

Exploration of Sustainable Development Pathways for Cultural Tourism under the Perspective of the “Priority of Historical Landscape Value” Theory in Ancient Architecture: A Case Study of the Mogao Grottoes in Dunhuang

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Abstract: Ancient Silk Road heritage sites carry profound national cultural history, and their protection and development are crucial for cultural inheritance and the sustainable development of the local economy and society. This paper takes the Mogao Grottoes in Dunhuang as a case study to explore, in depth, the realistic characteristics and sustainable development paths between heritage protection and the high-quality integration of cultural tourism development under the guidance of the “Priority of Aesthetic Value” theory in the context of the digital economy.

Keywords: Mogao Grottoes; Digital empowerment; Cultural tourism integration; Priority of aesthetic value

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1. Introduction

The report of the 20th CPC National Congress pointed out that people should adhere to the principle of shaping tourism with culture and promoting culture with tourism, and promote the in-depth integration and development of culture and tourism^[1]. The Third Plenary Session of the 20th CPC Central Committee proposed that the tourism industry will promote the all-round development of people and the common prosperity of the spiritual level as the development goal of the new era. It should not only emphasize the economic attributes of tourism, but also emphasize the cultural connotation, improve the system and mechanism of the in-depth integration and development of culture and tourism, and empower tourism^[2]. In the digital economic environment, the integration of culture, tourism, and science and technology is an important support for cultural confidence and scientific and technological self-reliance, and has become an important engine for improving the efficiency of my country's

economic development under the background of “dual circulation.” Wang Xin believes that cultural relics and historical sites are important carriers of historical culture. In the current period of rapid economic development, how to balance the relationship between the two has become the most important research topic at this stage ^[3]. Gong Xin explored the contradiction between tourism development and cultural relics protection and proposed a sustainable development strategy ^[4]. Liu Yanlin analyzed the relationship between cultural relics protection and tourism development, and proposed an effective strategy for the coordinated and steady advancement of cultural relics protection and tourism development ^[5]. He Yixiong, Hao Lisha, and Li Rui proposed that the three-dimensional integration of tourism landscapes can be promoted by improving the quality of tangible landscapes, digging deep into and highlighting the cultural connotations of landscapes, and organizing in-depth experience activities, thereby achieving high-quality development of cultural heritage tourism ^[6]. In summary, with the vigorous rise of my country’s tourism industry, cultural tourism has become a popular choice for public travel. It not only enriches people’s spiritual life, but also greatly promotes the prosperity of the local economy. However, this trend has also brought unprecedented challenges to the protection of cultural relics and historical sites. How to effectively protect and inherit these precious cultural heritages while promoting the development of tourism has become an important issue that needs to be solved urgently.

From September 10 to 13, 2024, the General Secretary of the CCP pointed out during his inspection in Gansu that Gansu has a profound historical and cultural heritage and rich red cultural resources. People must inherit the red gene, strengthen the protection of cultural heritage, and support the Dunhuang Academy in building a model for the protection of world cultural heritage and a highland for Dunhuang studies. He also stressed the need to strengthen the protection of cultural heritage and enhance national pride and self-confidence ^[7]. Since ancient times, the Silk Road has had far-reaching and significant significance in the country’s history and culture. The route not only promoted exchanges and interactions between diverse cultures but also crossed the vast territory of the Eurasian continent, closely connecting diverse cultures and countries. The Silk Road is undoubtedly an important landmark project that connects different cultures and promotes global prosperity and exchanges. It fully demonstrates the profound heritage of world history and the rich connotation of diverse cultures. As a world cultural heritage and a famous tourist attraction in the Silk Road Economic Belt, Dunhuang Mogao Grottoes has achieved remarkable development in tourism in recent years, attracting a large number of domestic and foreign tourists to visit. As of August 12, 2024, the Mogao Grottoes have received more than 1.77 million tourists, an increase of 15.33% over last year, and the number of tourists received per day has reached the daily limit ^[8]. Under the current cultural relics protection strategy, the number of tourists received by the Mogao Grottoes is far from meeting the continuously growing number of tourists, but too many tourists will cause irreparable damage to the Mogao Grottoes’ cultural relics ^[9]. This article will take Mogao Grottoes as an example to explore how to create a tourism scene based on the value of ancient monuments and style, realize the high-quality integrated development of ancient monument protection and cultural tourism, and explore sustainable development strategies for the future development of cultural relics and historical sites tourism, under the premise of continuous increase in tourists and continuous strengthening of tourism economy.

2. Case study resource ontology analysis

2.1. Geographical location

Mogao Grottoes are located in northwest China, with geographical coordinates of 94° 48’ 34” E, 40° 2’33” N, about 25 kilometers southeast of Dunhuang City, Gansu Province. It is a group of grottoes carved at the foot of the

east side of Mingsha Mountain, extending more than 1,600 meters from north to south. The grottoes are built in layers, with up to five layers. The locations of the caves are staggered and varied in shape, and the overall layout is similar to a honeycomb structure.

2.2. Characteristic value

Mogao Grottoes are not only a treasure of Buddhist art, but also an important physical material for studying the history of ancient Chinese art, religion, and culture, providing rich materials for studying ancient society. The murals and sculptures in Mogao Grottoes show the development of art in different periods, and the structure and statues of the caves themselves also provide precious references for modern architectural art. The well-preserved multilingual documents in the caves not only enrich linguistic research and demonstrate the cultural exchanges along the Silk Road, but also include a large number of documents on farming, transportation, astronomy, medicine, and printing, providing important practical references for modern scientific research.

2.3. Development context of cultural and tourism integration

The development of Mogao Grottoes cultural tourism has gone through multiple stages, showing its trajectory of continuous innovation and improvement.

2.3.1. Initial stage

When the Mogao Grottoes were first opened to the public, their rich Buddhist culture and unique artistic value attracted many domestic and foreign tourists. However, the tourism facilities and services at that time were still weak, and the number of tourists was relatively limited.

2.3.2. Rapid development stage

The Dunhuang Mogao Grottoes Scenic Area Management Committee, established in 1992, laid a solid foundation for the integration and development of tourism resources. The infrastructure, such as hotels, catering, and transportation, has been gradually improved, and the quality of tourism services in the Mogao Grottoes has been significantly improved.

2.3.3. New development stage

Entering the 21st century, Mogao Grottoes tourism has opened a new chapter. The government has increased its investment in the cultural protection and tourism development of Mogao Grottoes, and the tourism environment has been further optimized. The concept of “Digital Dunhuang” was realized in 2016.

2.3.4. Innovation and improvement stage

In recent years, Mogao Grottoes has continued to innovate in tourism development, launching new tourism methods such as digital displays and online mini-programs. In 2024, Tencent launched the “Dunhuang” VR digital immersion exhibition, which perfectly combines digitalization and game engines with the cultural tourism industry. The exhibition not only uses 3D scanning and modeling technology to restore the 1:1 stereoscopic image of Cave 285 in Dunhuang to tourists, but also uses animation technology and visual effects in game design to dynamically process the mural stories, making the characters and scenes in the murals vivid, as if traveling through time and space to tell tourists a thousand-year story.

3. The connotation of cultural and tourism integration development under the theory of “style value priority” of ancient buildings

3.1. The connotation of the theory of “style value priority” of ancient buildings

The style value priority theory of ancient buildings is a protection concept that emphasizes the historical style, cultural value, and social significance of ancient buildings, and advocates that the appearance, structure, and characteristics of the historical period represented by these buildings should be given priority in the protection process. This concept is reflected in the following aspects in actual operation.

3.1.1. Protecting the historical style of ancient buildings

Mogao Grottoes carry profound cultural connotations. It is not only the crystallization of ancient Chinese architectural technology and art, but also the large number of ancient documents unearthed from it are important academic materials for studying ancient Chinese history, culture, religion, and other aspects. The rich cultural information contained in Mogao Grottoes is of irreplaceable importance for an in-depth understanding of ancient Chinese history, art, religion, and social life.

3.1.2. Guaranteeing cultural inheritance

Ancient buildings are both a manifestation of culture and a witness to history. As a physical witness to history, they record the history of trade, cultural exchanges, and multi-ethnic integration along the ancient Silk Road. By protecting ancient buildings, these precious historical memories can be preserved, so that future generations can intuitively understand the lifestyles and ideas of their predecessors.

3.1.3. Demonstrate social value

Ancient buildings are often closely related to the lives of local residents. Their existence helps to enhance the sense of community identity and promote the protection of cultural diversity. Mogao Grottoes stand here, witnessing hundreds of years of historical changes and becoming a link between the past and the present. In the process of protection, not only should the building itself be considered, but also its surrounding environment and social functions.

3.2. Characteristics of the integrated development of culture and tourism under the theory of “style value priority” of ancient buildings

Under the guidance of the concept of “style value priority”, the integrated development of culture and tourism not only focuses on the protection of the ancient buildings themselves, but also emphasizes their repositioning and functional expansion in contemporary society, and strives to maximize the social value of cultural heritage while maintaining the historical style.

3.2.1. Priority consideration of historical and cultural value

In the process of promoting the integration of cultural tourism, the historical and cultural significance of ancient buildings should be paid attention to first. In any tourism development activities, it is necessary to first ensure that the historical style and cultural characteristics of ancient buildings are not destroyed.

3.2.2. Combining protection and utilization

On the basis of protecting the original style, combined with the lifestyle of modern people, ancient buildings

are integrated into the process of urban development to give them a new lease of life. This concept of “bringing cultural relics to life” advocates making ancient buildings a part of modern society through reasonable protection and innovative utilization

3.2.3. Sustainable development model

In the protection and utilization of ancient buildings, sustainability is emphasized, and scientific planning and management are used to prevent the adverse effects of excessive commercialization, ensure the long-term healthy and stable development of ancient buildings and their surrounding environment, and pave the way for the utilization and inheritance of future generations.

3.2.4. Technological innovation and application

Combined with modern scientific and technological means, such as digital display, virtual reality (VR), and other new technologies, tourists are provided with an immersive cultural experience to increase the attractiveness and interactivity of ancient buildings. “Black Myth: Wukong”, a game based on “Journey to the West”, one of the four great masterpieces of China, cleverly combines traditional mythological elements with modern game design, opening up a new way to inherit culture. The game selected 36 scenic spots across the country as game scenes, 27 of which are representative ancient buildings in Shanxi Province. It uses advanced technologies such as high-quality graphics rendering and dynamic light and shadow effects to provide users with an immersive experience. This approach not only enhances the cultural heritage of the game, but also brings a lot of attention and tourists to the cultural and tourism attractions in reality. At the same time, the game has also made bold innovations and attempts in cultural inheritance, such as adapting some plots of the original “Journey to the West” to make the story more in line with the tastes of modern audiences. It not only respects and protects traditional culture but also actively introduces new elements and concepts, based on classical culture, to keep up with the pace of cultural trends in the current era.

3.2.5. Top-level design and overall planning

In the practice of cultural and tourism integration and development, there is a need for clear strategic planning and top-level design to ensure that various measures can be coordinated and jointly promote the protection and utilization of cultural heritage. Governments, enterprises, and all sectors of society should jointly participate in the protection and utilization of ancient buildings to form a “1+3+N” protection system. Among them, “1” represents cultural and tourism administrative departments at all levels. “3” represents intangible cultural heritage protection associations, intangible cultural heritage protection centers, and intangible cultural heritage museums at all levels, and “N” represents local cultural ecological protection areas, representative protection units, intangible cultural heritage workshops, etc. This collaborative model helps to pool the strengths of all parties and improve the efficiency of cultural heritage protection.

4. Current status and challenges of the integration of cultural tourism in Mogao Grottoes

4.1. Current achievements in tourism development and protection of Dunhuang Mogao Grottoes

Currently, the Dunhuang Mogao Grottoes have achieved remarkable results in tourism development and protection. By strictly following the relevant provisions of the “Operational Guidelines for the Implementation

of the World Heritage Convention” and the “Guidelines for the Protection of Chinese Cultural Relics and Historic Sites”, Mogao Grottoes has explored innovative tourism opening service models, and used scientific and technological means such as digital resources to create an online Mogao Grottoes, alleviating the contradiction between cultural relic protection and tourism opening. At the same time, measures such as zoning rotation and limiting the number of tourists have improved the tourist experience and reduced the pressure on the caves. Mogao Grottoes offers a variety of ticket types and visiting modes to ensure that the diverse needs of tourists are met. In terms of protection, the Dunhuang Research Institute has completed the repair of a large number of caves, established a protection center and a scientific research team, used digital technology to protect murals, and formed a scientific and complete protection system. These efforts have improved the quality and experience of tourists’ travel, while ensuring that the precious value of Mogao Grottoes, a world cultural heritage, can be passed on for a long time.

4.2. The contradiction between the increased attention paid to the protection of the Mogao Grottoes’ cultural heritage and tourism development

With the continuous advancement of cultural heritage research and practice, intangible cultural heritage tourism has also begun to attract the attention of the tourism industry. It is generally believed that intangible cultural heritage has great tourism development value, so the research on the protection and utilization of intangible cultural heritage has been intensified. However, some serious practical problems have arisen immediately, that is, as a sensitive and fragile resource, intangible cultural heritage will have irreversible, serious consequences once it is developed unreasonably. At present, people are in the stage of transformation of high-quality development of the tourism industry. Against the background of global informatization, the Mogao Grottoes have ushered in new development opportunities and faced new contradictions in development practice.

4.2.1. The contradiction between the small cave space, the fragile material of the murals, and the continuous strengthening of tourism opening

Although the Mogao Grottoes are large in scale, most of the caves are small in space. Each cave was a hall for worshipping Buddha and a place for Buddhist believers to worship throughout history. It does not have the conditions and functions for a museum opening. The caves are full of murals and cannot be transformed according to the requirements of museum exhibitions. According to statistics, among the 492 caves with murals and colored sculptures, there are only 18 large caves with an area of more than 100 square meters, 21 caves with an area of 50 to 100 square meters, 41 caves with an area of 25 to 50 square meters, 123 caves with an area of 10 to 25 square meters, and 289 caves with an area of less than 10 square meters. Among them, caves with an area of less than 25 square meters account for more than 83% of the total number of caves, so the caves can only carry a very limited number of tourists. The murals and colored sculptures in the caves are made of local wheat straw, soil, and wood. After more than a thousand years of destruction due to natural and human factors, the murals and colored sculptures have undergone various deterioration, such as alkali damage, peeling, and hollowing, to varying degrees. Excessive open use may pose a threat to the preservation of these cave murals and colored sculptures in small spaces, fragile materials, and many deterioration over years.

4.2.2. Excessive number of tourists causes excessive “fatigue” in the caves

If the number of tourists in each group of Mogao Grottoes is 25 people, and the number of tourists on that day is

2,000, then there are 80 groups of tourists. If the stay time of each group of tourists in a cave is 6 minutes, then the opening time of a cave is 480 minutes a day, which is more than 8 hours, making the open caves in a “fatigue” state for a long time. In the selection of open caves, people must consider the representativeness and appreciation of the cave content, era, and artistic style, as well as the acceptable capacity of the cave and the condition of the mural state. Although there are 492 caves with murals and colored sculptures in Mogao Grottoes, there are only 70 or 80 open caves that meet the above conditions. To protect the murals and avoid excessive use of the caves, people have to adopt the method of “rotating rest” for the open caves, but due to the unique content of some caves, they have never been able to “rest” since they were opened.

4.2.3. The increase in tourists breaks the constant micro-environment of the caves

The cultural heritage of Mogao Grottoes can be preserved thanks to the dry climate in the local area and the lack of major wars and natural disasters in history. Due to the limited number of people entering the caves in history, the caves have maintained a relatively constant micro-environment for a long time, which provides very good conditions for the preservation of murals and colored sculptures. However, excessive visits by tourists have broken the stable climate environment in the caves. Carbon dioxide stays in the caves for a long time, and the increase in air humidity and temperature in the caves will erode the murals and accelerate the development of damage. This will pose a serious potential threat to the preservation of the very fragile murals and colored sculptures in the caves.

4.2.4. The negative effects of the additional tourist facilities on the protection of the murals in the caves

The cave plank roads built in the 1960s have had problems in many places in recent years. The repair work will have a certain impact on the stability of the cliff of the caves. In order to prevent tourists from scratching the murals during the visit, glass screens are installed in the caves open for visits. After years of observation, if this glass screen is used improperly, it may not be conducive to the protection of the murals.

5. The path to achieve the integration of cultural tourism with the priority of the style and value of the Mogao Grottoes under the digital background

At present, relevant experts and scholars at home and abroad pay more attention to its development model in the process of studying and discussing the development of intangible cultural heritage tourism, and therefore put forward different forms of intangible cultural heritage tourism development models, such as festival tourism, theme parks, non-exhibition parks, etc. In terms of the attraction of tourist destinations to tourists, different cultural styles are themselves an important part of off-site tourism. As an important cultural heritage of tourist destinations, it is a symbol of urban culture, a reflection of urban image, a concentration of urban brand, and a heritage of urban context. Extracting the unique historical and cultural resources of tourist destinations, integrating the current status of various industrial development, reshaping the image and brand of tourist cities, and creating a strong tourist style atmosphere in tourist destinations are of great significance and role in the protection of heritage, the inheritance of culture and the high-quality development of tourism. In view of the fragility of the ancient monuments of Mogao Grottoes and the particularity of historical culture, people can take protection as the premise and develop a development model that combines historical culture with style tourism.

5.1. Continuous authentic tourism development

Authentic application means that for all levels of cultural relics and historical blocks, the original appearance and cultural style should be preserved according to their historical, scientific, and artistic values, following the principle of “not changing the original state of cultural relics and the original living conditions of residents”. It is applicable to historical buildings with special protection and key protection levels, and blocks with relatively intact overall historical appearance. Strengthen the protection of the authentic cultural heritage of ancient buildings and ancient blocks in the tourist cities of Mogao Grottoes, and preserve and display the local authentic folk culture. Under the premise of not threatening or damaging their external form, historical buildings can be reinforced and renovated to restore their original functions.

5.2. Strengthen the development of style tourism

For blocks with certain traditional characteristics of Mogao Grottoes, but which have been severely damaged and have no complete appearance, people can combine traditional architectural characteristics, explore the connotation of local traditional culture, find the “historical prototype” of spatial form, repair the damaged street texture, and strengthen the local historical and cultural characteristics. This is the style application. It is applicable to historical buildings with general protection levels and lower protection levels, as well as historical residential areas with relatively large scale and relatively similar macro-overall appearance. This application mode not only properly arranges and repairs the macro-style, but also modernizes the internal functions of the building, such as style hotels and edible museums. This type of historical block, due to its high population density, covers a wide range, which is in sharp contrast to the protection and utilization of the original type. Since the style protection and utilization involves a large scope, the focus of protection and utilization transformation is overall coordination and consistency, not only pursuing integrity in appearance, but also achieving harmony with historical and cultural connotations. Some buildings in the block that are not in harmony with the overall style should be demolished, and some newly built buildings and facilities should be consistent with the overall style of the block. Style blocks are not isolated cultural relics, but active spaces that resonate with the rhythm of modern life, so they have enduring vitality and attraction. In the surrounding environment of Mogao Grottoes, people can find several vivid examples. Dongyi Dunhuang Hotel is one of them. It is located in the center of the Dunhuang Cultural District, with a superior geographical location and convenient transportation. The hotel is designed with ingenuity, drawing on the essence of traditional Northwest dwellings and incorporating Dunhuang’s unique regional customs, creating an accommodation experience for guests that allows them to enjoy modern services while appreciating ancient culture. The lighting ceremony every night leads guests on a journey through time in Dunhuang culture. Similarly, as a characteristic block, the Dunhuang Night Market is full of the charm of Dunhuang culture and has been rated as a national nighttime cultural and tourism consumption hotspot. The buildings in the night market are modeled after the Tang Dynasty style and are embellished with Dunhuang’s unique cultural elements, creating a wonderful feeling for tourists as if they have traveled through time and space back to Dunhuang in the heyday of the Tang Dynasty. The functional divisions within the block are clear, including Shazhou Tower, Famous Food Square, Qinzhou Household Street, Fengqing City, and other characteristic areas, providing tourists with a variety of leisure and shopping options.

5.3. Integrated reproduction tourism development

Some special caves in Mogao Grottoes have been destroyed or cannot be opened to tourists for various reasons.

For this type, they can be replicated on the basis of fully exploring the empowerment of science and technology to achieve the reproduction of historical features and historical and cultural connotations. At present, in the functional transformation and protection and utilization practice of heritage tourism, the method of off-site collective protection has become common. This method is to reintegrate scattered and endangered relics to form an urban space with historical and cultural connotations in the form of a group. This spatial integration of historical elements is not just a simple combination relationship, but it should focus on the principle of temporal and spatial correlation between historical elements, establish the connection between historical elements in spatial structure and origin, and convey historical information and the sense of the times of historical environment to people.

5.4. Ultimately achieve innovative tourism development

Innovative application is a comprehensive and innovative application of the above three models. On the premise of combining historical prototypes, it is boldly innovative and explores new forms of historical and cultural expression, the regeneration of materialized environment and the inheritance of historical culture, and the interaction of both emphasis and interaction, and updates the intangible cultural heritage through new material forms and injects new vitality.

6. Future prospects

Driven by international cooperation initiatives such as the “Belt and Road Initiative”, the rich cultural heritage contained in the Mogao Grottoes is expected to be more widely disseminated and recognized worldwide. This trend will significantly enhance its international influence and attract more tourists from all over the world to visit and appreciate this important treasure of human civilization together. At the same time, with the increasing global attention paid to the concept of sustainable development, the future tourism development of Mogao Grottoes will also pay more attention to ecological balance and the sustainable protection of cultural heritage. People are well aware that only on the basis of ensuring the harmonious coexistence of tourism activities and cultural relics protection can the lasting inheritance and sustainable development of Mogao Grottoes culture be truly realized. Therefore, the future tourism development of Mogao Grottoes will uphold the concept of sustainable development and strive to achieve a win-win situation between cultural heritage protection and tourism development.

In addition, under the guidance of new quality productivity, Mogao Grottoes continues to incorporate innovative elements, such as digital display and virtual reality experience, bringing tourists more colorful and fascinating tourism content. The future development of the Mogao Grottoes cultural tourism shows unlimited potential and broad prospects. This positive outlook is largely due to the continuous progress of science and technology, especially the continuous innovation of digital technology and virtual reality technology. With the increasing advancement of digital technology and light and shadow technology, immersive experience is gradually evolving into an emerging paradigm in the tourism industry. By using virtual reality (VR) and augmented reality (AR) technology, tourists can more deeply integrate into the diversified historical and cultural scenes, thereby obtaining a richer and deeper tourism experience. These cutting-edge technologies provide new ideas for the future development of Mogao Grottoes and bring unprecedented development opportunities. It is clear that with the deep integration and widespread application of these high technologies, tourists will have the opportunity to enjoy a more realistic immersive visit experience. This experience can transcend the constraints of time and space, allowing more tourists to feel as if they are personally in the profound historical accumulation and colorful cultural

atmosphere of Mogao Grottoes.

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