristics. Therefore, the trend of realizing the value of museums begins to shift from one-way communication to interactive experience by using new media such as light and shadow, audio and network in exhibition design, the form of display shifts from static to dynamic, the display content also shifts from real objects to virtual, and people turn from visiting to participating in museums.

However, when more and more new media technologies are applied to interactive, immersive, participatory and narrative design in museum exhibition design, the new media technology itself seems to be more eye-catching than people's cultural participation, and dominate. Henry Jenkins of the Massachusetts Institute of Technology makes it clear that attention should be paid to the growing culture of participation, rather than solely to the interactive technologies that support it. There are many people who like to engage in social and creative entertainment through social media, but do not go to museums because they see museums as non-social, non-dynamic and non-participatory places, so for museum audiences, creative activities and social connections are a prerequisite for cultural engagement. Jenkins defines this culture of participation as: relatively low barriers to artistic expression and civic engagement; Strong support for creating and sharing your creations with others; There is some kind of informal guidance that passes on to the novice what the most experienced know; Members believe their contributions are important; Members feel some level of social connection with each other (at least they care what others think of what they create) [5]. Therefore, the next generation of museum display design should be, as Christopoulos et al. believe, "an information seeking space; A social gathering space and a new artifact; Can embody social processes and projects" [2].

After the concept of social currency came into being, Wharton marketing professor Jonah Berger said in his book Contaious, "Just as people use money to buy goods or services, Use Social Currency to get more positive reviews and impressions from family, friends and colleagues." [1] As we all know, cultural and cultural venues are cultural and educational institutions that store cultural and natural heritage. Audience participation in all actions of the cultural and cultural industry (consumption, discussion, even showing off, etc.) is a new social currency (www.ifeng.com [3]). It is the gold currency of the social market, not only consumable, but also stored and appreciated. Therefore, the exhibition and dissemination of cultural information by museums combined with social media and the establishment of close cultural ties

between people will meet people's higher demand for spiritual culture at the present stage and make the social and cultural value of museums truly realized.

In addition, most museums belong to specialized museums and comprehensive museums. Under the premise of such classification, they are affected by the region and cannot integrate contemporary cultural information. According to the State Administration of Cultural Heritage of China, as of 2022, there are now 6,183 museums on record in China, 91% of which are open for free [12]. However, museum resources are relatively dispersed, and the quantity distribution is unbalanced, and the development level of museums in different regions varies greatly. In fact, when people enter a museum or online virtual museum, they also want to see information about all other museums. That is to say, the information they need is richer and more comprehensive, like a spider's web in all directions. The branch system in resource sharing formed by the development of one-to-one vertical system communication and cooperation mode; With provincial museums as the core and museums at the city and county level as the members, the alliance system of resource sharing has developed into a platform system of communication and cooperation. These two kinds of offline physical exhibition resource sharing are still greatly limited in terms of scale, convenience and cultural relic protection. In the context of Internet economy, museums can coordinate and contact various participants in the process of resource integration, organize and utilize multilateral resources, and build a value ecosystem with museums as the core, multilateral participants participating and external environment interacting. This process stimulates innovation and improves the utilization efficiency of various resources, which helps museums give full play to various functions and create social, cultural and economic benefits [4]. Therefore, using new media to cross regional restrictions, rationally allocate museum resources, realize interconnection, joint construction and sharing is more conducive to maximizing the value of museums and promoting exchanges and mutual learning among human civilizations.

Through the analysis, it can be determined that it is very necessary to explore a feasible interior display design scheme or design concept that can increase the attraction of museum participation by using new media technology, strengthen the cultural social function, and realize the joint construction and sharing of museum cultural information and the interconnection of regional resources.

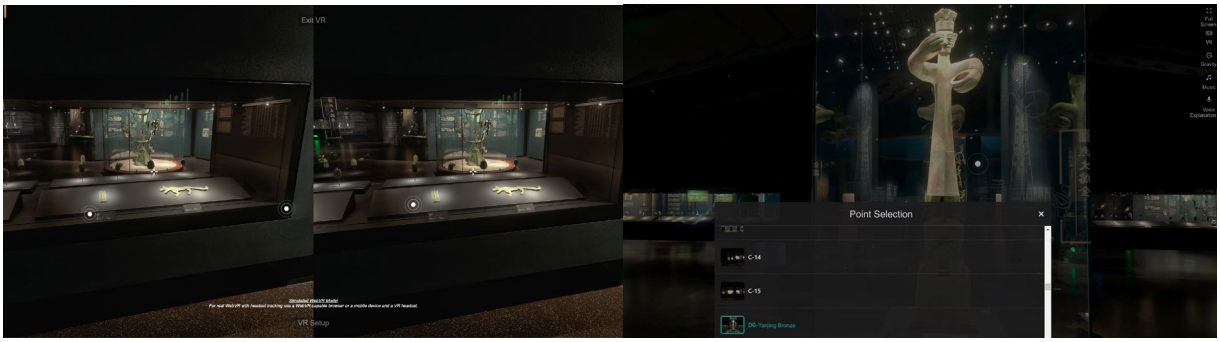
Results of the research

I. Application design of virtual tour system

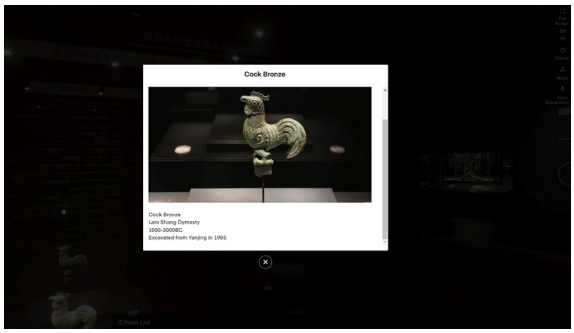
If the offline application of new media improves the on-site experience of visitors, then the online application of new media broadens the exhibition content and cultural correlation as well as the geographical scope of the audience. Through the narrative virtual roaming system, visitors can realize a remote online panoramic tour of the museum without leaving home, and even study the details of the exhibits online and understand the culture behind them. All the images in the application design of the system are based on the real existence of the museum, and the design of the roaming path is a story narration based on the historical development context. Through on-site data collection, processing and video link in the exhibition hall, and then interface design and operating system design in data processing, a complete set of virtual tour system can be formed.

As for the use of the system, open the system and you can see an intuitive and simplified operating interface that fully considers the operator's feelings. Since it is a 360-degree panoramic view, you can click and drag the mouse to browse the buildings and exhibitions from all angles (Figure 1a). The basic functions include the guide map, screen zooming, forward and backward, background music, guide explanation, operation help and so on. You can also select the site you want to visit by "selecting points" (Figure 1b), and click directly to enter different scenes to meet the key browsing. For key exhibits in the exhibition, you can enter the secondary link to view enlarged pictures and three-dimensional cultural relics display (Figure 1c), and for videos in the multimedia screen, you can directly watch in the original location. At the same time, the content that cannot be shown and explained in detail in the real exhibition can be extended through the secondary link, which is not limited by space and can be modified according to the situation. Therefore, the virtual tour system originates from the actual demand but is higher than the actual demand.

The design and application of online museum narrative virtual tour system, on the one hand, through the online initiative to deliver services, on the other hand, to attract visitors to the museum offline field visit, promoting the museum and visitors two-way travel.



a) b)



c)

Figure 1. Design of the website of Sanxingdui Museum

Source: Official website of Sanxingdui Museum [7]

2. Social media -- Museum application design of Wechat

In addition to using web pages for cultural communication assistance, museums can also open Wechat public account, a new media social platform account, to achieve extensive interaction with users. Therefore, the digital media ecosystem can be used to construct, design and create a "social entity", so as to find the right way to open a social museum. In the context of social media, museums should fully respect the subjectivity

of the communication objects, regard the communication objects as equal communication subjects with themselves, and build cultural communication communities. For museums, as independent audiences, in the process of accepting cultural communication, they will inevitably accept it selectively and even put forward opinions and suggestions on the content of communication. Therefore, in the process of cultural communication, museums should make full use of social media platforms to comprehensively collect information about the needs, expectations and preferences of audience groups, and then adjust the methods, contents and concepts of cultural communication of museums.

Through the existing Wechat public account, a new media social platform, the museum's cultural communication community is constructed, and scholars, historians and social figures are invited to jointly form the SCV (sharing, communication and voluntary service) community (Figure 2), and the interaction is carried out through discussion, forwarding and comments. At the same time, we actively organize offline cultural communication and publicity activities, realize the combination of virtual and real communities, and trigger the collision of thinking between cultural and museum lovers.

Douyin, another popular social media, makes algorithm recommendations based on users' interest orientation and geographical location, and its short video transmission can more accurately sense the target users. In addition, when experts or folk scholars open topics as anchors on Douyin live broadcast, tens or even hundreds of thousands of people in the live broadcast room form a huge temporary community. Real-time questions and answers and interactive discussions will generate more sparks of thought.

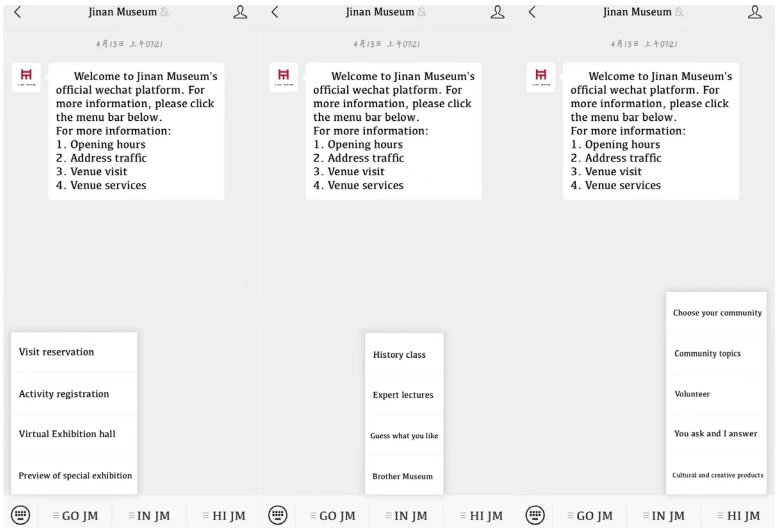


Figure 2. Designing the museum cultural communication community through Wechat public account

Source: Shanghai Museum's Wechat public account [8]

3. Design of data sharing application for museum community interconnection

With the evolution of information construction and the passage of time, museums have accumulated massive data resources, but most of them are still in the extensive management stage, which is not conducive to the effective management, long-term preservation, retrieval and utilization, interconnection, joint construction and sharing

of data resources. In addition, for a long time, the thought and behavior of decentralized application construction in the industry objectively caused the information island and data imcommunication between pieces. Proper application design of blockchain can solve part of the problem.

Specifically, in the museum data sharing environment, no matter the data sharing between museums or different departments within museums, the data sharing mode and system can be built based on alliance blockchain, so as to break the disadvantages and risks of the development of the traditional data center-based data sharing mode. Taking inter-museum data sharing as an example, different museums can be divided into national first-level, second-level and third-level museums according to their levels and volumes. Museums of the same category can be listed in the same alliance blockchain, such as the National first-class Museum Alliance blockchain. Alliance blockchains built by museums of different categories can be linked together through cross-chain technology to form the alliance blockchain system of the whole museum institution (domestic), as shown in Figure 3 [11].

To build the blockchain of the national first-class museum Alliance, one institution should first take the lead in creating it, and then invite other first-class museums to add to the alliance chain. Each first-level museum controls one authorized node, and each authorized node can realize point-to-point information interaction, and jointly maintain the operation of the alliance blockchain through consensus mechanism and intelligent contract mechanism. Meanwhile, the system provides API interfaces to facilitate future node expansion access and application for external user data utilization, further strengthening the sharing and interworking degree of node and system data. The blockchain structure of the National first-class Museum Alliance is shown in Figure 4 [11].

In the long run, blockchain-based data sharing mode will inevitably flourish in museums and other fields. Of course, the degree of information openness and the sense of information acquisition experience of visitors will also be the research focus of information sharing design of museums in the future.

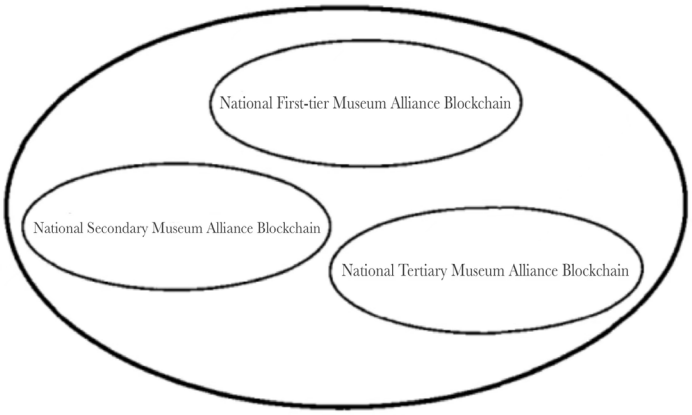


Figure 3. Alliance blockchain system of the whole museum institution
Source: [11]

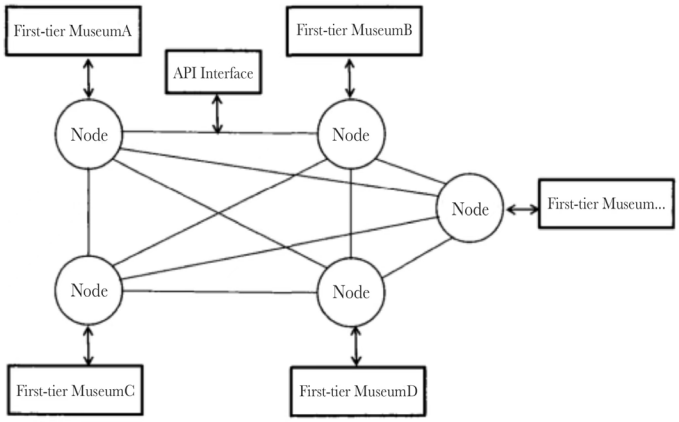


Figure 4. The blockchain structure of the National First-Class Museum Alliance
Source: [11]

Summary and conclusions

Through the analysis of the development trend of indoor exhibition of museum cultural communication at home and abroad, combined with the deeper cultural needs of today's audience, this paper explores the problem analysis and solution of realizing the value of museum cultural communication. People hope that the exhibition design of the museum can avoid one-way transmission and have the attraction of guiding the audience to explore actively, prompting the audience to form their own thinking. Perhaps the embedding of historical characters and the development of gamified narrative virtual tour system will greatly improve this situation. Building a social museum requires comprehensive consideration in activities, emotions, thinking, decision-making and even content, so as to enable users to participate in the community by using their own social currency on the museum's connected and shared platform, from active communication and contribution to spontaneous creation. In addition to the wechat official account, the museum's Douyin platform design application will also be a trend. As for the problem of expanding communication and mutual learning among museums that cannot establish resource connection for resource sharing due to geographical or institutional reasons, blockchain technology, as a distributed database, provides a new solution for the sharing of cultural relics digital resources among museums with its characteristics of decentralization, immutable and traceable. In addition to theoretical research more important is the real practical application.

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