Preserving A Fragile Cultural Heritage Destination:
Decoding and Encoding the MoGao Caves

by
Yiyang Li

Submitted in partial fulfillment of the requirements for the degree
Master of Science in Historic Preservation
Graduate School of Architecture, Planning and Preservation
Columbia University
May 2018
Acknowledgements

First and foremost, I would like to express my sincere gratitude to the Dunhuang Research Academy for its help and support along the research process. The wall painting conservation workshop for conservators across the nation held at the conservation department in summer 2017 planted the seed of this thesis project. Administrative efforts and heritage professionals from the Dunhuang Academy and its conservation department, reception department, the exhibition center, as well as the digital center have continued to be crucial resources in my journey of writing and researching.

Most importantly, I would like to thank my advisor, Dr. Theodore Prudon, for his tremendous patience and incredibly enlightening, sharp, and insightful comments. Thank you for not giving up on me, continuously pushing me to refine my work, and helping me to accomplish more than I have ever imagined. My sincere thanks extend to my readers Carolina Castellanos and Will Raynolds. Dr. Prudon, Professor Castellanos, and Professor Raynolds’ rich experience in the field of preservation and broad knowledge in global preservation issues rigorously widened my perspective in conserving and preserving cultural heritage sites.

I would also like to thank the inspiring faculty and amazing cohort at the Historic Preservation program for their critical and stimulating discussions during and outside of class, as well as their companion through the past two years. Many thanks to my dearest teammates from the Poughkeepsie studio, Tech studio, and the Jordan trail workshop.

Finally, I would like to thank my family and friends for their love, understanding, frequent indulgence, and unending support.
Table of Contents

Chapter I: Introduction
  1.1 Abstract ......................................................... 1
  1.2 Research Methodology ........................................... 1

Chapter II: Background Research
  2.1 Tourism in China .................................................. 3
  2.2 Cultural Heritage Tourism in China .............................. 5
  2.3 Global Context in Heritage Preservation ......................... 9
  2.4 Chinese Governmental and Legislative Framework on Cultural Heritage ................. 11

Chapter III: Introduction to the Mogao Caves
  3.1 The Mogao Caves and Dunhuang ................................. 16
  3.2 History of the Mogao Caves ..................................... 23
  3.3 The Significances of the Mogao Caves ........................... 29

Chapter IV: Preservation Issues and Existing Challenges
  4.1 Material Conservation ............................................. 41
  4.2 Site Capacity ..................................................... 49
  4.3 Site Interpretation ............................................... 56
  4.4 Pressure for Future Development ................................. 78

Chapter V: Current Management and Visitation at the Mogao Caves
  5.1 The Role of Dunhuang Research Academy ......................... 82
  5.2 Tourism Management Mechanism On-Site ........................... 84
  5.3 Visitation Design in the Cave Zone ............................... 90
  5.4 Situation and Visions of Mogao’s Travel Exhibition ............... 101

Chapter VI: Global Trends and Issues: Case Studies
  6.1 Lascaux ............................................................. 107
  6.2 The Cave of Altamira (Cueva de Altamira) .......................... 112
  6.3 KV62 (Tutankhamen’s Tomb) ................................... 117
  6.4 Takamatsuzuka Tumulus .......................................... 123
List of Figures

Figure 2.1  Chinese domestic visitations vs. Year_____________________________3
Figure 2.2  Domestic tourism total expanse vs. Year_________________________4
Figure 2.3  International arrivals, International arrival with touristic purposes vs. Year_____5
Figure 2.4  Domestic arrivals vs. International travelers with touristic purposes in 2016____5
Figure 2.5  Scenic spot administrative structure_____________________________14
Figure 2.6  Mogao’s administrative structure______________________________15
Figure 3.1  Provincial map of China with Gansu and Dunhuang highlighted______16
Figure 3.2  The Mogao Caves in its desert landscape________________________17
Figure 3.3  Chinese dynasties chronology based on Mogao Caves timeline________20
Figure 3.4  UNESCO interactive map of the Silk Road_______________________21
Figure 4.1  The stratigraphy of the wall painting in Cave 85, Mogao Caves_________43
Figure 4.2  Blackened figures due to lead-white oxidization in Cave 254 at Mogao Caves_46
Figure 4.3  How humidity impacts and circulates in caves____________________48
Figure 4.4  A sign indicating carbon dioxide concentration off-limit_____________49
Figure 4.5  Total visitation volume monthly and Emergency tickets volume in 2016____52
Figure 4.6  The occurrence of “peak days” in 2015 and 2016____________________53
Figure 4.7  Monthly emergency tickets comparison between 2015, 2016, and 2017____54
Figure 4.8  Stein’s photo (1908): A monk standing in front of the three-story cave-temple__57
Figure 4.9  Paul Pelliot’s photo (1908): monks gathering for the lunar April 8th______58
Figure 4.10  Photo of the carriages in front of the Nine-story Temple, the Cave 96______58
Figure 4.11  Photo of the market on April the 8th, not far from the caves___________58
Figure 4.12  Sketch by Chang Shuhong, 1953______________________________59
Figure 4.13  Oil painting by Chang Shuhong, 1954__________________________59
Figure 4.14  Oil painting by Chang Shuhong, 1950__________________________59
Figure 4.15  Visitors and local residents circling the grand Buddha_______________60
Figure 4.16  Burning incense in the square_______________________________61
Figure 4.17  Lighting incense_________________________________________62
Figure 4.18  Burning various types of incense_____________________________62
Figure 4.19  Regional residents singing accompanied by Er-hu, 2010____________63
Figure 4.20  Regional residents dancing Er-Ren-Zhuan, 2015_________________63
Figure 4.21  Visitors viewing the first movie, Qianmian Mogao_________________66
Figure 4.22  Visitors viewing the spherical movie, Canlan Fogong_______________66
Figure 5.1  Department and Services______________________________________83
Figure 5.2  Regional Institutions________________________________________83
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3</td>
<td>Related Corporations</td>
<td>84</td>
</tr>
<tr>
<td>5.4</td>
<td>Visitation Management Diagram</td>
<td>85</td>
</tr>
<tr>
<td>5.5</td>
<td>General Visitation Diagram and Peak Season Visitation Diagram</td>
<td>86</td>
</tr>
<tr>
<td>5.6</td>
<td>World Heritage Property Inscribed</td>
<td>88</td>
</tr>
<tr>
<td>5.7</td>
<td>The Digital Center</td>
<td>88</td>
</tr>
<tr>
<td>5.8</td>
<td>Site plan of Mogao</td>
<td>89</td>
</tr>
<tr>
<td>5.9</td>
<td>Current visitation design diagram provided by Director Luo Yao</td>
<td>90</td>
</tr>
<tr>
<td>5.10</td>
<td>Nine-Story Tower, Cave 96</td>
<td>91</td>
</tr>
<tr>
<td>5.11</td>
<td>The Grand Buddha in Cave 96</td>
<td>91</td>
</tr>
<tr>
<td>5.12</td>
<td>Cave 148</td>
<td>92</td>
</tr>
<tr>
<td>5.13</td>
<td>Cave 158</td>
<td>92</td>
</tr>
<tr>
<td>5.14</td>
<td>Coffer</td>
<td>94</td>
</tr>
<tr>
<td>5.15</td>
<td>Cave 17 in cave 16</td>
<td>94</td>
</tr>
<tr>
<td>5.16</td>
<td>Current stage of cave 17</td>
<td>94</td>
</tr>
<tr>
<td>5.17</td>
<td>Cave 17 when Paul Pelliot was browsing through the manuscripts</td>
<td>94</td>
</tr>
<tr>
<td>5.18</td>
<td>Dunhuang Manuscripts Museum. The stone in front of it carved a sentence from the famous Chinese scholar Chen Yinke. “Dunhuang is the place of sorrow of our country’s academia.”</td>
<td>95</td>
</tr>
<tr>
<td>5.19</td>
<td>The interior of the Dunhuang Manuscript Museum</td>
<td>96</td>
</tr>
<tr>
<td>7.1</td>
<td>Northern Caves Zone</td>
<td>149</td>
</tr>
<tr>
<td>7.2</td>
<td>Northern Caves Tour in the intermediate stage of redevelopment</td>
<td>157</td>
</tr>
</tbody>
</table>
Chapter I: Introduction

1.1 Abstract

The cultural heritage tourism industry has been on a constant expansion in China across the past decades. A growing volume of regional municipalities and investors is actively participating in developing and transforming the cultural heritage sites into tourism destinations. While the mass tourism and its continuous escalation are bringing tremendous success to regional economy, it is also significantly challenging the material integrity of fragile cultural heritage destinations. Such an issue is exposed most acutely at the Mogao Caves, an archaeological cave-temple ensemble in northwestern China.

This thesis lays out the cultural heritage preservation framework and the growing tourism economy in China, dissects the preservation issues and challenges presence at the Mogao Caves, evaluates current Mogao Caves visitation design and narratives, seeks guidance and possible resolutions via international case studies faced with similar challenges, and eventually proposes a vision and plan of redevelopment that aims at encounter-balancing the diverse challenges by integrating findings discovered in the research process.

1.2 Research Methodology

The methodologies employed in the research process include literature review, quantitative analysis on social demographic and visitation statistics, qualitative analysis of in-person on-site interviews and visitation reviews collected from travel platforms, as well as case studies consisted by renown cultural heritage destinations.

**Literature review**

This research envelopes a broad scope of literature on multiple subjects across several disciplines. Chapter two summaries the influential cultural heritage documents in the international forum and the cultural heritage preservation legislative framework in China. Chapter three and four dives into contextual academic research conducted by the Dunhuang Research Academy and related institutes on the history, artistic achievement, and material conservation issues of the Mogao Caves.
Quantitative Analysis

This research visualizes several social-economic and social-demographic shifts based on the statistics published by the National Bureau of Statistics of the People’s Republic of China in chapter two. This research also manages to chart the development of tourism volume in the recent years drawn from tourism visitation statistics provided by the Dunhuang Research Academy.

Qualitative Analysis

From December 19th to December 30th in 2017, the researcher re-visited the Mogao Caves after a summer internship at Dunhuang Research Academy’s conservation department in the same year, and conducted on-site semi-structured interviews with 52 units of anonymous visitors at the major exhibition center, 15 visitation management personnel at the Mogao Caves (7 docents, 5 securities, and 2 dispatchers), the five heritage preservation professionals from the Dunhuang Research Academy. Interviews with visitors lead up to the exploration of the existing challenges in interpretation and presentation of the Mogao Caves presented in chapter four. Conversations with the management personnel and heritage preservation professionals have enlightened multiple discussions throughout this thesis. A full summary of visitors’ interviews can be found in the appendix B. Core information retrieved from the semi-structured interviews with management personnel and professionals are cited and footnoted. Furthermore, in chapter six, in order to review tourism experience at the selected case studies, discourse analysis is also deployed to evaluate the effectiveness of visitation designs via online travel platform such as the TripAdvisor.

Case Studies

This research also includes a review of five cultural heritage sites that are facing similar challenges and have turned to similar solutions as the Mogao Caves in the past decades to seek possible resolutions for the dilemma between conservation and mass visitation. The selected case studies are the cave of Lascaux, France, the Cave of Altamira in Spain, Tutankhamen’s Tomb in Egypt, the Takamatsuzuka Tumulus in Japan, and the Ajanta Caves in India.
Chapter II: Research Background

2.1 Tourism in China

A statistics report published by the China National Tourism Administration (CNTA) indicates that Chinese citizens have made 2.54 billion domestic travel visits during the first half of 2017. Compared to 2016, the number has increased by 13.5%.

As presented by the graph “Chinese Domestic Touristic Visits (in millions) vs. Year”, the growth of domestic touristic visits in China in the past twenty years has been exponential. From around six hundred and forty-four millions of visits in 1997, the total number of visitation broke 4 billion in 2016, reflecting a dramatic increased of 85 percent within ten years.

![Figure 2.1 Chinese domestic visitations vs. Year](image)

---


As shown in the graph “Total Expanse on Touristic Visits (in hundred millions of Yuan) vs. Year,” the economic benefits brought on by the tourism industry show an ever steeper curve. In 1997, Chinese citizens have spent over 211.2 billion in Yuan, about 33.5 billion in dollars, on domestic travel. In 2016, the number has reached 3.9 trillion in Yuan, over half of a trillion in dollar.\(^3\)

According to the World Tourism Organization (UNWTO), China occupied the largest percentage (21.4%) of the market share with 261.1 billion in dollar in international tourism expenditure in 2016.\(^4\) Research conducted by the luxury travel company Virtuoso ranks China the fourth most popular luxury destination among its global customers as of August 2016, following Kenya, Iceland, and Saint Martin.\(^5\) However, the international traveler identified with touristic purpose is only about one-third of the total international arrivals. Although the 261.1

\(^3\) Ibid


billion dollar of travel expanse (around 1.6 trillion Yuan) contributed by international visitors is over one-third of Chinese domestic travelers’ expanse, the total number of international travelers is only a fraction when compared to Chinese domestic travelers, as is clearly demonstrated by the pie chart. Even with tremendous volumes of foreign visitors, unlike many developing countries and post-colonial countries, the tourism industry in China remains highly domestic-oriented and has the most impact. Therefore, the scope of this research focuses primarily on the Chinese domestic visitors within the visitation population.

2.2 Cultural Heritage Tourism in China

Around the same time when the first group of cave-temples was constructed at the Mogao Caves, China was enjoying its first peak in pilgrimage in its entire written history. The Wei-Jin periods (220-589) divided central China into multiple co-existed political and military centers across four hundred years. Endless conflicts yielded a group of intellectuals and elites who aspired to live among forests and mountains while composing poems about their ideal way of living, which was being out there and being away from the turbulent political centers. Due to the thriving of Daoism and the introduction of Buddhism in the same period, Daoist and Buddhist monks soon joined the spiritual search led by intellectuals and elites with a purpose of seeking tranquil landscape for ritual practices and meditations. The renowned “Seven Sages of the Bamboo Grove” composed volumes of poems portraying their enjoyment in the natural

---

6 Liang Rui 梁瑞, “Wei Jin Nanchao shidafu hyou huodong tanxi” 魏晋南朝士大夫旅游活动探析 [Exploring the “travel” activities among the Scholar-Official in Wei, Jin, and Southern Dynasties], Lantai Shijie, 兰台世界 2014-12
landscape while sarcastically expressing their discontent towards the royal court. Scholars like Ellen Johnston Laing believe the Seven Sages of the Bamboo Grove internalized the influence of Taoism during Wei-Jin periods and through which they gave birth to the Neo-Taoism, emphasizing the relationship between nature and man in artistic creations. “The Fields and Garden poetry” movement started by Tao Yuanming a hundred years later was regarded to have continued the spirit of the Seven Sages of the Bamboo Grove and extended it into the Tang dynasty. Meanwhile, among the representational poets in the Fields and Garden poetry movement, Xie Lingyun was famous of his natural landscape deceptions and their intimate connections with Buddhism ideologies.

Besides the historical texts that referenced such a cultural conversion, murals from the Sixteen Kingdoms to Northern Zhou (from 366 to 581) at the Mogao Caves also documented such a merging, within which the Taoism and traditional Chinese methodological iconographies have appeared alongside Buddhism depictions.

Buddhism ideologies in Central China have long been infiltrated by Taoism and vice versa. The intellectual discourse among the ancient elite class that enveloped natural beauty, poetic lifestyle, spiritual purity, and philosophical reflections perceived each of the element to be deeply entangled with the others. Nowadays, such an understanding has persisted to flow into the educated population as they read and recite poems and ancient texts from the iconic intellectuals as part of their education in ancient Chinese text and history. Further enhanced by contemporary prose and novel from writers and travelers like Yu Qiuyu and San-mao, their works portray the process of traveling as inherently spiritual and cultural. For the educated Chinese, if travel is not inherently spiritual or cultural, it is at least meaningful, though the exact meaning could vary.

---


from person to person. At least, the inherited poetic lens for being-out-there might have inspired the unceasing desire for traveling among the educated population, fostering an underlying interest in cultural tourism.

Since national-wide economic reform led by president Deng Xiaoping in 1978 tourism development was set as one of the major economic driving forces. Multiple provincial and regional governments have established five, ten, to even twenty years’ tourism development master plans. Simultaneously, the first group of Chinese sites heritage was enlisted the World Heritage list in the 1980s. Cultural heritage tourism soon became a vital tourism model since it allows tourism attraction to be created in a large quantity at great speed due to the amount of cultural heritage resources existing in China. Though heritage is now encouraged to be utilized as an asset in solving larger societal issues including economic disadvantage, China is frequently criticized commoditizing heritage sites and over-exploiting historical resources. Cultural Heritage Politics in China (2013) addresses the development of cultural heritage preservation as a process that has been deeply embedded in the contemporary political intent, ranging from cultural identity building, regional economic development, to the promotion of authorized historical or political discourse. The book describes the hit phrases most frequently used in promoting cultural heritage among Chinese mainstream media such as “cosmopolitanism,” “heritage,” “tourism,” and “community empowerment” to be all part of the progressive economic development veneer of modern China and its internationally branding effort.

The article “Urban entrepreneurialism and the commodification of heritage in China” by Xiaobu Su calls out the tourism industry boom in the historic town of Lijiang to be mainly composed by the tourism market, the real estate market, and the capital market. Su studies the demographic displacement in the Lijiang and argues that the heritage development in Lijiang is manufacturing a new paradigm in Chinese real estate market. In “Heritage as theatre: Reconceptualizing heritage-making in urban China” Cangbai Wang characterizes heritage

---


resources as a civilizing agent in regulating and improving urban population. The “dramatic music representation, monumental architecture and expressive ceremonies” is part of the “state-led heritage-making processes” that aims at showing the power of the state as a “spectacle, sensation, and awe.” In “Heritage as Improvement: Cultural Display and Contested Governance in Rural China” by Tim Oakes, cultural heritage is described to be “a contested project of governance and social ordering in rural China.” Oaks believes that heritage preservation, planning, and management as well as the tourism economics heritage resources are used as “powerful tools of modernization and development.”

In Robert J. Shepherd’s *Faith in Heritage: Displacement, Development, and Religious Tourism in Contemporary China* (2013), he conducted a socio-cultural anthropological review on different groups of population revolving around the religious World Heritage site Wutai Shan in Shanxi Province. Shepherd categorizes the World Heritage status of Wutai Shan as a standard to regulate Wutai’s visitors’ public “moral behavior,” such as being polite, disciplined, and respectful. The book also documents the conflicts and arguments among the residents of Taihua, a town that was ordered to relocate far from its original location due to the construction of a buffer zone and massive real estate development around the buffer zone. Surveys and interviews with tourists conducted by the author on-site, unveil that due to China’s complex social history in the past hundred years, the visiting intention of tourists is very much opaque, predominantly religious, cultural and historical while being rationalized and masked with the term “cultural tourism.” Meanwhile, Ellen Badone and Sharon Roseman’s *Intersecting Journeys: The Anthropology of Pilgrimage and Tourism* (2004) dives into the entangled concepts of “pilgrimage” and “tourism.” Tourists could undergo a sacred or spiritual experience at a religious site or spiritually significant event, while pilgrims might conduct sightseeing and touristic behaviors along the pilgrimage. In the context of the modern tourism industry, travelers with religious intentions and travelers with touristic purposes are becoming even more intermixed.

---


However, issues come within the opportunities. Hongyan Li and Zhu Qian’s “Archaeological heritage tourism in China: the case of the Daming Palace from the tourists’ perspective”\textsuperscript{18} analyzes the historical significance of the Daming Palace, current planning of the Daming Palace Heritage Park, and tourists’ visitation experience. Due to the administrative top-down decision process which haphazardly fits recreational attractions around or even on top of archaeological remains, the tourism experience and understanding of the site are severely limited. Li and Qian believe that additional programming and interpretative methods are crucial in closing the gap between general tourists’ need in experiencing Tang’s culture and the experts’ vision in maintaining the authenticity of the archaeological remains. Mao-Ying Wu and Geoffrey Wall in their publication “Visiting heritage museums with children: Chinese parents’ motivations” conducts semi-structured interviews with family at a cluster of heritage museums in Hangzhou. Their research identifies the growing trend of parents taking children to museums for “education and learning, relaxation, relationship enhancement, and extended family obligations.” The research also points out the importance of heritage-based museums in establishing the common ground and educational opportunity between parents and children, as well as the significance of creative and innovative displays that young parents address to be “creating positive experiences for children.” This growing audience of regional heritage museums also reflects on heritage sites during school-breaks in China.\textsuperscript{19} As demonstrated by the demographic shift in the previous section, the audience of the same group of cultural heritage touristic attractions has changed over the last twenty to thirty years. The traditional conceptual framework towards cultural heritage is at a crucial stage, and a moment ripe for a change.

2.3 Global Context in Heritage Preservation

Adopted by the \textit{First International Congress of Architects and Technicians of Historic Monuments} held in Athens in 1931, the so-called Athens Charter\textsuperscript{20} marks the beginning of the international collaboration and concern on cultural heritage preservation. The Athens Charter


\textsuperscript{20}Athens Charter, \textit{First International Congress of Architects and Technicians of Historic Monuments}, 1931
laid out seven points in its manifesto as general goals and professional guidelines regarding the issues of historic building protection and on the restoration of historic monuments. To further solidify preservation actions towards historic buildings after the World Wars, the First International Congress of Architects and Specialists of Historic Buildings took place in Paris during 1957 also crafted seven recommendations to planners and architects with an interest in preserving historical architectures. Further, the committee of the First International Congress decided to hold their second congress in Venice and invited Piero Gazzola to be the chairman of the Venice congress. In 1964, the Second International Congress of Architects and Specialists of Historic Buildings hosted by Piero Gazzola resulted in two of the most fundamental features from which the global heritage preservation framework was constructed, refined and developed: the Venice Charter and ICOMOS (International Council on Monuments and Sites). The Venice Charter revises its predecessor, the Athens Charter, reframing and declaring the importance of conservation in comparison to restoration. The Venice Charter elaborates on the notion of “common heritage” and place its emphasis on safeguarding the integrity and authenticity of the historic structures.

Accepting the concepts and philosophy highlighted by the Venice Charter as a starting point, the Australia ICOMOS contextualized the conservation and restoration principles with the cultural context in Australia via the conference Australia ICOMOS Charter for the Conservation of Places of Cultural Significance held in the historic town of Burra in 1979. Within its later revisions and referred as the Burra Charter it takes the practice guidelines and framework for heritage conservation to the next stage while dissecting the significance of historic structures into categories of values. Encouraged by the need of diversifying cultural diversity on the world heritage list, UNESCO World Heritage Convention launched its global strategy in 1998 to increase the number of non-European world heritage nominations and expand the selection criteria valuing human interactions with the heritage constructs.


The Nara Document on Authenticity\textsuperscript{24} produced in 1994 takes the idea of dynamically interpreting cultural diversity proposed by the Burra Charter one step further. It points out that the definition of “authenticity” and what is to be recognized as authentic varies from culture to culture. The Nara Document proposes that the process of historic preservation should be evaluated on a case by case basis, among which the word “authentic” might sometimes hold more value in pertaining cultural significance than the material fabric.

Echoing the Nara Document on Authenticity, the revised Burra Charter was adopted by the Australian Heritage Council in 2004. The final adopted version of the Burra Charter published in 2013 by ICCOMOS proposes a heritage value system that is composed by the aesthetic value, historic value, scientific value, social value, and spiritual value. In contrast to the Venice Charter published in 1964, which placed authenticity square in its materiality, the Burra Charter adopted in 2013 acknowledges reconstructions and adaptations when original fabrics are not severely harmed and cultural significances are not impaired. The Burra Charter aims at reminding conservation practitioners about the cultural significances of the material subjects. Meanwhile, its arguments still prioritize the conservation of material fabric in the process of preserving historical monuments and sites.

2.4 Chinese Governmental and Legislative Framework on Cultural Heritage

During the February 26th to February 28th in 2018, the Third Conference of the 19th Central Committee of the Communist Party of China officially adopted the \textit{Plan for Deepening Institutional Restructuring of the Party and the State Council.}\textsuperscript{25} On March 13th, the \textit{Plan for Institutional Restructuring of the State Council} was presented to the 13th National People’s Congress and soon passed on March 17th. The national department of culture and the national department for tourism is officially announced to be merged into one, the Ministry of Culture.

\begin{thebibliography}{9}
\bibitem{24} The Nara Document on Authenticity, ICOMOS, 1994
\bibitem{25} “Zhonggong zhongyang yinfa <shenhua dang he guojia jigou gaige fang’an” 中共中央印发《深化党和国家机构改革方案》 [CPC Central Committee publishing and distributing the \textit{Plan for Deepening Institutional Restructuring of the Party and the State Council}, \textit{The State Council The People’s Republic of China}, March 21st, 2018, \url{http://www.gov.cn/zhengce/2018-03/21/content_5276191.htm#1}}
and Tourism. The guiding rule for the 2018 institutional restructuring is to combine governmental agencies with similar or related objectives and functions. Besides historical ties and contemporary trends discussed in the previous sections, the entanglement between cultural heritage and tourism management also roots in how cultural heritage is perceived and situated within Chinese legislative framework.

The cultural heritage legislative framework in China evolved as a response to the global advocacy. After the People’s Republic of China was established on October 1st, 1949, the entire legal system was rebuilt to comply with the new administrative structure. Laws and regulations regarding all fields were revised and re-issued to reflect contemporary social changes. In 1950 and 1951, right after the establishment of the People’s Republic of China, provisions, temporary regulations, and instructions were put in place to protect the cultural heritage resources. The protection of historical architecture was also addresses separately within the law-binding document *Government Administration Council of the Central People’s Government’s Instructions on the Protection of Cultural Relics and Architecture*. Such a fundamental and categorical emphasis towards the protection and preservation of historical structures’ does not reoccur until the *Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages* passed in 2008.

After the national tumultuous era in the 60s and 70s, the two most fundamental legislative documents on cultural heritage protection are the *Cultural Relics Protection Law of the People’s Republic of China* passed in 1982 and the *Regulation for the Implementation of the Cultural Relics Protection Law of the People’s Republic of China* passed in 2003. Chinese laws

---


and regulations are subject to revision according to the contemporary need and understanding. Once a generous consensus among governmental bodies has been reached, changes could be executed at an astonishing pace. Every year, the National People’s Congress would reveal the proposals of revision and give permission to establish new, effective version of the examined law. Meanwhile, cultural heritage sites and archaeological structures or ruins remain to be categorized and preserved as “immovable cultural relics.” Within the context of drastic urbanization in the past decades, their preservation was often isolated from its environment and context. Values ascribed by regional communities and other societal stakeholders often left unvoiced and significances under-interpreted.

Right after China established its first legal document on protecting cultural heritage in 1982, China signed the UNESCO’s World Heritage Convention in 1985 and became one of the most active agents in nominating World Heritage sites as well as cooperating with international institutes to better conserve heritage resources. *Principles for the Conservation of Heritage Sites in China* was published in 2002 with the help of the Getty Institute as the principal guideline of Chinese heritage preservation and conservation professionals. Besides its significant in founding the guidelines on protecting and managing heritage sites in China, the guideline has also left behind a historical precedent. Because there is not a Chinese phrase that can directly translate conservation, conservation and preservation are sharing the same phrase as their translation till today. Henceforth, heritage preservation professionals are frequently referred as heritage conservation professional with either technical skills in restoration or knowledge in material sciences, unless is clarified.

Soon after the principle has been published, a number of national, provincial, and regional regulations regarding the protection and conservation of cultural heritage sites is passed. National regulations issued right after Getty’s China principles publication include: *Measures for the Administration of Cultural Relics Preservation Projects (2003), Regulations of Cultural Relics Conservation Project (2003), Management Regulations of Certification of Conservation Projects Survey and a Design (2003), Management Regulations of Certification of Construction Projects*.

---

Certification for Cultural Relics Conservation Projects (2003), Approval and Management Regulations of Conservation Plan of National Protected Cultural Relics Units (2004), Forming Requirements for Conservation Plan of National Protected Cultural Relics Units (2004), Protection and Management Regulations of World Cultural Heritage (2006). Demonstrated by their titles, most of the regulations target form, design, construction projects, and conservation projects, implying the anticipation of development. As concluded by Zou Tongqian, besides the Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages established in 2008, most of the regulations towards cultural heritage sites are deeply entangled with management regulations and guidelines for scenic spots. A scenic spot might be a natural landscape or historical structure, or in a combination of natural and historical resources. Either way, a scenic spot in contemporary Chinese citizens conscience is equal to a tourism attraction. In fact, the Chinese translation of the tourist attraction, “lvyou jingdian” (旅游景点), is exactly composed by the word “travel” (lvyou 旅游) and “scenic spot”(jingdian 景点), which in combination entails a scenic spot for traveling.

In Zou Tongqian’s research he has concluded the administration of individual cultural heritage site and scenic spot as the following graphic (translated by the author):

![Figure 2.5 Scenic spot administrative structure](image)
Nevertheless, in the context of this thesis, because the Mogao Caves is a World Heritage site and under the jurisdiction of the national research institute, the Dunhuang Research Academy, the administrative structure of the Mogao Caves drawn from interviews with Dunhuang Academy’s administrators is illustrated below:

As shown above, although the Mogao Caves is at the highest level of protection among Chinese cultural heritage sites, it is a vital resource for the provincial and regional development. The Dunhuang Academy, which originally was established in 1944 as the National Research Institute on Dunhuang Art, now is in charge of overseeing archaeological excavation, academic research, conservation, site development, daily tourism management, and hosting national and international research conferences at the Mogao Caves. Though the Dunhuang Academy has the final say in the decision-making process, the Mogao Caves is much of a shared product across several administrative entities. The management and development issues will be deciphered individually in the following chapters, reflecting the universal conundrum in cultural heritage preservation in contemporary China.
3.1 The Mogao Caves and Dunhuang

Enveloping 735 caves structures, Mogao Caves are located on a conglomerate cliff facing east, adjacent to the city of Dunhuang in Gansu province, where most of the Hexi corridor resides. The shape of the Gansu province resembles a pathway that connects Shaanxi province, a cultural and historical center of the Central Plans region in ancient China, with the critical northwestern territories such as the Xinjiang province, the Qinghai province, and Inner Mongolia.

Figure 3.1 Provincial map of China with Gansu and Dunhuang highlighted

31 Rendered by author based on Google map 2018.
Lying on the west end of the Hexi corridor, west of central China, north of the Tibetan Plateau, and south of the Mongolia grassland, Dunhuang resides in on the edge of the Gobi Desert. In ancient records from the Tang dynasty, Dunhuang situated in the region of 沙州 Shazhou, whose literal translation is “the land of sand” or “the State of sand.”

![Figure 3.2 The Mogao Caves in its desert landscape](https://www.e-dunhuang.com/index.htm)

Historically, due to the geographic proximity, the northwestern provinces were intimately related to Central Asia through conflicts, trade, religious practices, marital connection, as well as other social, cultural and political interactions. As early as the Warring States period (475-221 BC), written records have mentioned the Hexi regions within the conflicts and tension between the Yuezhi tributes, the Wusun nomadic group, and Xiongnu. Although Shiji faithfully documented the military campaign that successfully incorporated Hexi’s corridor into Han’s territory in 121 BC, the official establishment of Dunhuang’s township and its role as a military outpost was unclear according to the ancient sources. “Wudi benji” chapter in Hanshu attributes the establishment to the sixth year of the Yuanding reign (111 BC), while the “Dilizhi” chapter in

---

32 Demonstrated by the Shazhou dudufu tujing 沙州都督府图经 found in the Mogao Cave 17. Transcription see Li Zhengyu 李正宇, Guben Dunhuang xiangtuzhi bazhong jiangzheng 古本敦煌乡土志八种笺证 (Taipei:Xinwenfeng chuban gongsi 台北新文风出版公司, 1998), p.16-17,50-55. The original copy of the Shazhou dudufu tujing is stored in the National Library of France.

33 Image retrieved from Digital Dunhuang, [https://www.e-dunhuang.com/index.htm](https://www.e-dunhuang.com/index.htm)

34 Shiji 史记 110, “Xiongnu liezhuan” 匈奴列传; 123, “Dayuan liezhuan” 大宛列传.
the same book places the event in Houyuan reign (88-87 BC).\textsuperscript{35} Either way, since Han dynasty, Dunhuang was officially considered to be the entry point from Central Asia to Central China. The archaeological remains of the Yumen Guan\textsuperscript{36} are the testimony of an ideally controlled, organized, and certified communication between Central China and the “Western Regions.”

After Han dynasty collapsed and a fleeting age of unification under the political power of Western Jin faded, Dunhuang had been ruled by multiple regional regimes over the Sixteen Kingdoms period (304-439): the Former Liang that funded by Han descendants, Former Qin by the ancient ethnic group Di, Later Liang also by Di, Western Liang by Han descendants, and Norther Liang by a bunch of Xiongnu’s descendants, the Lushuihu group.\textsuperscript{37} Following the turbulent Sixteen Kingdoms period, Xianbei group consecutively established three different regimes from Norther Wei (439-534 A.D.), Western Wei (535-556 A.D.), to Northern Zhou (557-580 A.D.). Due to the constant outbreak of wars and conflicts, Dunhuang could only pertain periodic peace. The Mogao caves became an essential spiritual shelter for regional residences and leaders praying for peace and stability.

Emperor Wendi of the Sui dynasty (581-618 A.D.) finally reunited Central China and incorporated the dispersed, minor power centers into a larger political structure. Emperor Wendi highly encouraged the construction of Buddhism temples and towers. Dunhuang has even recovered sutra copies produced by Sui royal family members. After Sui was replaced by Tang (618-907 A.D.), strategic military regions like Dunhuang came under strict control and regulation. Meanwhile, in Mid-Tang period, the entire Hexi corridor was enclosed into Tang’s territory. Tang emperors shared the interest and respect towards Buddhism as its predecessor during Sui. Beyond the religious significance attributed by local regimes across centuries, royalties and regional families in power provided enormous economic and political support in

\textsuperscript{35} Hanshu 汉书, “Wudi benji” 武帝本纪; “Dilizhi” 地理志. Scholarly opinion provided by Rong Xinjiang 荣新江 at “Dunhuang in Chinese History” 中国历史上的敦煌 in Eighteen Lectures on Dunhuang 敦煌学十八讲, published by Beijing University in 2001 and translated by the University of Cambridge in 2013.

\textsuperscript{36} Yumen Guan, or the Jade Gate, was a pass in the Kulun Fortress section of the Han Great Wall. Its earthen, semi-gate and semi-fortress architectural remains stand east of the modern city of Dunhuang.

\textsuperscript{37} Rong Xinjiang 荣新江, “Dunhuang in Chinese History” 中国历史上的敦煌, Eighteen Lectures on Dunhuang 敦煌学十八讲, published by Beijing University in 2001 and translated by the University of Cambridge in 2013.
the development of Dunhuang and the construction of Mogao caves during Sui and Tang dynasties.  

During Tibetan occupation of the west of Hexi corridor from 755 to 848, Dunhuang was recognized to be an important religious center of the Buddhism practice. However, the growing rivalry between the belief of Buddhism and Tibetan native religion Bon among Tibetan royalties finally resulted in series of political unrests. Eventually, small, regional military and political divisions once again took control of the west Hexi. Though declaring allegiance to the central government in the Middle Plain, influential families in the Dunhuang region formed marriage alliance and functioned as independent kingdoms throughout the Five Dynasties period (907-960A.D.) and into the Song dynasty. In the 11th to 12th century, Western Xia conquered the majority land north of the Shaanxi province. Western Xia was funded by the Tangut people, a Tibeto-Burman-speaking group descended from Central Asia. As a highly valued sacred Buddhism site, the Mogao caves continued to attract political, cultural, social, and religious interest to Dunhuang.

However, after Mongols established Yuan dynasty (1227-1386 A.D.) in Central China and reincorporated the regional regimes into its central political structure, the west of Hexi corridor was no longer considered to be on a strategic military position or the only pathway to Central Asia as Mongol controlled most of the Asian containment. Before Yuan took over Dunhuang, Western Xia once relocated Dunhuang residents to its eastern frontline in order to mobilize laborers and supply in its confrontation with military power from central China. Under Yuan’s ruling between 1291 and 1292, the majority of remaining Dunhuang residents were again moved eastward to Suzhou, the new administrative center of the region. Lacking economic support, political interest, and laborer resources, Dunhuang’s importance declined. In early Ming dynasty (1368-1644 A.D.), Dunhuang region became part of the pasturing area.

---

38 Ibid.
41 *Yuanshi* 元史 60, “Dilizhi” 地理志
Residential at Dunhuang was only seasonal. Municipality at Dunhuang was not rebuilt until the Qing dynasty (1644-1911).42

<table>
<thead>
<tr>
<th>Periods</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixteen Kingdoms</td>
<td>366—439</td>
</tr>
<tr>
<td>Northern Wei</td>
<td>439—534</td>
</tr>
<tr>
<td>Western Wei</td>
<td>535—556</td>
</tr>
<tr>
<td>Northern Zhou</td>
<td>557—581</td>
</tr>
<tr>
<td>Sui</td>
<td>581—618</td>
</tr>
<tr>
<td>Early Tang</td>
<td>618—712</td>
</tr>
<tr>
<td>High Tang</td>
<td>712—781</td>
</tr>
<tr>
<td>Middle Tang</td>
<td>781—848</td>
</tr>
<tr>
<td>Late Tang</td>
<td>848—907</td>
</tr>
<tr>
<td>Five Dynasties</td>
<td>907—960</td>
</tr>
<tr>
<td>Song</td>
<td>960—1036</td>
</tr>
<tr>
<td>Western Xia</td>
<td>1036—1227</td>
</tr>
<tr>
<td>Yuan (Mongol)</td>
<td>1227—1368</td>
</tr>
<tr>
<td>Ming</td>
<td>1368—1644</td>
</tr>
<tr>
<td>Qing</td>
<td>1644—1911</td>
</tr>
<tr>
<td>Republic of China</td>
<td>1912—1949</td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>1949—</td>
</tr>
</tbody>
</table>

In 2018, the year in which this thesis would be completed, Dunhuang is a small, energetic city that hosts one million to two million visitors annually. The Mogao Caves have been listed as a World Heritage Site in 1987. Dunhuang is officially recognized as one of the essential cities along the Silk Road network by UNESCO’s Silk Road initiative.

In the past few decades, the city of Dunhuang has been enjoying an enormous boom in economic development and city expansion due to the continuous growth of Chinese tourism industry and its interests in cultural heritage. Dunhuang is no longer a commercial center on a modern trade route, nor a strategic military outpost. Its prosperity is mainly brought on by the tourism industry to Mogao Caves, Mingsha Mountain, Yumen Guan, and other adjacent archaeological or natural sites that capitalize the regional cultural, historical, or natural resources.

42 Following table is derived from “A Chronological Chart” in Duan, Wenjie, and Chung Tan’s, Dunhuang Art: through the Eyes of Duan Wenjie, published by Indira Gandhi National Centre for Arts in 1994.
Nevertheless, an interview with the daughter of Dunhuang Academy’s founding principal Chang Shuhong, Chang Shan’na, reveals that Dunhuang was only a remote and deserted rural town in the 1940s. Although the discovery of Mogao Caves and the disbursement of Mogao’s manuscripts around the world in the early 1900s instigated much discussion among Central Asia and East Asian scholars, the two World Wars and national conflicts in China exhausted enormous resources. Chang Shan’na reflects, in the 1940s, to get to Dunhuang from the provincial capital of Gansu took days, including two to three days of the journey on an ox-cart. Back then, the staff at the newly established “Research Institute on Cultural Relics of Dunhuang” and their families members only had salted noodles as daily meals with nothing on the side.

The early revitalization of the Dunhuang city was driven by the establishment and development of Dunhuang Academy. Since the national-wide economic reform in the 1980s,

---


44 Video content provided by the exhibition center at the Mogao Caves, the Exhibition of Relics From the Dunhuang Grottoes.
governmental support has been pouring into cultural heritage development in the form of basic infrastructure construction on-site and at larger scales, especially at World Heritage sites. Travel from Lanzhou, the provincial capital of Gansu, to Dunhuang no longer requires days but seven hours by train. The completion of Dunhuang airport in 1982 and its expansions in 1999, 2002, 2008, 2013, and 2016, mark the proceeding advancement on its accessibility, gradually transforming the remote and deserted small town to a prosperous oasis. Dunhuang’s GDP in 2016 reached 10.64 billion Yuan, about 1.68 billion in dollar. The tourism economy and related hospitality industries contributed over sixty percent of the figures, following by the manufacturing industry (25%) and agriculture (15%). Beyond the two hundred thousand local residents, tourists, close to twenty times the number of the local residents, are the major consumers of local agricultural and industrial products in the Dunhuang region.45

According to national policy, the Mogao Caves only needs to respond to administration decisions made by the Dunhuang Academy as the organization chart illustrated earlier (Fig.2.9). However, due to Mogao’s essential role in Dunhuang and even Gansu’s tourism economy, the management of the Mogao Caves often becomes an issue of balance between the interests of Dunhuang Academy, Dunhuang city government, and the provincial government of Gansu. The city government of Dunhuang has been emphasizing the construction of resorts, exhibition centers, conference centers, theater districts, and other recreational development. By upgrading tourism facilities and infrastructure on less famous heritage and natural sites, the government of Dunhuang aims to expand the economic profits from the growing tourism economy by accommodating larger tourism body and prolonging visitors’ length of stay. The Department of Cultural Relics from Gansu Provincial Government sends out congratulations and complements

on January 22nd of 2018 regarding the growth of visitation to Mogao Caves in 2017,\textsuperscript{46} even though the Mogao Caves are facing extreme capacity issues during peak seasons.

3.2 History of the Mogao Caves

莫高窟者，厥初秦建元二年，有沙门乐僔，戒行清虚，心恬静。尝杖锡林野，行至此山，忽见金光，装有千佛，遂架空凿岩，造窟一龛。次有法良禅师，从东届此，又于僔师窟侧，更即营造。伽蓝之起，滥觞于二僧。复有刺史建平公、东阳王等，各修一大窟。自后合州黎庶，造作相仍。
—《李君莫高窟佛龛碑》

“The Mogao Caves began in the second year of the Jianyuan era of the (Former) Qin (366) when the śramaṇa Lezun (or Yuezun), who was pure in his practice of the precepts and maintained a tranquil mind, while wandering in the forest wilds with a monk’s cane and traveling to this mountain, suddenly saw a golden light that had the appearance of a thousand buddhas. He thereupon built up structures high above the ground, digging in a dangerous area in order to construct a niche. After this, Chan master Faliang came here from the east, carrying out construction beside Master (Le)zun’s cave. The origins of the samghārāma can be traced back to these two monks.”\textsuperscript{47} Later, there were the Duke of Jianping and the Prince of Dongyang (appointed as governors), each of which constructed a large cave. From then on, peasants and royalties from this providence and the nearby providences have been continuing to come and construct caves (in this region).\textsuperscript{48}
— Li Jun Mogaoku fokan bei

\textsuperscript{46}“Gansu shiku guanli ‘Dunhuang moshi’ xiaoguo chuxian” 甘肃石窟管理‘敦煌模式’效果初显 [Caves management at Gansu, the ‘Dunhuang Mode,’ has shown its effect], sent by the Gansu Province Department Cultural Relics via its WeChat official account on January 22nd, 2018. https://mp.weixin.qq.com/s/7OpZ9oULRuRtPz_Zo_qEu5Q

\textsuperscript{47}The first three sentences of the selected stele inscription are translated by Dr. Li Yuqun in his publication “Classification, Layout, and Iconography of Buddhist Cave Temples And Monasteries” in Early Chinese Religion, Part Two: The Period of Division (220-589 AD) (2 Vols), pp. 575–740., doi:10.1163/9789004175853.i-1564.81.

\textsuperscript{48}The forth and fifth sentences of the selected stele inscription are translated by the author in consultation with the modern Chinese interpretation of the original text (page 12) and the English translation of the interpretation (page 32) in Dunhuang, A Pearl On The Silk Road A Treasure Trove of Buddhist Culture published in 2014
Li Jun Mogaoku Fokan Bei is a stone stele found in Cave 322 in the twenty-fifth year of Jiaqing period in Qing dynasty (1820 A.D.), later fragmented in times of war and conflict. The stele is dated to 698 A.D., the first year of the Shengli era in mid-Tang dynasty under Empress Wu. The selected lines of inscription presented above are the earliest historical references describing the origin and early history of Mogao Caves. Although events and incidents of the Duke of Jianping and the Prince of Dongyang were faithfully recorded in the regional historical documents, the origin of Mogao Caves remains to be a myth, as the precedent of Li Jun stele—the Lezun (or Yuezun) stele was lost at some point of history.49

Archaeological investigation has attributed the earliest painted cave at Mogao to the Northern Liang Dynasty (421-439 A.D.)50 during the Sixteen Kingdoms period. Cave 268, 272, 275, are the earliest painted cave temple complexes in Mogao, exhibiting Buddhism imageries directly derived from the Northwest Indian Maitreya belief and Central Asian artistic depictions such as less clothed and more dramatic body languages.51 The Northern Liang caves used a fresco technique, which was once believed not to have been invented until the 13th century in Italy and is also vastly different from the predominate dry-painting techniques in Chinese wall painting tradition, suggesting the technique to be invented elsewhere even earlier than the fifth century.52 Following Northern Liang, caves from Northern Wei (439-534 A.D.), Western Wei (535-556 A.D.), and Northern Zhou (557-580 A.D.) continue to implement painting techniques adopted from Central Asia, layering pigments from dark to light, creating color degradation from


50 Fan Jinshi 樊锦诗, Dunhuang: sichou zhi lu mingzhu fojiao wenhua baozang 敦煌：丝绸之路文化明珠佛教文化宝藏 [Dunhuang: A Pearl on The Silk Road A Treasure Trove Of Buddhist Culture], Zhong Guo Lu You Chu Ban She 中国旅游出版社, 2014. p.36.

51 Qiu Chunxia 仇春霞, “Dunhuang beiliang sanku bihua de xiyu fengge ji bentuhua yanjiu” 敦煌北凉三窟壁画的西域风格及本土化研究 [Murals in Three Northern Liang Caves at Dunhuang: Influence of the Western Regions and Local Style], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2013 No.2

52 Huang Wenkun 黄文昆, “Dunhuang zaoqi sanku ji shibihua jifa” 敦煌早期三窟及湿壁画技法 [The Three Earliest Caves of Dunhuang and Fresco Technique], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2017 No.5
shadow to highlight. Nevertheless, the Buddha and Bodhisattva began to imitate gods and goddesses’ clothing, gesture, and body-shape in contemporary scroll paintings depicting in Taoism mythologies and folklore. Mythological creations mentioned only in ancient Chinese texts were incorporated as decorations. Unlike the small, simple, rectangular layout with a flat ceiling in the Northern Liang cave, a cave constructed in the Northern Wei like Cave 254 carved deep into the conglomerate cliff with a central pillar left in the middle of the spacious complex. The pillar not only serves as a crucial structural support, but also housing four niches on each side where Buddha statues reside, echoing the other smaller niches, sculptures, and the Jakata tales painted in both the Central Asian and central China traditions on every inch of the surface.

Mogao caves grew into its full blossom in Sui (581-618 A.D.) and Tang (618-907 A.D.). A hundred and nine painted caves were constructed in Sui Dynasty. Forty-seven caves were constructed in Early Tang (618-704 A.D.), followed by ninety-nine caves in High Tang (705-781 A.D.), fifty-five in Mid-Tang (781-848 A.D.), and seventy-one in Late Tang (848-907), which gave rise to a total number of two hundred and seventy-two painted caves in the entire Tang dynasty. Caves constructed during the Tibetan occupation of Dunhuang are categorized under the Mid-Tang and Late Tang periods according to central China’s dynasty lineage. Caves in Tang period have expanded into front and back halls, allowing holding more statutes and each in greater scale. Pictorial images on the side walls also involved from the simple, fable-like Jataka tales into a grand pictorial representation of the sutra in-favored at the time, such as the *Nirvana Sutra* and the *Lotus Sutra*. Fifty years of Tibetan occupation of the region during the Mid- and

---

53 Hu Tongqing 胡同庆, “Cong xiwei di 249 ku longfeng jiache tuxiang lun dunhuang yishu de mofangxing” 从西魏第249窟龙风驾车图像论敦煌艺术的模仿性 [On the Imitativeness of Dunhuang Art Based on the Phoenix-Drawn and Dragon-Drawn Chariots Depicted in Mogao Cave 249], *Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research]*, 2014 No.4

54 He Shizhe 贺世哲, “Mogaoku di 285 ku kuding tianxiangtu kaolun” 莫高窟第285窟窟顶天象图考论 [The Investigation on The Celestial Iconographies on the Ceiling of Mogao Cave 285], *Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research]*, 1987 No.2

55 The research presented here is derived from multiple scholarly analyses on Mogao’s iconic caves published on *Dun Huang Yan Jiu*.

56 The numbers are calculated by author based on the Mogao caves’ chart in: Cai Weitang 蔡伟堂, “Chongding mogaoku gejia bianhao duizhaozhao shuoming” 重丁莫高窟各家编号对照表说明 [Clarification on the Correction of Mogao Caves’ Numbering], *Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research]*, 2005 No.6
Late Tang period further provided new themes, sutra, and innovative as well as hybrid Buddhism imageries to Mogao existing collection.57 Henceforth, caves from Sui and Tang Dynasties are frequently attributed to housing the most vivid, lively, and realistic painted figures as well as mud-clay statues, declaring the highest artistic achievement in the history of Mogao.

The collapse of Tang took away both economic and political stability from Central China and its western border regions. Regional military officials soon started taking turns in claiming control. However, the Cao family managed to stay in power in the Mogao region from 924 to about 980 A.D across Five Dynasties (907-960 A.D.) and Northern Song (historians also addressed this period as the Uighur period, due to the strong Uighur influence and control in the region between 960-1036 A.D.). During their regime, the Cao family and their in-laws carved fifty-five caves in Mogao, among which three of the largest and most visited caves today are Cave 98, 100, and 454.58 Nevertheless, far less resources went into cave construction comparing to Sui and Tang dynasties. Modifying, renovating and repainting existed caves did become a more economically viable approach than carving out new caves from the conglomerate cliff body. Thirty-two caves in total were constructed during Five Dynasties. Meanwhile, although the number of caves could be constructed on the cliff face of Mogao was reaching its maximum, a hundred and fifty-four caves built in earlier dynasties were renovated or repainted. Fifteen caves were built in the time span of “Song” dynasty, while a hundred and four earlier caves were repainted. The brief Uighur regime also constructed two caves, with fifteen earlier caves renovated and repainted. Such tradition continued to Western Xia (1036-1227 A.D.), during which twenty-two caves were carved while a hundred repainted.59 Cave paintings in Mogao slowly migrated towards a cohesive and integrated style. Bodhisattva depictions became more repetitive and less distinguishable. Much less variation could be observed among caves.


58 Ma De. 马德, “Caoshi sandaku yingjian de shehui beijing” 曹氏三窟营建的社会背景 [The Social Setting of Building the Three Great Caves by Caoshi], Dun Huang Yan Jiu [Dunhuang Research], 1991 No.6

59 Number calculated based on: Cai Weitang 蔡伟堂, “Chongding mgaokou gejia bianhao duizhaobiao shuoming” 重丁莫高窟各家编号对照表说明 [Clarification on the Correction of Mogao Caves’ Numbering], Dun Huang Yan Jiu [Dunhuang Research], 2005 No.6
established or repainted among the same period. However, the pictorial depictions of the cave donors painted along the corners of the caves faithfully documented the diverse clothing, jewelry, hairstyles, and even ritual activities of the multi-ethnic residences in western regions of China.

In the sixth month of 1227, Mongols annihilated the Western Xia regime. Under Mongol’s over a hundred and sixty years of occupation from 1227 to 1391, only nine caves were build and nineteen caves renovated or repainted in Mogao. After Ming Dynasty (1368-1644 A.D.) finally incorporated the western border regions into its territory in 1404, Mogao caves went completely dormant. Not a single cave was constructed or renovated, until its rediscovery in the late Qing Dynasty (1644-1911 A.D.) around 1900 by a Taoism priest. What remains at Mogao is a collection of fragments from all the remarkable cultures and regimes once flourished in the west Hexi region.

In the same year of 1900, on top of rediscovering of Mogao caves, the Taoism priest Wang Yuanlun, also referred as Abbot Wang, unlocked a fully sealed, painted-over, hidden cave which stored hundreds if not millions of written scrolls and silk, painted sutra inside the south wall of the ordinary looking Cave 17. An enormous amount of ancient records were found documented in multiple languages, including Chinese, Tibetan alphabet, Sanskrit, Kuchan, Sogdian, Turkic, Old Uighur alphabet, Kangju text, etcetera. Many of the ancient languages have not yet been deciphered even today.

In the name of restoration and protection, the newly arrived, self-claimed guardian of Mogao caves decided to sell as many scrolls and manuscripts as possible to collect funds for “cleaning” and “renovating” the long deserted site. Marc Aural Stein, the famous Hungarian-British archaeologist, purchased around forty thousand scrolls from Abbot Wang in his 1907 and 1914 expeditions to western China, including a printed copy of the Diamond Sutra which is the oldest printed text existed. Paul Eugene Pelliot, a French sinologist and orientalist, collected the most significance scrolls left behind by Stein in 1908, as he sat in the library cave and read

---


through a considerable amount of the Classical Chinese and Central Asian manuscripts. By the time Langdon Warner, an American archaeologist and art historian specializing in East Asian art and the possible model for Steven Spielberg’s Indiana Jones, arrived in Mogao in 1924, most of the ancient manuscripts were already gone and scattered all around the world. However, Warner managed to remove twenty-six sections of murals (only five fragments survived the removal and long-distance transfer in a condition good enough to be exhibited) and purchased several statues in an agreement with the Abbot Wang. Meanwhile, unfortunately, scholars and art historians widely agree that the renovated statues from Qing dynasty have very primitive techniques with minimal artistic value comparing to its predecessors.

Stein’s collection now stored in the British Museum in London, with Pelliot’s in Bibliothèque Nationale de France in Paris, and Warner’s the Harvard Art’s Museums in Boston. The remaining Mogao manuscripts in the public domain scattered among the National Library of China in Beijing, the Institute of Oriental Manuscripts in St. Petersburg, the Berlin-Brandenburg Academy of Science and Humanities, the Dunhuang Academy at Dunhuang, Ryukoku University in Kyoto, and the Research Institute of Korean Studies in Seoul.62 Because the majority volumes of the Dunhuang manuscripts no longer are located at the Mogao Caves, the preservation, interpretation, and exhibition of the Dunhuang manuscripts will not be intensively discussed in this research.

In the 1930s and 1940s, because of the massive international exposure, Chinese artists like Li Dinglong, Zhang Daqian, Wang Ziyun and Chang Shuhong were drawn to Mogao caves and started to paint and distribute facsimiles of the Mogao wall paintings in an effort of requesting governmental attention and resources to protect the site. In 1944, National Research Institute on Dunhuang Art was established by the Republic China government located and right next to the Mogao caves to prevent further destruction of the remaining artifacts and artwork. However, due to World War II and the Chinese Civil War followed immediately after, no resource could be provided to heritage protection and preservation. After the establishment of the People of the Republic of China in 1949, the institute changed its name to Research Institute on Cultural Relics of Dunhuang in 1950 and to its current name the Dunhuang Research Academy,

62 The International Dunhuang Project: The Silk Road Online. http://idp.bl.uk
or Dunhuang Academy, in 1984. What has not changed is its role of protection and dedication to
the Mogao caves and the Mogao collection around the world.63

3.3 The Significances of the Mogao Caves

Designated as a World Heritage Site in 1987, the nomination report of the Mogao Caves
only has three pages. Nevertheless, this concise report provided an important and authoritative
recognition of the universal values of the Mogao Caves. Criteria I, II, III, IV, V, and VI are
attributed, stressing the cultural and historical values of the site. One top of attributing criteria I
to VI to the Mogao Caves, the World Heritage Committee Report in 1987 urged that “the
Chinese authorities to take all necessary measures to safeguard the very vulnerable rock site of
Mogao Caves” and that “the Committee would like to be kept informed of all action undertaken
to this end.”64 Such an authoritative tone and imposing gesture paved the way for the intense
preservation planning, conservation projects, and the infrastructure’s construction and
development at the Mogao Caves as well as the city of Dunhuang in the following decades. To
closely examine Mogao Caves’ significances, World Heritage sites’ selection criteria I to VI are
listed below in comparison to the justification of significance in the Mogao Caves nomination
report and its revisions submitted in 2003 to the World Heritage Convention. The layers of values
attributed to the Mogao Caves and the justification of significance proposed in diverse
documents will be revisited and contested in dialogue with site interpretation and presentation in
later chapters.

World Heritage Site Selection Criteria I to VI65:

Criteria I: to represent a masterpiece of human creative genius;
Criteria II: to exhibit an important interchange of human values, over a span of time or within a cultural
area of the world, on developments in architecture or technology, monumental arts, town-planning or
landscape design;
Criteria III: to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization
which is living or which has disappeared;

63 Fan Jinshi 樊锦诗 “shouwang dunhuang” 守望敦煌 [Keeping Dunhuang], Zou Jin Dun Huang 走近敦煌
[Walking Into Dunhuang], 2010 p.001-036


Criteria IV: to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
Criteria V: to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
Criteria VI: to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria).

Justification of the Mogao Caves’ Significance (1987)⁶⁶:
Criteria I: The group of caves at Mogao represents a unique artistic achievement as much by the organization of space into 492 cells and temples built on five levels as by the product of more than 2000 sculptures⁶⁷ carved out of the rock walls, then covered with clay and painted, and the approximately 45,000 square meters of murals, among which are many masterpieces of Chinese art.
Criteria II: For a thousand years, from the period of the Northern Wei (386-534) to that of the Mongol dynasty of the Yuan (1276-1368), the caves of Mogao played a decisive role in artistic exchanges between the Middle Empire, Central Asia and India.
Criteria III: The painting at Mogao bear exceptional witness to the civilizations of ancient China during the Sui dynasty (cave no. 302 contains one of the oldest and most vivid renderings of the Silk Route theme; the mural depicts a camel pulling a cart), the Tang dynasty (workers in the fields in cave no. 23 and a line of warriors in cave no. 156), and the Song dynasty (the celebrated landscape of Wutaishan in cave no.61 is an incunabular example of cartography, with its cavalier view of the region, where nothing has been left out - mountains, rivers, cities, temples, roads and caravans are all depicted).
Criteria IV: The Caves of a Thousand Buddhas⁶⁸ constitute an outstanding example of a Buddhist rock art sanctuary.
Criteria V: Still occupied by Buddhist monks from the end of the 19th century up to 1930, the rock art ensemble at Mogao, administrated by the Dunhuang Cultural Relics Research Institute, preserves the example of a traditional monastic settlement.
Criteria VI: The caves are strongly linked to the history of transcontinental relations and that of the propagation of Buddhism in Asia. For centuries the Dunhuang oasis, near which the two branches of the Silk Route forked off, enjoyed the privilege of being a relay where not only merchandise was traded, but ideas as well, as is testifies to by the Chinese, Tibetan, Sogdian, Khotan, Uighur and even Hebrew manuscripts found within the caves.

Justification of the Mogao Caves’ Significance (Revisioned in 2003)⁶⁹

---


⁶⁷ Sculptures at the Mogao Caves are preserved through in-kind restoration.

⁶⁸ The Caves of a Thousand Buddhas is another name of the Mogao Caves.

Criteria I: The Caves display unique artistic achievements. The space of the 492 caves were divided into five layers with over 2,000 sculptures applied with color mud on rock walls and 45,000 m² of murals. Many of them are elaborate works of Chinese art.

Criteria II: During over 1,000 years from the Northern Wei Dynasty (386-534) to Yuan Dynasty (1276-1368), Mogal Grottoes played a decisive role in the artistic exchanges between central plains and Central Asia and India.

Criteria III: The murals in the caves accidentally witness the brilliant ancient Chinese culture from the Sui Dynasty (the mural in Cave 302 depicting a camel drawing a cart is the earliest and most vivid picture about the Silk Road), the Tang Dynasty (the mural in Cave 23 shows people working in the field and the mural in Cave 156 draws a team of chariots) and the Song Dynasty (the famous landscape of Wutai Mountain in Cave 61 is the unparalleled example of picture composition. From a religious point of view, it depicts rivers, mountains, cities, temples, roads and even canary birds, all being parts of the boundless universe).

Criteria IV: The Thousand Buddha Cave is one of the outstanding representatives of Buddhist cave art.

Criteria V: By the end of the 19th century, the Caves have been in the possession of monks and they have not been under the management of Dunhuang Cultural Relics Academy until the 1930s. Therefore, they keep the traces of monk inhabitation.

Criteria VI: Mogal Grottoes are closely linked with the come-and-go between the east and the west in history and the dissemination of Buddhism in Asia. For centuries, Dunhuang and its nearby areas has been at the crossroad of the Silk Road and serving as the place of alternation between the new and the old in both trade exchanges and in ideology. This has been proven by documents in the languages of Han, Tibet, Sute, Yutian, Huihu and even Hebrew discovered in the caves.

The 2003 version of justification, the internationally agreed-upon nomination “Silk Road” is used in place of “Silk Route” in the 1987 statement, echoing the growing attention and efforts in illuminating the historical Silk Road. The description of Dunhuang changes from a destination where the Silk Route “pork off” to a “crossroad” of the Silk Road, emphasizing a sense of merging and blending of cultures coming from all directions. The word “Chinese” is also used more cautiously in the 2003 statement. It becomes an umbrella term to broadly categorize the sum of art and culture exhibited at the Mogao Caves, claiming the cultural ownership of the site. Meanwhile, specific materials are referenced according to their ethnic origins such as Han, Tibet, and Huihu, illustrating a long tradition of ethnic diversity and minority diversity in the region.

The Mogao stand stone cliff face that houses 735 cave structures in total, among which 492 were painted cave-temples and the remaining were living space for monks and laborer. As

---

70 “Mogal” as in the original document.
demonstrated by both of the statements of significance, the caves with Buddhism imageries and sculptures are emphasized as the representation of human creative genius. The artistic value and the historical value of Mogao are highlighted across the proposed justifications. The justification for criteria V changes the most between the two versions. “Traditional monastic settlement” at the Mogao Caves could simultaneously refer to two entirely different settlements. The ancient monastic settlement would indicate the monks living in the caves. A more recent tradition, specified as from late 19th century to 1930s, would indicate the monks living in the temple next to the caves. The justification for criteria V listed in the 1987 statement indicates the existence of the “traditional monastic settlement” while leaving its condition unstated. In the 2003 statement, criteria V acknowledges that the traditional way of living has already seized to exist and only traces are preserved and protected. The significance of the site as a ritual space was not accentuated. Overall, the 2003 revision toned down the language that once filled with excitement and assertion in 1987’s nomination report.

Beyond the overarching significances recognized by the World Heritage Convention, the artistic values and the historical values of the Mogao Caves is best demonstrated by the immense amount of scholarly research published by the Dunhuang Academy. “Water-Moon Avalokitesvara” is a well-known theme in Mogao Caves painting which required the painters to master Chinese traditional portraits and landscape techniques at the same time. Shi Zhongping’s formal analysis on “Water-Moon Avalokitesvara” imageries illustrated the transformation of plantation, stone, water and figurative depictions across centuries, reflecting the shifting interpretation of the same sutra over time.71 “The contest between Sariputra and Raudraksa” was another popular motif that could both demonstrates the wealth of cave owners and the mastery of painters. The original story vividly describes a series of competing scenes between the evil Sariputra and the good Raudraksa using their fantastical power. Gu Shuyan connects the emergence, disappearance, and reappearance of such motif with the prevalence of dramatic folk literature in the Later Tang, Five Dynasties, and Song Dynasties. She further suggests the growing popularity of Mahayana Buddhism in the High Tang and Middle Tang might have been

71 Shi Zhongping 史忠平, “Dunhuang shuiyue guanyintu de yishu” 敦煌水月观音图的艺术 [The Art of Dunhuang’s “Water-Moon Avalokitesvara” Paintings], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.5
surpassed the interest in “the contest between Sariputra and Raudraksa” that originated from the *Dama-murkha Sutra*, a sutra represented the Hinayana Buddhism. Due to the rate of illiteracy in the early periods, Gao Haiyan, Chen Qi, and Chen Haitao conclude that wall paintings depicting Jakata stories have been using creative compositions to direct viewers to decipher the spiritual values in Buddhism ideologies, such as “filial piety” and “alms-giving.” Apart from the major Jakata tales and sutra, there are also local twists on classical Buddhism stories unique to the Mogao region. An interesting study on the imps or goblins like creatures in Mogao’s wall and scroll paintings by Wang Fang has shown that the evil-child eaters Atavika, later conquered and converted by the Buddha, became the kind Yaksa to protect children. These special Yaksa took their extravagant color and dramatic contour from Kucha and Khotan Atavika traditions but special and joyful souls only at Mogao. Meanwhile, from a pure craftsmanship point of view, a meticulous comparison between shading techniques from Greco-Roman wall painting traditions and haloing techniques (or water polishing techniques) from the ancient Indian conducted by Gu Yin has tried to determine how light and shadow were orchestrated on the stylistically Central Asian Buddhism figures. The stylistic analysis done by Chen Qingxiang for the Eight-Pagoda imagery in cave 76 has also reflected a merging between the Gupta, Pala, Tibetan, and Chinese

---

72 Gu Shuyan 顾淑彦, “Dunhuang shuku zhong laoduacha doushengbian xiaoshi yu zaixian yuanynin zaitai” 敦煌石窟中牢度叉斗圣变消失与再现原因再探 [On the Disappearance and Reappearance of the Illustration of the Contest between Sariputra and Raudraksa in the Dunhuang Caves], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2016 No.3

73 Gao Haiyan 高海燕, “Shixi sheshen weihu bensheng yu shanzi bensheng tuxiang de duiyang zuhe guanxi — jian lu maijishan di 127 ku gongdezhu” 试析舍身饲虎本生与睒子本生图像的对应组合关系 —— 兼论麦积山第 127 窟功德生 [An Analysis of Corresponding Relationship in Image Combination of the Illustrations of the Mahasattva Jātaka and the yāmaka Jātaka —With a Discussion of the Donors of Cave 127 at the Maijishan Grottoes], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2017 No.5; Chen Qi and Chen Haitao 陈琦 陈海涛, “Mogaoku di 254ku gerou maoge tu de yishu biaoxian tezheng” 莫高窟第 254 窟割肉贸鸽图的艺术表现特征 [On the Characteristics of the Artistic Expression of the Sibi Jataka in Mogao Cave 254], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2015 No.5

74 Gu Yin 顾颖, “Lun xiyu yangshi aotufa yu tianzhu yifa” 论西域样式凹凸法与天竺遗法 [On the Three-Dimensional Method and the Inherited Tianzhu Method of the Western Regions], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2017 No.2
pictorial tradition. The Tusita Heaven painted in the Northern Liang cave 275 is also believed to be an attempt of copying the imported Gandharan Buddhist sculptures while referencing the architectural depictions of the Queen Mother of the West in Chinese mythology.

Mogao caves paintings also include pictorial records of major historical events. The “Outing Scene of Zhang Yichao” in cave 156 has been used by Zhu Xiaofeng as a reference of recreating musical instruments in ceremonial bands during Tang dynasty. Sha Wutian proposes that music dancing scene at the lower portion of the Bhaisajyaguru sutra in Cave 220 reflects the contemporary celebratory activities at evening events.

Besides historical events and sutra stories, mural painters would paint the donors of whom ordered the construction of a family or community cave-temple structure on the lower level of the cave, right beneath the Jakata tales, sutra paintings, or sometimes circling the central pillar. Since Tibetan occupation period, family members that had been past away were often painted on the east wall of the cave, right next to the entrance. Chen Ming claims such phenomenon combines the Taoistic mythologies of “ascending to heaven and becoming immortal” from Han dynasty with the “being reborn into the Pure Land (Sukhāvatī)” in Buddhism. By doing so, the highly-valued ancestral temple in Chinese tradition merged into the Buddhism temple and became one, showcasing the cross-cultural influence embedded in regional

---

75 Chen Qingxiang 陈清香, “Dunhuang mogaoku di76ku batabian fozhuan tuixiang yuanliu tantao” 敦煌莫高窟第76窟八塔变佛传图像源流探讨 [A Study on the Source of Images of Buddha’s Life Story in the Eight-Pagoda Illustration in Mogao Cave 76], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2017 No.2

76 He Zhiguo 何志国, “Tianmen, tiangong, doulv tiangong — Dunhuang di275ku mile tiangong tuxiang de laiyuan” 天门·天宫·兜率天宫—敦煌第275窟弥勒天宫图像的来源 [Heavenly Gate, Heavenly Palace, and Tusita Heaven— On the Iconographical Origin of Maitreya’s Tusita Heaven in Mogao Cave 275], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2016 No.1

77 Zhu Xiaofeng 朱晓峰, “Zhang Yichao tongju chuxing tu yizhang yuedui yueqikao” 《张议潮统军出⾏图》仪仗乐队乐器考 [A Study on the Ceremonial Band and Musical Instruments in the “Outing Scene of Zhang Yichao], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.4

78 Sha Wutian 沙武田, “Yifu zhengui de chang’an yuewu tu — yi mogaoku di 220ku yaoshi jingbian yuewutu zhong deng wei zhongxin de jiedu” 一幅珍贵的唐长安夜间乐舞图 ——以莫高窟第220窟药师经变乐舞图中灯为中心的解读 [A Valuable Picture of an Evening Music and Dancing Scene in Chang’an—An Interpretation Focusing on the Lamps in the Music and Dancing Scene of the Bhaisajyaguru Sutra Illustration in Mogao Cave 220], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.5
ritual practices. Clothing, hair styles, and other decorative elements not only serve as essential elements in constructing cultural identification through accordant aesthetic tastes but also echo the social roles and societal expectation of the illustrated figures. In 2007, funded by the national research project, Xie Jing and Xie Shengbao embarked to distinguish the identity of the Uighur donors from the Western Xia donors based on the decorative detail among their visually resembled costumes. Lu Xiwen compares the amount of dangling hair ornaments worn by female donors in different social rankings across dynasties and regional minority regimes.

Because much of the symbology and scenes depicted on murals have yet to be deciphered, a substantial amount of scholarly research is on identification. For example, an elephant-riding Bodhisattva and a chanting Bhiksu scenes painted in cave 280 are traced to the Lotus Sutra by Wang Huimin. A decorative monstrous element that was constantly referred to as the tao-tie motif, “the Monster of Greed” in Chinese mythology, has been corrected to be the kirtimukha, “glorious face” in Buddhist culture, when it is compared to historical photos of the similar elements in Bamiyan caves and Ajanta Caves. Mural and sculptural depictions are deciphered mainly as historical artifacts. Few studies systematically explain the Buddhism ideology and cosmology constructed in each cave. The operation of the belief system remains a myth. A study done in 2015 by Liu Yanyan and Wujun combines the pictorial record on cave 23 east ceiling slope and the regulations of Buddha worshiping within Buddhist text, concluding

79 Chen Ming 陈明, “Dunhuang mogaoku dongbimen shang gongyang xiang de tuxiang yiyi” 敦煌莫高窟东壁门上供养像的图像意义 [An Iconological Study of the Donor Figures on the Wall above the East Entrance of the Dunhuang Mogao Grottoes], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2016 No.6

80 Xie Jing, Xie Shengbao 谢静, 谢生保, “Dunhuang shiku zhong huihu, xixia gonyangren fushi bianxi” 敦煌石窟中回鹘、西夏供养人服饰辨析 [The distinction of Uighur’s and Western Xia’s donors’ costumes (painted) in Mogao Caves], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2007 No.4

81 Lu Xiwen 卢秀文, “Dunhuang funnv shoushi buyao kao” 敦煌妇女首饰步摇考 [A Study on the Dangling Ornaments (Buyao) Worn by Dunhuang Ladies], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.2

82 Wang Huimin 王惠民, “Mogaoku di 280ku pus a chengxiang tu he biqiu songjiu tu de zaijiedu” 莫高窟 280窟菩萨乘象图和比丘诵经图的再解读 [Reinterpreting the Images of a Bodhisattva Riding an Elephant and a Bhiksu Chanting Scriptures in Mogao Cave 280], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.1

83 Ma Zhaomin 马兆民, “Dunhuang Mogaoku di285ku ‘tianfu zhimian’ (kritimukha) kao” 敦煌莫高窟第 285窟“天福之面” (kritimukha)考 [A Study on Kirtimukha in Mogao Cave 285 at Dunhuang], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2017 No.1
that the worshippers would circle the central pillar and Buddhist towers clockwise. This study is among the few research items published that deal with on ritual practice. This critical and descriptive conclusion is eventually incorporated into the most recent documentary about the Mogao Caves that now plays at Mogao’s digital center, demonstrating an ancient Buddhist practice. Unlike in early years with much less visitation load, visitors are no longer allowed to circle around any of the central pillar caves at Mogao out of conservation and protection purposes.

Conservation and preservation issues of the Mogao Caves will be closely examined in the following chapter. Meanwhile, the materiality remaining at the Mogao Caves still hold paramount archaeological values. Because traditional Chinese architectures were built in wood, ancient architectures found themselves almost impossible to survive across centuries. However, at Mogao Caves, because of the desert environment, archaeologists discover the remains of wooden doors at Dunhuang could be dated far back into time. The brackets at cave 251 are dated back to the Northern Wei. The door of cave 430 is dated to Northern Zhou. And the eaves at cave 437 is from Song dynasty. The Sanqing Gong Taoism temple built in Qing dynasty right across cave 17, the library cave, is among the youngest wooden architectures. The Sanqing Gong Taoism temple now is functioning as the Exhibition Hall of the Dunhuang Library Cave, displaying archaeological artifacts with copies of the manuscripts and scroll paintings found in cave 17.

Moreover, with national funding and technological assistantship from the Getty Institute and using the Mogao Caves a magnificent resource in wall painting and sculptural conservation practices, the conservation department of the Dunhuang Academy has developed materials designed specifically for long-term preservation and maintenance of earthen sculptures and earthen-based wall paintings in a dry climate. Li Zuixiong, Zhao Linyi, and Li Li produced a set

---

84 Liu Yanyan, Wu Jun 刘艳燕 吴军, “Mogaoku lifo yishi de zuoxuan yu youxuan” 莫高窟礼佛仪式的左旋与右旋 [Clockwise or Counter-Clockwise Circumambulation in the Buddha Worshipping Ceremony at the Mogao Grottoes], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.6

of formula for modifying physical properties of the traditional earthen architectural materials in the northwestern China, the Aga soil and the Ginger net. Experiment results demonstrate that the modified substances acquire higher porosity, mechanical intensity, and better permeability stability. The modified substances also becomes more resistance to freeze-thawing, weathering, wind erosion, and the erosion of alkalinity. Henceforth, the modified Aga soil and Ginger net are tested to the most suitable substances for grouting conglomerate rock fracture, ameliorating the issues of instability among conglomerate cliff faces. After years of wall painting restoration and stabilization attempts and controlled experiments, Dunhuang Academy proposes that the consolidation of disintegrated between earthen plaster and paint layer could be best achieved by the application of 1.5% (w/w) ZB-SE-3A modified acrylic resin and 1.5% (w/w) ZB-SE-1 silicone-modified acrylic resin at 1 to 1 ratio. The ZB-SE series adhesives were developed by the Dunhuang Academy specifically for based-layers reinforcement of both in-situ and relocated wall paintings. The consolidation and reinforcement of the support structure could be achieved by injecting 15% (w/w) ZB-SE-1 silicone-modified acrylic resin into support with 10 to 15 centimeters, multi-injection points steel needles. This formulated adhesive was successively executed also on wall paintings recovered from the archaeological excavation at Dharma Valley in Khotan, Xinjiang. The conservation department at Dunhuang Academy is now a national resource. Professionals can submit applications to ask Dunhuang Academy facilitating any wall painting conservation-related project, ranging from archaeology excavation to periodical monitor and maintenance. Henceforth, even a study on the usage of menthol (???) for the emergency

86 Li Zuixiong, Zhao Linyi, and Li Li 李最雄 赵林毅 李黎, “Shaliyan shiku yanti liexi guanjiang xin cailiao yanjiu” 砂砾岩石窟岩体裂隙灌浆新材料研究 [On New Fracture Grouting Material for Conglomerate Grottoes Rock], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2011 No.6

87 Fan Zaixuan, Xue Zhikun, Tang Wei, Aili Abudula, Yin Xuan 樊再轩 薛止昆 唐伟 艾力·阿不都 殷煊, “Xinjiang hetian damagou yizhi chutu bhua xiuju shiyan baogao” 新疆和田达玛沟遗址出土壁画修复试验报告 [Restoration Experiments on the Wall Painting Excavated from the Dharma Valley in Khotan, Xinjiang], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2013 No.1
removing of Tang tomb moral in Xi’an was done in collaboration with the Dunhuang Academy in 2016.\textsuperscript{88}

The Mogao Caves have gradually evolved into the model of cultural heritage site management, conservation, and preservation in China with the guardianship of Dunhuang Academy. The Mogao Caves was nominated to the World Heritage list as a representation of its type because it signifies the persistent influence of Buddhism in Dunhuang. Nevertheless, the persistent and popularity of constructing Buddhist cave-temples could only be comprehensively discussed when numerous much smaller Buddhist cave sites are taken into considerations.

Thirty-five kilometers west of Dunhuang, the West Thousand Caves of Buddha houses sixteen smaller cave-temples from Wei to Late Tang period. The Yulin Caves at Guazhou in Gansu province has forty-three cave-temples range from Tang to Yuan dynasties. The Five Temples at Subei in Gansu also have five cave-temples that were once heavily worshipped by local residents and damaged intensively by the smoke from incense burning. Though much less visited than Mogao, due to geographic proximity, the West Thousand Caves of Buddha, Yulin Caves, and the Five Temples at Subei are part of the Dunhuang Academy’s responsibility in preservation, conservation, and management. In northwestern China, beyond Gansu provinces, the Xinjiang province and Tibet encompass numerous significant cave-temple sites as well. The Kizil Caves on the edge of the Tarim Basin in Xinjiang houses 236 cave-temples from the 3rd century to the 9th century, bearing historical testimony to the ancient Kucha. The Bezeklik Caves in Xinjiang’s provincial capital, Turpan, envelopes 87 caves excavated during 10th to the 13th centuries that demonstrate the flourishing culture of Oocho Kingdom (or the West Uyghur Kingdom). Together with other twenty sites in China and eleven sites in Kazakhstan, Kizil Caves and Bezeklik Caves are added to the World Heritage List in 2014 as part of the transboundary site \textit{Silk Roads: The Routes Network of Chang’an-Tianshan Corridor}.\textsuperscript{89} The rest of the cave-temples with

\textsuperscript{88} Han Xiangna, Zhang Bingjian, Luo Hongjie, Huang Xiao, Su Boming, 韩向娜 张秉坚 罗宏杰 黄晓 苏伯民, “\textit{Bohechun zai muzang bihua qiangjiuxing jiequ shang de yingyong yanjiu}” 薄荷醇在墓葬壁画抢救性揭取上的应用研究 [A Study on the Use of Menthol in the Emergency Removal of Tomb Murals], \textit{Dun Huang Yan Jiu} 敦煌研究 [Dunhuang Research], 2016 No.5

deteriorating murals might be largely unfamiliar to the general public and have not yet been systematically protected, available examples include: the Kumtura Caves, Senuusaimu Caves, Taitaier Caves, Mazhaboha Caves, Kizilgaha Caves, Touhukeaiken Caves, and Ae Caves.

Although murals and sculptures at the smaller cave sites are more dramatic and characteristics in regional artistic expressions and cultural representation, these minor caves sites are much less known than the Mogao Caves. The cave-temple sites that are protected, under systematic administration and opened to visitation mimic the visitation process and management at the Mogao Caves. Though limited by resources in each scenario, the preservation planning at Mogao Caves is perceived as the structural model for all other cave-temples cultural heritage in northwestern China.

Today, the impact of the Mogao Caves in cultural heritage preservation in China is paramount. However, in Mogao Cave’s World Heritage 1987 nomination report and the committee report, the language reveals a strong sense of urgency concerning the protection and conservation of the fragile material fabric. With the international attention and thirty years of partnership with the Getty Foundation, Mogao Caves gradually becomes more than just an archival resource. At the regional level, as mentioned earlier, the Mogao Caves is one of the most important economic resources for the city of Dunhuang. It promotes the cultural tourism industry in the west Hexi region and accelerates the establishment of preservation as well as management system at minor heritage sites. At the national level, the Mogao Caves is perceived not only as the embodiment of centuries-old cross-cultural communications in northwestern China, but also as a platform for modern China to meet the world. Over thirty years the partnership between the Getty and the Dunhuang Academy has fostered several generations of conservation scientists and an institute best equipped to preserve wall painting and earthen architecture in China.

Geographically largely based on the ancient silk roads, “the Belt and The Road” development strategy proposed in 2013 have pushed the Mogao Caves and studies on Silk Road sites to another peak. Cultural heritage is not only a product but also an asset. The utilization of such asset is the main issue in preservation planning for each heritage site in each era. The Mogao Caves is an important resource in contemporary China, but it is also contested by tremendous challenges.
Chapter IV: Preservation Issues and Existing Challenges

After a brief introduction to the history of Mogao Caves, its broader context in the Dunhuang region, and current visitation experience at the site, this chapter seeks to decipher the preservation issues and existing challenges that the Mogao Caves complex is constantly facing. In contemporary cultural heritage preservation discourse, material conservation and site integrity is still situated at the core of a preservation project. In the case of Mogao, the conservation and protection of the inherently fragile materials in-situ have always been regarded as the priority by Dunhuang Research Academy and its international collaborators. Generations of researchers have been deeply embedded in searching and developing the most suitable conservation materials and techniques in stabilizing the condition, slow the rate of deterioration, and resolving its causes.

Meanwhile, to preserve a site means so much more beyond safeguarding the material fabric. Cultural heritage preservation should be a means to an end or multiple ends. Suggested by a conservator at Mogao when we were chatting casually as he conducted structural reinforcement for a small cave (which can at most contain five people) at the bottom of the cliff face, he said “since we basically re-consolidate every single cave and mural every other ten, twenty or thirty years, what would be the end goal if they are not being examined and studied in the meantime?” The value and significance of a cultural heritage site can only be conveyed and sustained through being continuously valorized and with its significances unceasingly being explored in response to the contemporary social context. The content of Mogao Caves has been made available to the general public mainly in three ways: academic research and conferences led by the Dunhuang Academy, tourism and visitation, and national as well as international travel exhibitions in universities and major cities. However, the value and significance of the site have yet to be efficiently elaborated or systematically constructed beyond the World Heritage nomination as well as the existing, limited interpretation presented on site.

On May 1st, 2016, the Digital Dunhuang (https://www.e-dunhuang.com/index.htm) was launched, adding a fourth channel to the picture. The website responds to the latest trend of experiencing cultural heritage via digital recreations like virtual reality and high-resolution panorama images. And it marks the beginning of a possibly massive online community revolving
around Dunhuang as it opens up a registration platform in 2018. Nevertheless, there has yet to be signs indicating this new channel would be able to constructively alleviate the challenges the Mogao Caves is currently facing. Thus far, the digital platform is only revealing thirty caves and their content in the form of high resolution photo-documentary and still having difficulties in linking interpretation and explanation to current format of display.

The preservation issues and challenges presented in this chapter are drawn primarily from my research, observation, statistics generously shared by the Dunhuang Academy, and interviews"participated by the diverse parties of interest on and off-site, highlighting recurring topics and themes. Although this research is conducted in a short window of timeframe with limited sample size, the results seem to be indicating what may be encountered when the scope was expanded.

4.1 Material Conservation

Like in other cave sites worldwide the fragility of the hundreds-year-old wall paintings and sculptures is the major conservation challenge at the Mogao Caves. Although the survival of the remaining materials is largely contributed to the intensively dry, desert climate of the west Hexi region, the steady, dry climate makes the preserved materials extremely sensitive to external factors such as humidity fluctuation. The report produced by Getty Conservation Institute and Dunhuang Academy together on the conservation project of Cave 85 characterizes the Mogao Caves as in “typical desert environment.” The report records that between 1990 and 2008 the average monthly ambient temperature ranged in July from 24°C to 28°C (75.2°F to 82.4°F) and from -15°C to -4°C (5°F to 24.8°F) in January. The overall relative humidity at the site appears to be higher in winter (around 50%RH) and lower in summer (around 20%RH).

Meanwhile, based on monitor data in Cave 85, the report suggests that such a situation that happens in the open-air cave zone outside of the caves is reversed inside the caves. In summer, the temperature inside the caves tends to be much lower. Air flows into the caves, and

90 Full disclosure of the semi-structure interviews with anonymous visitors is included in appendix.

such cooling process could bring the relative humidity to 41% when the outside relative humidity is only 20%. At the meantime, in winter, although the relative humidity in the opened-air cave zone can reach 50%, the circulation within the caves become a heating process that could reduce the relative humidity to 4%. Henceforth, the humidity level inside the caves could only be accurately reflected through humidity ratio, which is calculated based on relative humidity and temperature. The humidity ratio stands for the amount of water vapor in ratio with the amount of dry air. Getty and Dunhuang Academy’s research reveals that the humidity ratio in the caves is much higher (6.6g/kg; 2.99g/lb) in August than (1g/kg; 0.4g/lb) in January and February. Mogao also experiences rain episodes in summer, which would increase the humidity ratio to 8-18g/kg. But after 24 hours, the humidity ratio would drop back instantly to the typical value of 5-7g/kg, unless in atypical months every other three or four years when major rainfall continuously occurs. A drastic shift in humidity ratio could cause the materials to expand and contract drastically, resulting in minor cracks and flaking. Though the west Hexi region has to endure sandstorms in the spring, the triangular wind fence designed and erected in 1980s to 1990s by Dunhuang Academy on top of the cliff, facing the opposite direction of Mogao, kept away the majority amount of sand.92 Thus far, summer and the major rainfall episodes in summer are among the major conservation challenges for the Mogao Caves. Although summer is the peak visitation season for Mogao Caves, in the summer of 2017, the management team has managed to temporarily shut down the visitation and re-distribute visitors to other days and times at the occurrence of any rain episode.

Intrinsic issues triggered and extravagant by the environmental fluctuations expose themselves on surfaces as diverse syndromes as mural deteriorated and disintegrated. Sculptures are relatively more isolated in relation to its environment than the wall paintings. Upon emergency conditions, sculptures can be removed from the site and treated in labs, while wall paintings cannot. The removal of a piece of wall painting could result in an unredeemable loss to its physical integrity and a removed wall painting could by no means be reattached to its original base. If conditions allow, wall paintings should be conserved in-situ. Nevertheless, because the

wall paintings are physically part of their “situ,” treating a deteriorated mural implies proposing treatment or revision for the entire cave and its semi-enclosed micro-environment. Henceforth, the conservation of murals has long been regarded among the most difficult tasks and the priority in the majority scientific research done at the Mogao Caves.

A wall painting could be categorized into its conglomerate base, the earthen plasters applied as the surface preparation for the final paint layer, and paint layer. The earthen plaster can be further divided into coarse plaster and fine plaster, among which the coarse plaster serves as a medium that can grasp firmly to the conglomerate while providing a smoother platform to the final layers. The paint layer can also be further divided into the ground layer and paint layer. The ground layer encompasses the finest, smoothest preparations materials and the line drawing

93 “Figure 13.4” from Wong, Lori, et al. The Conservation of Cave 85 at the Mogao Grottoes, Dunhuang: Development and Implementation of a Systematic Methodology to Conserve the Cave Wall Paintings and Sculpture. Getty Conservation Institute, 2011. p.155
for the final image. Such differentiation is typical common murals at the Mogao Caves and can be best illustrated by the diagram above (Figure 4.1).

As illustrated by the diagram, because each layer has a different material composition and properties with its adjacent layers, the natural, cyclical expansion and contrast could easily cause separation. If the separated layers entrap water or salt in the existing gaps, complex complications will occur as deterioration factors accumulate. Broadly speaking, deteriorations of a mural painting in-situ (assuming that the conglomerate base remains structurally intact) can be divided into two categories: the in-depth deterioration focuses on the plaster layers, and the surface and sub-surface deterioration happening at the paint layers. In-depth deterioration includes plaster detachment and plaster disruption. Plaster detachment is one of the most dramatic and detrimental deteriorations since it marks the loss of adhesion between the coarse earthen plaster and the conglomerate base. The loosened section might be elevated, detached and bulged out of the surface, or it could have already fallen off and shattered on the ground due to gravity or strong vibration. The main cause of plaster detachment is the loss of adhesion in its original materials of construction or the original methods of construction. Intrinsic failures can also escalate with the impact of temperature and humidity fluctuation and result in plaster deformation. Meanwhile, plaster disruption marks the end of the earthen plaster’s lifespan. Though the earthen plaster might still be attached to the conglomerate base and the paint layers, it has gradually lost all its cohesion and started to disintegrate. Though plaster disruption is visually much less dramatic than plaster detachment, it is more difficult to resolve. Detachment usually occurs in sections, while the disintegration process drives the material into a powder state. Nonetheless, problematic as they are, each scenario could be exponentially intensified and complicated by the mobilization of soluble salt entrapped in gaps and voids.

Surface and sub-surface deterioration include flaking, exfoliation, punctate loss, crater eruption and loss, and color change. Flaking stands for localized lifting and detaching of the ground layer or paint layer. It is a common result of different materials’ cyclical expansion and contraction, and it is typically non-progressive. Exfoliation describes a section of the wall painting where a massive amount of flaking concentrates. Exfoliation can be induced by a complex group of factors, such as salt activity in the fine plaster just beneath the paint layer and
the loss of cohesion at the ground layer. Dramatic mobilization of soluble salt is primarily driven by the sudden increase and decrease of the humidity level. Rain episodes in summer that drastically modify the humidity ratio over a short period of time can trigger a sudden explosion of exfoliation and disruption, leaving the impacted profoundly vulnerable and fragile. Without timely consolidation, even the natural circulation of air could blow away disintegrated materials. Punctate loss is another salt-triggered deterioration. It tends to occur alongside disruption and exfoliation marking a “salt-active” territory. Punctate loss exhibits as small rounded holes with diameters less than 1 millimeter. It signals a process that has initiated with salt migration from deeper layers to the surface, blocked by the fine plaster layer and/or paint layer, crystallized, and finally pushed off the remaining materials on top of it. Regions, where punctate loss is prevalent, indicate chronic salt accumulation and salt migration might be happening in base layers. On the other hand, crater eruptions that also result in similar circular but crater shape losses are triggered by the impurity (anhydrite) in earthen plaster. The hydration of anhydrite expands in volume and forms gypsum. Compared to salt-induced deteriorations, crater eruptions are rarely found in caves at Mogao, demonstrating the presence of incredibly remarkable and meticulous ancient earthen plaster works.

Color change is the most well-known material deterioration phenomenon among visitors at Mogao for its prevalence and its dramatic visual effect. The change of color could be driven by the mineral pigment’s alteration or the degradation of the organic materials such as the colorant and binder. Alternations of the inorganic, mineral pigments typically result in the strongest visual effects. Lead white ($\text{PbCO}_3 \cdot \text{Pb(OH)}_2$) is frequently found to portray skin color of the figural depictions at Mogao. Mixed with a tint of any available red pigment, lead white could generate a variety of lively skin tones. However, oxidation of lead-based pigments across centuries has substantially altered the white color into dark brown (plattnerite, $\text{PbO}_2$). Henceforth, the highly contrasted, dark color Buddhism imageries at Mogao are used by the guides and docents as entry points to talk about the necessity and difficulty of heritage conservation and preservation, though color alteration has the least impact on the material integrity and enriched the diversity of Buddhist art with an unexpected aesthetics. Besides the color degradation of lead white, lead red is also affected by its lead-based component’s
oxidation, but the alteration of lead red is much less apparent than the lead white. Azurite alteration that is commonly present in Byzantine murals is detected at Mogao as well. In Cave 85, the same design painted with blue azurite \(\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2\) on the eastern end of the cave appears in primarily green on its symmetric design at the western end of the cave. The green pigment is determined by an oxidized, saturated green copper pigment. Further analyses by Getty and Dunhuang Academy conclude that the green copper pigment might have escalated the degradation and oxidation of lead white, creating an internal oxidation chain reaction among the pigments in an exposed environment.\(^{94}\)

![Figure 4.2 Blackened figures due to lead-white oxidization in Cave 254 at Mogao Caves. \(^{95}\)](image)


Biological hazard and microbial outbreak, which are impactful factors on a different dimension, can result in irreparable damage to the original fabric. Fortunately, due to the desert climate in the west Hexi region, the extremely dry environment largely constrains the impact of fungi and bacteria growth. In 2015, Dunhuang Academy conducted a research on the adhesive force of *Apopestes* Spectrum and its impact on mural and sculptural surfaces. *Apopestes* Spectrum is a species of moth also found in Mediterranean countries from Spain and Italy to Israel and Jordan. The research proposes that the strongest force that can be imposed by an *Apopestes* Spectrum is fifteen times of its own weight. Such a force could result in micro-scratches on murals and break off paint fragments that are in flaking condition.\(^6\) Thus far, effective measurement has yet been implemented to limit *Apopestes* Spectrum from contacting murals. Meanwhile, research on airborne microorganisms’ activities in Cave 16 illustrates that the number of microorganisms generally increases in summer and autumn (all peaks appeared within May to October), while decreases in spring and winter. The research sharply points out that the amount of airborne microorganisms (including Alternaria, Aspergillus, Cladosporium, Penicillium, none-sporing isolates, etc.) tend to exhibit a positive correlation with temperature and a negative correlation with humidity, however, it is not the case at Mogao. Because the humidity level at the Mogao Caves and Dunhuang region in year-round is much lower than other locations that have completed similar experiments, researchers suggest that the increase of humidity in the intensively dry environment might facilitate the expansion of airborne microorganisms. Data record that the drastic increases of humidity after rainfall episodes trigger sudden decreases of the airborne microorganisms, which resonances with the negative correlation between airborne microorganisms and humidity when the humidity level reaches a typical value. Furthermore, airborne microorganisms are observed to have significant increases during the national holidays when massive volumes of visitation occur.\(^7\)

\(^6\) Ji Aihong et al. 吉爱红 等, “Fangaiye’e zai Dunhuang Mogaoaku moni biahua biaomian de fuzhuoli yanjiu,” 仿蛾夜蛾在敦煌莫高窟模拟壁画表面的附着力研究 [Adhesive Force of Apopestes Spectrum （Esper）on a Simulated Mural in Dunhuang Mogao Grottoes], *Dunhuang Research 敦煌研究*, No.1 2015

\(^7\) Ma Xu et. al. 马旭 等, “Dunhuang Mogaoku di16ku moni biahua biaomian de fuzhuoli yanjiu,” 敦煌莫高窟第16窟空气微生物动态变化研究 [The dynamic changes of airborne microorganisms in Mogao Grottoes Cave 16], *Dunhuang Research 敦煌研究*, No.5 2010
is consistent with similar studies conducted at the Cathedral of Santiago de Compostela in Spain\textsuperscript{98} and Kartchner Caverns in the United States\textsuperscript{99}. Ikner’s study at the Kartchner Caverns demonstrates that the presence of visitors is in correlation with the number and diversity of airborne microorganisms at the site. Henceforth, upon the natural increase of airborne microorganisms in summer and autumn, the amount of microorganisms present further elevated by the visitation volumes during the peak months (June, July, and August), and especially the “golden weeks.”

In conclusion, the humidity level at the Mogao Caves site within the caves is higher in summer and lower in winter, while the most dramatic change of the ambient humidity level occurs in summer before and after rainfall episodes. Meanwhile, the most detrimental deteriorations appear at the Mogao Caves are the salt-induced deteriorations, which are made possible by the increase of humidity and frequently triggered by a large variation of humidity in

\begin{itemize}
\item[From Martha Demas, Neville Agnew, and Fan Jinshi’s Strategies for Sustainable Tourism at the Mogao Grottoes of Dunhuang, China, 2015, p.67]
\end{itemize}
a short period of time. Therefore, salt-induced deterioration is a chronic disease to wall paintings but with major eruptions commonly appears in summer. At the same time, the increase of humidity also facilitates the expansion of airborne fungi and bacteria during summer and autumn. The peak season of visitation at the Mogao Caves is from May to October, precisely incorporating the summer-to-autumn time frame when humidity is generally at the higher level. The heavily visited caves will have a better chance in air circulation to decrease the humidity ratio within the caves, however, humid air can also enter the cave and the breath and sweat from visitors can elevate the humidity around 5% regardless while adding diversity to the airborne microorganisms.

4.2 Site Capacity

![Image of sign indicating carbon dioxide concentration off-limit](image)

Figure 4.4 A sign indicating carbon dioxide concentration off-limit. 102


102 Ibid. p. 57
From the perspective of a visitor with no knowledge about Mogao’s tour route design, the primary factor that limits him or her from visiting a cave is the carbon dioxide level in a cave. The increase of CO$_2$ concentration within caves is predominately from breathing. Therefore, the caves that are closed due to CO$_2$ level overload are also the most visited caves in the early half of the day. A general trend at the Mogao Caves in peak season is that there are usually fewer caves available for visitation in the afternoon than in the morning, simply due to CO$_2$ level overload in caves comparably smaller in size.

The sign above would be erected in front of the “public” caves when the carbon dioxide level exceeds the set limit to remind the docents not to take visitors into the cave and demonstrate the visitors that each cave is closely monitored by the management team. Nevertheless, the CO$_2$ level at Mogao is set for the benefit of visitors health rather than for conservation purposes. CO$_2$ level is an important factor for limestone caves due to its ability in dissolving carbonates. The structural base of the Mogao Caves is sandstone and the sculptures at Mogao are mud-based, so the concentration of CO$_2$ is less likely to have direct dramatic impact on them. Although murals would absorb a percentage of CO$_2$ in the air, the concentration it could bear is higher than the level that the calculated safety level for human to be presence. The internationally agreed 5,000 ppm of the CO$_2$ limit in natural caves is the safe limit for visitation to happen. For even smaller, more confined caves at Mogao, a safe CO$_2$ limit is determined to be 3,000 ppm. Before a set carrying capacity is put in place, the CO$_2$ level frequently exceeds 3,000 during peak seasons. Adding factors like heat stress, dehydration, body odor, crowdedness, and noise, incidents of fainting and fatigue sometimes occur among elderly and physically unequipped visitors. Henceforth, the final limit set for the CO$_2$ level is 1,500 ppm in each of the cave. Around 1,000 ppm and especially below 7,00 ppm are determined to be the most comfortable level for visitors to concentrate and have an enjoyable experience.\textsuperscript{103}

In order to control the visitor volume and regulate visitor behavior inside the caves, visitation takes the form of a guided tour and each tour group has a maximum size of 28. The

\textsuperscript{103} Ibid.
comfortable physical capacity is set to two persons per square meter (3 feet). Therefore, caves with relatively intact wall paintings and over 13 $m^2$ (about 140 sq feet) are selected to be adequate for visitation. Larger caves could accommodate more than one group, according to its size. In May 2013, based on the sustainable tourism study, the Dunhuang Academy announced a carrying capacity of 3,000 visitors daily and each tour group can stay in one cave for up to eight minutes. In order to accommodate the increase of tourism volume, digital center is constructed and was officially put into use in 2016. The digital center allows visitors to watch two short movies on the history and content of the Mogao Caves, reducing the amount of information that docents have to provide to the visitors, and theoretically further condensing the length of the visitation per cave in half, to 4 minutes. Henceforth, since 2016, the carrying capacity of the Mogao Caves is raised to 6,000.104

Besides maintaining a low level of CO$_2$ concentration for the health of the visitors, the management team also needs to make sure the structural of the site is safe and sound. The structural stability of the cliff face could be maintain when under 12,000 people are stepping on the trackways that are directly attached to the cliff face while taking considerable portions of structural load. Out of the concerns about safety and structural integrity, further shortening the visitation and enlarging regular visitation volume could be dangerous. 6,000 is set as the daily limit of regular tickets that can be registered by individuals and tourism companies online within a month. A regular ticket in peak season includes two movies at the digital center and a guided tour to 8 caves selected by docents according to the visitation flow and volume on the site. Meanwhile, 6,000 visitors per day are usually lower than the number of visits that have arrived at Dunhuang and planned to visit the Mogao Caves during the peak season. In order for the regional stakeholders to capitalize on the massive tourism flow while not accumulating too many tourists in the small city center of Dunhuang for security reasons, the management team at the Mogao Caves establishes “emergency ticket” for selected “peak days” to mobilize the massive tourism volume in retention at Dunhuang. The emergency ticket has a daily limit of 12,000. The

---

104 Li Ping 李萍, Luo Yao 罗瑶, “Mogaoku youku guanli de tansuo yu shijian (yi) — yuyuezhi de shishi yu wanshan” 莫高窟游客管理的探索与实践（一）——预约制的实施与完善 [Exploration of and Practice with Visitor Management at the Mogao Grottoes (I) — Implementation and Improvement of the Reservation System], *Dunhuang Research 敦煌研究*, No.5 2013
12,000 emergency holders would only visit the larger caves on the ground level and only travel in the cave zone on at the ground level, minimizing their impact to the structural integrity of the cliff face. Unlike the regular tickets, emergency tickets do not include movie or guided tour. It only encompasses visitation to 4 larger caves. Even with highly limited visitation experience, there were incidents in July and August of 2017 that visitors had to line up even for the emergency tickets one or two days in advance. More details on the visitation process at the Mogao Caves is described in visitation chapter. Here, the first and foremost priority is to examine the visitation pressure at Mogao imposed by the peak season, “peak days,” and the gradual increase of the number of the peak days and emergency ticket sells each year.

![Visititation Volume Monthly at Mogao Caves in 2016](image)

**Figure 4.5 Total visitation volume monthly and Emergency tickets volume in 2016**

The data is provided by the digital center and tourism regulation professionals at the Dunhuang Academy. With a daily 6000 carrying capacity, the maximum regular ticket sell of a month should be at most either 180,000 for a thirty-day month or 186,000 for a thirty-one-day month.

---

105 Raw data included in appendix A.
month. In 2016, 187031 regular tickets were sold in August and 180739 tickets were sold in September, both exceeding the maximum carrying capacity while emergency tickets were provided to the audience. The exceeded amount of regular tickets might include academic visitations or official visitations from national or international institutes. Thus far, regular visitations and even specific designated visitations to the special caves are provided to professional personnel or government officials from major institutes. Though they are counted into the “regular visitation” category, their visitations are constantly contesting the carrying capacity limit. Although Dunhuang Academy and the Mogao Caves management team have announced to eliminate the visitation to special caves\textsuperscript{106} in summer, it is highly difficult in practice to relocate all of the academic and governmental visitations to the off-peak season. As demonstrated by the 2016 monthly visitation chart, the emergency ticket sale alone in August almost reached the carrying capacity of the site. The total visitation in August basically doubled the calculated maximum carrying capacity.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure.png}
\caption{The occurrence of “peak days” in 2015 and 2016}
\end{figure}

\textsuperscript{106} Further explanation in the next chapter.
Figure 4.7 Monthly emergency tickets comparison between 2015, 2016, and 2017

Another anomaly is in October of 2016. With a 120,000 regular ticket sale across the whole month, October has reached an emergency ticket sell about 56,000. Such phenomenon is caused by one of the major “golden weeks” during the National Day holiday (from October 1st to October 7th with three days holiday and adjusted weekends). National holidays are legal-biding holidays for school, private and public companies, and most of the government agencies. Seven days’ national holidays are commonly described by media as “golden weeks,” since the length of which are suitable for intermediate or even long-distance travels. Most of the famous scenic spots and tourist attractions in China are flooded with people during the golden weeks. In 1999, three “golden weeks” were established in a year: Spring Festival (from lunar January 1st to lunar January 7th with three days holiday and adjusted weekends), the Labour Day holiday (May 1st to May 7th with three days holiday and adjusted weekends), and the National Day holiday. Cultural traditions during the Spring Festival suggest individuals traveling back to their families before the first day of the Lunar New Year. More traditional families would choose not to travel, or not to travel far in the first few days of the new year for diverse regional practices and beliefs.

Henceforth, the more active “golden weeks” for traveling were the Labor Day holiday and National Day holiday. In 2008, the State Council decides to cut the Labor Day holiday to one day.\textsuperscript{108} For instance, since 2008, there are only two long holidays over a year, the Spring Festival and the National Day holiday. In fact, as illustrated by the second graph, there were seven “peak days” and seven only during both of the Octobers in 2016 and 2015, which occurred right along the golden week.

The third chart is a comparison of the monthly emergency ticket sells across 2015, 2016, and 2017. As demonstrated, the tourism volume is on the increase. The more accommodating the visitation regulations are, the more visitors the site has to handle. Interviews with administrators at Dunhuang Academy reflected that the emergence sale ticket would not be lifted in the following years. So far, the “peak day” strategy and the emergency ticket is only implemented around twenty days over the months of July and August. As a steady annual growth of visitation volume to the Mogao Caves can be drawn from the statistics, if necessary, the “peak day” strategy might be applied to the entire month of July and August to meet the volume. July and August exactly include the summer vacations at kindergartens, elementary schools, high schools, and colleges. Supported by Mao-Ying Wu and Geoffrey Wall’s research at Hangzhou\textsuperscript{109}, tourist designations with cultural and historical associations are favored by parents and young adults with higher education backgrounds.

Combining the results, the current peak season for visiting the Mogao Caves happens to be the most challenging season for material conservation and stabilization. Applying adequate management system and visitation process is crucial to the protection and preservation of the site. The system in place has to prioritize the integrity of the site, following the World Heritage convention’s management guidelines for a World Heritage enlisted property. Nevertheless, since by law the cultural heritage sites in China also falls into systems designed for managing touristic scenic spots, their roles as essential assets of regional tourism economic development cannot be


avoided as well. Interestingly, the sustainable tourism study conducted by the Dunhuang Academy with the Getty Institute illustrates the core factors that are limiting the visitation experience is the total visitation volume and the visitation process, not the conservation issues. If the ambient humidity is not magnificently higher than the humidity with the caves, visitation across the board only increases the humidity ratio for 5%. Under high concentration of CO$_2$, a small percentage could be absorbed into the murals and sandstone which might facilitate the formation or consolidation of salt. But the impact of CO$_2$ has been reflected more actively on the physical experience of the visitors than on the immovable heritage presence in the caves. The notion of sustainable tourism constructs for the sustainability of the site, but a crucial aspect of it is to sustain the tourism.

4.3 Site Interpretation

To be regarded as a well-equipped and well-managed cultural heritage site, having adequate conservation strategies is only one of the many aspects. Efficiently and effectively communicating the values of the site to its audience is another essential aspect that cannot be overlooked. The interpretation of a site is composed of three but interrelated main elements: content, medium, and audience. What is the story? How is it being told? To whom is the story being told? This section deciphers the interpretation at the Mogao Caves from the content the site is presenting, the media and form of presentation, and the composition of its audience. The goal of this section is not to deliver judgment or evaluate the efficiency of current interpretation, but to point out the limitations and issues that might have been overlooked over the past years.

Content

The history and interpretation of the Mogao Caves as written in chapter four is based on the official publications and academic research published in the past few decades. The Mogao Caves is defined primarily as an archaeological site reflecting occupancy from the 4th to 14th century. Materiality, history, and artistic values are put forward as three core areas of significance of the Mogao Caves. Nevertheless, though the caves went dormant for several hundreds of years
before its rediscovery in the late Qing dynasty in 1700s, the caves were first and foremost regarded as the “cave-temples,” religious entities.

Figure 4.8 Stein’s photo (1908): A monk standing in front of the three-story cave-temple

In 1900, the newly arrived Taoism monk Wang Yuanlu charged himself with the responsibility of reestablishing temples and raising funds to preserve the Mogao Caves. The early religious practitioners of the rediscovered Mogao Caves shared occupancy by a mixture of Buddhist and Taoist monks, as illustrated by Stein’s photo taken in 1908. The second photo captured a gathering of the mixed religious body gathering on lunar April 8th. The background of this photo is the Sanwei mountain, indicating the photographed group was facing the Mogao Caves.

---

110 Taken by the author at Dunhuang Museum in the city of Dunhuang.
Figure 4.9 Paul Pelliot’s photo (1908): monks gathering for the lunar April 8th\textsuperscript{111}

Figure 4.10 Photo of the carriages in front of the Nine-story Temple, the Cave 96 (left) \textsuperscript{112}

Figure 4.11 Photo of the market on April the 8th, not far from the caves (right)\textsuperscript{113}

\textsuperscript{111} Ibid.

\textsuperscript{112} Image provided by the Dunhuang Research Academy official WeChat account.

\textsuperscript{113} Ibid.
The lunar April the 8th is regarded to be the birthday of Buddha, among the Dunhuang residents and people in the Dunhuang region. The local Dunhuang residents maintained a strong connection and cultural attachment to lunar April the 8th. As documented through the oil paintings produced by founder of the Dunhuang Academy, Chang Shuhong, the market and gathering seemed to have grown even more popular in the 1950s. In 1953, Chang Shuhong also completed an imaginary sketch for the lunar April the 8th at Mogao hundred of years before.

Figure 4.12 Sketch by Chang Shuhong, 1953 (the upper left)
Figure 4.13 Oil painting by Chang Shuhong, 1954 (the upper right)
Figure 4.14 Oil painting by Chang Shuhong, 1950 (the bottom left)

114 Image provided by the Dunhuang Research Academy official WeChat account.
116 Ibid.
For conservation purpose, burning incenses within the caves has for sure been forbidden.

For security and management purposes, regional residents cannot access the site freely. Only on April the 8th, residents of the Dunhuang city and in the region can come to the site with an entry ticket of 5 Yuan. Such ticket permits the access only to Cave 96 and the opened square outside of the cave zone. Only on April the 8th, the circling pathway around the grand Buddha statue in Cave 96 is opened to public access. A Buddhist resident can circle the statue clockwise for three times, and then burn incense on the opened square in front of the Cave 98. By cropping the Mogao Caves out of the background, the sight of incense lighting and burning highly resembles the other active Buddhist or Taoism sites in China.

![Figure 4.15 Visitors and local residents circling the grand Buddha](image)

During on-site interviews, many of the management team members born and raised in Dunhuang recalled stories told by their grandparents about the Mogao Caves. In the recollections, the youthful and energetic grandparents once climbed to the caves before the concrete structural surface and tracks were put in place. Some of the grandparents once burnt incenses in the caves. Some others confessed to having committed vandalism to the statues. One local superstition goes that the 佛土 (mud from the Buddhist statues) can serve as medicine.

---

117 Images provided by Dunhuang Academy Wechat account.
ingredient to cure diseases. The older the statue is, the better its effect could be. It is quite amazing how regional that such superstition is since natural, long-term preservation of mud-based Buddhist statues probably more frequently happen in the north-western part of China. Even now, when the grand statue in Cave 98 is opened to visitors for circling on the lunar April the 8th, the base of the statue has to be wrapped in cloth to prevent scratching and digging as shown in the images. Though their family members came much less frequent to the site, many of the management team members would burn several incenses in representation of their families. Meanwhile, the professionals that participate in incense burning not necessarily identify themselves as Buddhist. The action of burning incense takes the notion of a goodwill or a good fortune, not necessarily attaching to any strictly Buddhist ideology. Such an action could be compared to lighting a candle, which is fundamentally a Catholic practice but now prevalently associated and colloquially used as an act embodying praying.

![Figure 4.16 Burning incense in the square](http://public.dha.ac.cn/content.aspx?id=688056008615)

Besides the smoky incense burners, the opened square is filled with quite a great amount of lively activities. Though the traditional market documented in 1908 by Stein and in 1950 by Chang Shuhong is no longer permitted under current management regulations, the opened square still serves as a crucial communal gathering space for the regional residents. The photo provided by Dunhuang Academy in May 2010 illustrated local residents singing songs accompanying the grassroots performance with Erhu, a typical Chinese music instrument. The photo taken in 2015 recorded even more grassroots music performers playing the Erhu and drums with a group of middle age women dancing with handkerchiefs and fans. The red handkerchief being used is a dancing prop and commonly appears in the folk dance “Er ren zhuan” from Northeast China, probably historically unrelated to the Silk Road due to the time and region of its emergence and distribution. A docent vividly recalled on the Lunar April 8th of 2017, she witnessed an elderly man of Uyghur origin performing an Uyghur dance on the opened square. Just as the Uyghur in Kazakhstan, Uzbekistan, Kyrgyzstan, and Turkish, Uyghurs in China are also the followers of Sunni Islam. It is still particularly astonishing for my interviewee to be looking at such a scene, though she has worked at the Mogao Caves as a docent for over fifteen years.

The attitude towards the religious nature of the site is very much ambiguous. The cultural heritage preservation and conservation narrative emphasize the scientific research and accuracy as the primary motivation for any policy or management system’s implementation. Scientific research and accuracy in cultural heritage preservation aligns with the guiding socio-economic

119 Ibid.

120 Ibid.
principle Scientific Outlook on Development\textsuperscript{121} and have been extensively praised and promoted. Meanwhile, the religious and spiritual aspect of cultural heritage preservation is much more difficult to validate if the traditional management system is no longer present. The notions like “gathering” and “celebration” are more important than the religious connotation that lunar the April 8th might imply.

To examine the inclusiveness of an interpretation is to invite all stakeholders in voicing their concerns and opinions. Henceforth, an off-site interview that was conducted with the Tsering Khenpo\textsuperscript{124} from the Larung Gar Buddhist Academy did throw some interesting light on the regional ritual practices at the Mogao Caves. According to Tsering Khenpo, one of the five core sutras from Maitreya the *Abhisamayalankara* ("Ornament of Realization") has specified that fragmented murals and sculptures are not suitable for ritual worshipping. Nevertheless, further research reveals that the five core Mahayana sutras are different for Tibetan Buddhism and Chinese Buddhism. *Abhisamayalankara* is included in the Tibetan Buddhism’s version of the five Sanskrit-language Mahayana sutras, but it appears not to be included in the Chinese


\textsuperscript{122} “Mogao de siyue ba” 莫高窟的四月八 [The April 8th of the Mogao Caves] 敦煌研究院 http://chuansong.me/n/783677552721

\textsuperscript{123} Ibid.

\textsuperscript{124} The title of “Khenpo” stands for an achievement and a degree in higher Buddhist studies in Tibetan Buddhism.
Buddhism’s selection of the five. Chinese Buddhist monk from the Hongfa Temple commented much more vaguely on the issue. Saying that if the Buddhist does not recognize the fragmented subject as fragmented or in a ruin stage, the practice is still valid. But if the Buddhist recognize such fragmentation and fear the fragmentation might impact his or her practice, the subject should be restored or returned to a temple and the worshipper should invite a new subject to his or her place of practice. Enormous amounts of research in reading and in comparative analysis of the immense volumes of sutras would be needed in order to decipher the religious significance of the lunar April 8th gathering in depth. Such an amount of work is far beyond the capability of a thesis that focuses on the tension between cultural heritage preservation and mass visitation. Nevertheless, such a discussion would not be able to occur if the religious aspect is constantly left unexamined. The Mogao Caves is as much a historical, archaeological, and artistic heritage as a religious heritage. Demonstrated by Stein’s photographs, after several centuries of the abandonment, soon as the site was rediscovered, the regional gathering was reactivated. The religious connection of the site was not damaged by its abandonment. The meaning of the site did not change and is still important. The religious significance of the Mogao Caves seems to be the first significance that was picked up by these early “preservationists.”

Same to a few Buddhist visitors who pray to the murals when they meet Buddha or Bodhisattva of their desired along their visitation. The religious significance of the site is always present. It is such an obscured narrative that the detachment and dissociation are taking away general public’s ability to talk about it and examine it.

Thus far, the lunar April the 8th gathering situates itself more as a day of celebration than a day of religious practice. The Dunhuang Academy so far has yet been actively promoting the gathering, considering it is a cultural tradition mainly for the local and regional residents. Putting aside the disagreement of whether the murals and statues at Mogao are eligible or not for ritual worshipping according to Buddhism philosophy, the sacredness of the place itself as a monumental landscape with profound connections among the regional residents is indisputable. Although the site still hold sacredness to the local residents, the site itself now is mostly

perceived as a heritage site. Though the docents from Dunhuang Academy are obligated to conduct lectures about the Mogao Caves in Dunhuang’s elementary schools and high schools, the community does not see much integration with the cultural and historical values of the site unless they work for the site as part of the management team. Nevertheless, attention might result in economic exploitation. Systematic exploitation of the lunar April the 8th might push the already marginalized local residents even further away. How might a narrative be developed that strikes the balance between community empowerment and attentive promotion while preventing systematic exploitation? How might the new generation of heritage professionals and academics acquire skills and abilities to discuss the religious-related content justly and objectively? Much is undone, and much is awaiting.

Media

As in the year of 2017, the media available during a typical visitation at Mogao Caves include movies, guided tours, publications and souvenirs for sale, and exhibitions that incorporates archaeological artifacts (objects), recreations (caves), and facsimiles (caves). Before embarking on the journey of appreciating magnificent cave paintings with fast speed, visitors are required to go through the Mogao Grottoes Visitor Center (or digital center for short) and watch two twenty-minute movies about the story of Mogao Caves. The first movie is *Qiannian Mogao* (Thousands of years at Mogao). The movie is a reenactment of the history of Dunhuang, the vitality of the Silk Road, the establishment of the Mogao Caves, and its rediscovery. The second movie is a spherical movie called *Menghuan Fogong* (the dream-like Budda palace). Using the spherical screen and 360 photogrammetry record of the selected iconic caves, the movie is purposefully placed as a supplementary for the shortened real life experience visitors will have to go through during current visitation. Most of the visitors reflected in the interviews that the content presented in the first movie was too elemental. Indeed, the geographical location of the Mogao Caves and the city of Dunhuang makes such destination a planned journey for most of its visitors. Especially for visitors that have traveled long distance specifically for the Mogao Caves, the information provided in books, news articles, or documentary could easily be expanded from the baseline history depicted in *Qiannian Mogao*. However, for visitors traveling with their
families, the first movie seems to be adequate for children as an introduction to their visitation. Meanwhile, the spherical movie received many praises and compliments. 29 out of the 52 units\textsuperscript{126} of the interviewed visitors indicated that the spherical movie was the most enjoyable complementary element throughout their visitations. In spite of the fact that due to lighting, material of the screen, or interaction of the two, the spherical images of the selected murals and caves appear greener than the original. Nevertheless, the majority of the interviewed visitors (50 out of the 52 units) had not been to the Mogao Caves before and none of the interviewees specially mentioned a color discrepancy between the spherical movie and the actual caves.

![Figure 4.21 Visitors viewing the first movie, Qianmian Mogao (left)](image1)

![Figure 4.22 Visitors viewing the spherical movie, Canlan Fogong (right)](image2)

In September 2014, the digital center has been incorporated into the visitation process but not as a required destination. Visitors could watch both of the movies for 60 Yuan before they take shuttle buses to cave zone. However, only one-tenth of the total visitors decided to watch the introductory movies.\textsuperscript{129} As previously mentioned, the digital center was put in place to prolong visitor’s exposure to Mogao while shortening their presence in the cave zone. During the

---

\textsuperscript{126} A summary of the on-site interviews with visitors can be found in the appendix.

\textsuperscript{127} Image retrieved from Baidu and Xinhua News.

\textsuperscript{128} Image retrieved from Baidu and Xinhua News.

\textsuperscript{129} Xu Yanqian, “Dunhuang mogaoku jiedai chaofuhe yibei, 3 yiyuan dazao de shuzi zhongxin zao youke lengluo” 敦煌莫高窟接待超负荷一倍, 3亿元打造的数字中心遭游客冷落 [Dunhuang Mogao Caves have doubled its capacity, the digital center built with 3 hundred million Yuan is disfavored by the visitors], The Paper 澎湃新闻, http://www.thepaper.cn/newsDetail_forward_1269811.
peak season, waiting time for the shuttle buses and guided tours might add up to hours, whereas the visitation duration in the cave zone might only last thirty minutes. Incorporating the movies into the visitation process is an effective and meaningful educational method to communicate the history and aesthetic values, cultural significance, preservation necessity and challenges to visitors. Many visitors reflected in the interviews that although they would like to see more content, they understand the difficulty and necessity in preserving and conserving the fragile materials in the long run.

Such a notion, pinpointing the limitation of access as a conservation and preservation necessity, is embedded throughout the visitation. After the visitors arrived at the cave zone, the guided tour would then begin. The content of the guided tour varies based on the caves selected and the experience of the guides. In 2010s, before a monitoring system for the carrying capacity and time limitation were put in place, a typical guided tour encompasses 15 caves with a total length of three hours. A typical 12 minute’s explanation in each cave could systematically cover the date, structure, general content, historical background, and other aspects on the cave’s content. Meanwhile, current visitation cuts the time in each cave to down 3 minutes in peak season and 6 minutes in the off-peak season, limiting the narration to the most eye-catching subjects. Visitors tended to recall fragments along the trips but not a cohesive narrative. 23 units of the visitors described the most impressive features they have seen as the grand Buddha statues in Cave 96 and Cave 148. 14 units of the visitors mentioned specific stories from the murals, such as the mural story of *A Deer of Nine Color* from Cave 257, the Jarkata tale of Mahāsattva from Cave 428, and the story of Buddhist Nun Weimiao from Cave 296. Two visitors accurately recalled a mural painting technique 立土堆金 (Litu duijin, creating a three-dimensional contour by thickening and gilding sections of the imageries). One visitor expressed the excitement of seeing the Chinese ancient scroll painting technique 曹衣出水 (Caoyi chushui, a scroll painting technique originated from painter Cao Zhongda that depicts folds of clothing as waves) applied on the wall painting.

---

130 Information provided by director Luo Yao at the reception department’s office. December 26th, 2017.
Most visitors commented on the general impression of the visitation, using words “impressive,” “astonished,” “vibrant,” and “delicate,” emphasizing strong emotional responses triggered by their visual experience. Similar words are often the terms used most frequently by guides, focusing on the aesthetic value of the murals and sculptures.

Since time and access to the caves are highly limited, the quality of a guided tour heavily depends on the capabilities of the guide or docent. According to the director of the Reception Department at Dunhuang Academy Luo Yao, besides their basic one year training when first entered the department, docents at the Mogao Caves are required to read the monthly publication *Dunhuang Research* to renew their information and attend training sessions on language or related academic topics once a few years. Docents are required to only deliver information substantiated by academic research. Site visitations with senior docents were incredibly constructive and informative in learning about the Mogao Caves in a systematic fashion. The evolvement of painting techniques and artistic styles is a basic narrative framework for an experienced docent. Jumping from one cave to another without any chronological or thematic lineage, a senior docent might still be able to systematically incorporate sociological theory and anthropological interpretation to the available materials, such as how the societal stability and economic status might have influenced the popularity of each sutra and Jartaka tale across dynasties and regimes. Nevertheless, there is no requirement for a docent to connect all the dots with a constructive framework with. Especially for university students that serve as volunteer docents at the site in summer, a minimal requirement would be providing concrete and accurate information about each cave for at least three minutes of one pre-determined tour route. Occasionally, due to visitor volume adjustment, docents have to deviate from their pre-designated tour routes and might arrive at caves that they are not familiar. More often than not, such a deviation could directly envelop two similar caves in terms of time, structure and them in the same visitation. A less experienced docent or a volunteer would not be able to locate constructive talking points instantly.

A rule of thumb, drawn from my observation at the Mogao Caves as an independent researcher tagging along multiple regular visitations in the summer of 2017, is to talk about the materiality aspect of the caves when the content is unfamiliar or repetitive. For example,
“because the ancient painters use natural minerals as the sources of pigments, colors of the murals are able to sustain their vibrancy across several hundred years.” Meanwhile, “color degradation and the oxidation of the lead-based pigments is one of the most severe challenges for mural conservation.” Whenever there is a waiting gap in the visitation process, it is considered to be a good time to pitch about the conservation and preservation challenges at the Mogao Caves. Such a strategy effectively drives the fragility of the material into visitors’ mind. All of the visitors interviewed did express that they learned of the importance and necessity of conservation and preservation through their visitation.

A lot of the management difficulties that occur along the visitation were by attributing them to a preservation policy. Obvious examples are: “no touching,” a basic policy for material conservation, as is “no photography.” For regular travelers and museum-goers, “no photography” is a prevalent policy for private collections, whereas “no flashlight” tends to be the general policy for public museums and public entities’ permanent collections. The “no photography” policy is actually constructed to reduce the amount of disturbance that might generate by the “photographers” to the “non-photographers” among the visitors. It is also a policy for docents to efficiently limit the total duration in each cave. While it is almost impossible to take high-quality images within caves without a flash, claiming “no photography” for conservation purpose is as “deceptive” as assuming high CO\textsubscript{2} concentration is a direct cause for deterioration at the Mogao Caves. Most of the regulations and visitation policies at the Mogao Caves are set to maximize visitors’ enjoyment while increasing management efficiency. Coating all policies under “conservation” is a simple and straightforward resolution, but such a resolution might mask the possibility of having better alternatives in the long-run.

Overall, the introductory movies pave the historic background of the Mogao Caves. The guided tour drives home several core notions of the entire visitation: “beautiful,” “resourceful,” “important,” and “fragile.” Thus far, the set visitation package has ended. Visitors can choose to take the shuttle bus back to digital center, or shop for souvenirs and visit museums outside of cave zone.

If a visitor is resourceful, it is worthwhile to explore several special caves although each of them would cause 200 Yuan per person. The visitation to special caves is led only by senior
docents and the visitation duration in each cave usually takes 20 to 30 minutes. All of the visitors (only 4 units out of the 52 units of the interviewed visitors) that experienced the special cave tours highly complimented on their visitation experience, among which only one required the special cave visitation out of personal interest. The remaining three units of special cave visitors are a group of sculptors, a group of student from a fashion design institute, and a group of fashion designers that were on cross-institutional collaborative visitations hosted or approved by the Dunhuang Academy.

For visitors that would like to learn more about the Mogao Caves but do not have the resource to visit the special caves, on-site museums and bookstore would be good alternatives. There are three museums, one bookstore, a tea house, a restaurant, and multiple souvenir shops outside of the cave zone within the Mogao Caves property. As many touristic sites around the world, all stores and museums are packed with visitors in peak season. At the same time, except the major exhibition center, a store selling Mogao imageries imprinted silk scarf, and a small restaurant, all other facilities are closed. The major exhibition center is opened the whole year-round, however, it is located the furthest from the cave zone, even further than the distance from the cave zone to the parking lot. The exhibition center is the first destination for emergency ticket holders, but the last for regular ticket holders. Visitors with regular tickets who are less physically equipped might choose not to walk to the exhibition center in heat or in severe cold weather. In late December when an emergency ticket does not apply, only ten to twenty percent of the total visitation volume reached the exhibition center.

Meanwhile, the exhibition center houses collections portraying the preservation history of Mogao, techniques, and tools of wall painting conservation, and archaeological findings that demonstrate the cross-cultural communication happened via Mogao and Dunhuang. Five units of visitors identified the exhibitor center as the best complementary feature throughout the visitation.

Multiple interpretation methodologies are applied at the museum. The making process of mural and sculpture are recreated step by step to illustrate the historical techniques. Samples of pigments used to create the paintings are laid out to create a color pallet of Dunhuang. Tools used in mural conservation are presented in a section educating on basic mural conservation process
and procedures. An interactive screen display stood against the corner for visitors to navigate through a photogrammetry reconstruction of the cave 61. Each theme of the exhibit is further supplemented by a small screen. The exhibition section on the preservation history of Mogao in the mid-20th century is supplemented by an interview with Chang Sha’na, the daughter of Chang Shuhong. The section on the development of Mogao Caves around the late-20th century is supplemented by an interview with Fan Jinshi, the previous Principal of Dunhuang Academy. There is also an animated story of the Mahāsattva Jarkata tale in cave 254 deciphering the structure and connotation of the mural from an analytical perspective. Fragments of the remaining Dunhuang manuscripts at Mogao are on exhibit, together with archaeological artifacts recovered from the living quarter of the monks. Nothing speaks for the history of the Silk Road better than the displayed manuscripts written in Tibetan, Mongolian, ancient Chinese, Hebrew, Xixia characters, and Uyghur characters. Archaeological artifacts range across a bronze crucifix, bone dices, coins from diverse origins and periods, to small, hand-held size Buddhist statues and reliefs. Diverse media are employed in building the artifact-based exhibition sections. Theme and content covered by the core exhibition highlighted the history, materiality, conservation, preservation history, and attempted artistic interpretation of the site.

Across the exhibition hall lies six replica caves. The six replications were all hand-built and hand-painted by artists from the Fine Arts Department in Dunhuang Research Academy using the ancient techniques and historical materials. The installed replications are the cave 285, 419, 276, 217, and 3 from Mogao, and the cave 29 from Yulin Caves. Cave 419 is the most viewed caves among the six because it has been incorporated into the tour route in peak season. Cave 285, 217, and 3 from Mogao and the cave 29 from Yulin are considered to be the “special caves.” The “special caves” are protected in priority to the regular caves and will be further explained in the next chapter, excluded from regular visitation. When the fieldwork for this research was conducted in the late December of 2017, the reconstructions of cave 29 from Yulin and cave 3 from Mogao were on travel exhibition. Cave 285, 419, 276, and 217 were opened to the public. A few visitors commented that they did not recognize the replica caves to be replications and thought they were moved to the exhibition center for preservation. In summer, though the exhibition center does not limit visitor’s time at the center, the management personnel
still attempts to create a controllable flow to reduce the load of the crowded hall. Henceforth, during the peak season, several docents will report to the exhibition center daily and guide visitors through the replica caves. When the hall is packed, the guiding tour for the replica cave would shorten its time of duration within each cave accordingly. As reflected by the security at the exhibition center, during highly crowded hours, the docents could only guide the visitors through three out of the six replica caves in order to divert the mass and create a faster flow. Although docents at the exhibition center mainly serve as tourism capacity regulators, during the less crowded time of the day, the docents can talk about one cave up to twenty to thirty minutes if visitors are interested. According to the director of Cultural Relics Exhibition Center of Dunhuang’s Grottoes, the required minimum time spent on explaining one replica cave is 15 minutes when the visitor volume allows. For special caves such as the replica cave of 285, the visitation time with guide could easily reach thirty minutes. The longest record of narration on one replica cave thus far is one hour and a half, twenty times longer than the visitation time within an actual cave during peak season.

Meanwhile, in off-peak season, the interpretation service for the replica caves are not available. Each replica cave has a plate at its entrance introducing its date, content, and significance. The information presented on the plates contains references to specific sutras and identifications of the depicted figures. Docents that are trying to move visitors from one cave to another in a limited amount of time tend not to get into such specifications. Most of them favor telling stories, because stories leave stronger impressions in general. The plates, unfortunately, do not have space for story or any other information beyond the basics and references, leaving aside the content that could support twenty minutes of narration. Comparably, visiting the replica caves during off-peak season is a substantial loss. The majority of the visitors who managed to walk all the way from cave zone to the exhibition center during -10 to -15 Celsius degrees had substantial interests towards Mogao Caves and wished to learn more. Facing the under-interpreted replica caves, many visitors could not fully understand what is presented to them. The “special caves” are not labeled as “special caves” on their plates, so visitors are not alarmed to aware and actively seek the history or artistic significances of these caves either. If interactive
interpretation method could be utilized at the under-interpreted replica caves, visitation experience and understanding could be enhanced significantly.

The second floor of the exhibition center is for international temporal exhibitions reflecting the theme of Silk Road. The latest exhibition encompassed over two hundred artifacts from the National Museum of Afghanistan. Because the temporal exhibition has already concluded before the research field trip, it would not be examined in the scope of this thesis.

**Audience**

The demographic composition of China has been changing gradually over the past thirty years. In 2010, the total number of urban residents is larger than the total number of rural residents in the first time in history. The educational level and economic status in general for the Chinese population have significantly escalated within the past decades. The change of visitor composition has also heavily impacted the Mogao Caves.

The director of the Reception Department, Luo Yao, addressed the change of the visitor composition from an other angle. As he recalled, the pre-registration visitation system at Mogao started around 2005 and 2006 via phone. From 2007 to 2010, the Reception Department officially constructed an office in the city of Dunhuang to conduct and promote its online registration system. Since then, online registration became required for tourism companies developing group tours. In the 2010s, over 70% of the Mogao Caves visitors came as part of a tour group. Through the registration system, the Reception Department managed to coordinate with tourism companies and spread out visitation volume across a day or days in groups. However, as the economic and educational level among younger generations increases, the percentage of visitors that travel based on self-arranged schedules has been on a constant growth. The tourism management team’s capability in proactively arranging and allocating visitation volume has gradually been weakened. The volume of visitation would then have to be self-adjusted among the independent travelers. Those who did not register or manage to register a

---

131 Data provided by [National Bureau of Statistics of the People’s Republic of China](http://www.stats.gov.cn/tjsj/) 中华人民共和国国家统计局
regular ticket would have to standby for days or purchase the emergency ticket in order to catch up with the following touring schedule.

The change of visitor composition has also been most strongly felt by whom worked continuously as guides and docents at the Mogao Caves over eight or ten years. Many of the senior docents reflected, the content they provided in a tour could be adjusted most effectively if the socio-economic and educational background of the entire tour group is cohesive. A group tour stands for the pre-packaged and pre-arranged visitation schedule that tourism companies sell to the visitors on an economical budget. To maximize economic profit and optimize the management process, a standard group tour might range from over twenty to thirty-five people. The quality of the tours is differentiated based on the cost and service provides the tour. In the early years, an entire group tour might last around a week or more and usually initiated from the city or town the visitors live. For example, a tour originated from Beijing to northwest China might envelop the Mogao Caves as a tourist attraction. All of the visitors in such a group would be from Beijing or its adjacent cities and towns. An experience docent would then introduce the Mogao Caves in connection with the regional characteristics of northwestern China. Similar scenarios still apply to the bilingual and multilingual docents when they guide international visitors. Bilingual and multilingual docents conclude, when the international visitors are not heritage professionals or scholars, tours in English generally encompass more information about the historical context of China, whereas tours in Japanese and Korean dive deeper into mural content. However, because the increase of independent travelers, a regular ticket tour of Chinese audience at the Mogao Caves that ranges from 25 to 28 individuals can envelop visitors with diverse social, economic, and educational backgrounds. The decrease of grand tours also drives an increase of the small, local tours, such as the one to three-day tours in the Dunhuang region that initiates in the city of Dunhuang. This kind of short local tour does not provide accommodation, meal, or guiding services, only transportation to tourist attractions according to pre-arranged schedules. Though such a group of visitors would arrive at the Mogao caves in the form of a tour group, it still embeds substantial disparity. The disparity sometimes instantly evolves into conflict among the visitors on the tour.
Such a disparity among the visitors adding on top of the limitation of time drive the docents to only deliver the most basic information along the tour. In order to make sure regular visitation ticket holders can hear their docent clearly, small radio devices that have been connected and tuned to the channel of their docent’s microphone are provided. The connection could only be activated when the devices fall into the fifteen meters radius of docents’ microphone. Tourism management team requires each visitor to follow his or her guide for the whole trip, partially due to the limitation of devices and partially to management efficiency. In peak season, there is always a small percentage of visitors who “switch teams” during the tour. Crowdedness might have contributed to the disorientation, but the narration is believed to be the main issue. Some visitors might have felt the assigned docent do not meet their standards and thus decided to maximize their experience by switching to another docent. Some other visitors might have lost interest in the presented materials after their visitation to two or three caves and decided to skip the rest of visitation. (There is also a small portion of the “team switchers” purposefully stayed behind and lingered in the cave zone for visiting more caves.) Meanwhile, a docent is responsible to disburse the devices to his or her audience before the tour begins and collect the devices after the tour end. In order to intensify docents’ awareness of their audience’s behavior, the tourism management team decides for each device that a docent did not manage to collect at the end of the tour, a fine would be applied and deducted from the docent’s monthly salary. Although the issues are embedded in the un-differentiated content of narration and the disparity among the visitors, the docents are charged with an extra responsibility to conduct number count while narrating and guiding the tours.

During the off-peak season, only three to five groups are conducting their visitation within the same time frame. It is more difficult for a visitor to switch team but increases the chance of conflicts. The visitation in the off-peak season envelopes twelfth caves, four more caves than the peak season and doubled in visitation time. Some docents might open up to fifteen caves if the audience is highly engaged. However, the visitor composition in the off-peak season is even more polarized than during the peak season. A substantial percentage of the visitors has done their research about the Mogao Caves, and are aiming to see and learn about Mogao in great detail. Meanwhile, the rest of the visitors might happen to travel in northwest China and
come to Mogao as passers-by because of its price. Due to its intensely cold weather, everything relates to the travel industry in northwest China is significantly cheaper in the winter time. Even the entrance ticket to Mogao Caves during the off-peak season is half of the price of the peak season. For the passers-by travelers, the Mogao Caves has no different than any other tourist attraction. Therefore, occasionally within an off-peak tour, quite a few visitors would be rushing the docent to talk faster and “skip the details for everyone’s sake since it is cold” with an anxious attitude, disrupting the visitation experience and quality for the remaining visitors.

The visitor composition disparity feeds into the problems created by the limitation of accessible information about the content of the caves. Visitors that ranked their visitation experience in the lowest scores across the board had higher expectations on the quality and availability of information. Throughout the visitation, docents are the major source of information, especially during the off-peak season when the bookstores and the smaller museums closer to the cave zones are closed. Many of them critique the information provided by the docents are too fundamental in order to accommodate all visitors, while the only other choice for a more informative experience is to purchase a separate tour to the special caves which are 200 Yuan per person per cave. Such a cost is generally considered to be too expensive for students and less resourceful individuals. To protect the condition of the special caves, the tourism management team has also decided not to actively promote for seeing the special caves. However, one visitor who purchased a separate tour to the special caves after the regular visitation and commented that putting aside the presented materials, the most essential difference between the two tours is the narration. The narration on the special tour is instantly more comprehensive and informative, because the docent would assume a level of complexity and knowledge of the special cave visitors (although not necessarily applicable every time.) At the meantime, as suggested in the previous discussion, the students and the less resourceful that might have craved for the learning experience the most are caught in a grey space.

Extension

To change visitor’s perception in addressing the Mogao Caves as a tourist attraction, the educational function of the Mogao Caves and the related cave sites managed by the Dunhuang
Academy needs be addressed. Research projects are conducted either by the scholars from the Dunhuang Academy or through the joint-projects among designated collaborators. Many museums have created specific channels for independent scholars and students to request information in the facilitation of their own research. Similar to most of the national institutes in China, retrieving information from the Dunhuang Research Academy would also need to go through the application process. However, such an application process has yet to be opened to the general public. The academic resources that can be accessed by the public are Dunhuang Research, Digital Dunhuang (360 spherical photogrammetry of 30 selected caves from the Mogao and Yulin Caves), the International Dunhuang project (Dunhuang manuscripts) and the official website of the Dunhuang Research Academy. All sources presented above can be regarded as databases for either the raw material or existing research. Comprehensive thematic catalogs have yet to be prepared. In theory, scholars and students can apply to retrieve the information they need, but such a process would only happen when the existence and availability of the information have been presented. Although very few research institutes and museums in China have composed thematic catalogs or shared sections of their catalogs with the general public. Allowing information transparency is the first step to foster an active, engaging, interdisciplinary discourse about the values and significances of the nation’s shared cultural heritage.

The Mogao Caves represents one of many of massive cave-temples complexes in northwest China. It is among the largest in volume and houses the most diverse range of themes and artistic styles across time. However, the Mogao Caves is only a segment in reflecting the artistic achievement of Buddhist cave-temple complexes in China. The materials and content presented in the Mogao Caves, even when they are fully documented and apprehended, are still in fragment if the other cave-temple sites are not incorporated into the picture. The Mogao Caves is the most accessible site among all. Other exemplary cave-temple sites with murals and sculptures in highly distinct characteristics include the West Thousand Caves of Buddha, Yulin Caves, the Five Temples in Subei, the Kizil Caves and Bezeklik Caves in Xinjiang province, and the largest cave-temple complex in China the Dong-ga and Pi-yang site in Tibet. Each of them captures a segment of the regional history in time. The cave-temple complex is another pillar of
ancient Central Asia and Central China art form shall be systematically examined and promote just as the vernacular wood and brick architecture. Because the Dunhuang Research Academy is the protector and guardian of the cave sites in the west Hexi region, it has the most comprehensive resources, experience, and documentation technologies in preserving the cave site. The Academy will for sure taking a leading role in the future academic research about the cave-temple complexes. Information transparency and availability of the content of Mogao Caves is only the first step. If a usable framework can also be applied in collaboration and partnership with the remaining cave sites, the academic research of the cave-temple complexes in China will then obtain a solid foundation for the next generations of scholars.

4.4 Pressure in Future Development

The regional development pressure imposed on the Mogao Caves has been introduced in the second chapter. The tourism economy is the core economic driving force in Dunhuang’s development. Mogao Caves is the “must-see” site at the city of Dunhuang. Several administrators from the Dunhuang Academy revealed their opinions on whether the “emergency ticket” would be eliminated within a few years as the online registration system be introduced to a broader public. Many of them believed that the “emergency ticket” will probably persist to exist in the upcoming years in order to accommodate the visitation volume needs and lessen the population load dangerously accumulated in the small city center of Dunhuang at the peak season. Though the tourism management sector is severely tormented during the regulation of distressed and frustrated visitors, the accommodative attitude and the accommodated visitation volume are highly appreciated by the regional governments. Within the 52 units of the interviewed visitors, except those coming for business conferences or pre-arranged study trips (three in total), the longest length of stay in Dunhuang is four days. The most renowned “scenic spots” in Dunhuang are the Mogao Caves and the Mingsha Mountain, a natural landscape composed of multiple sand dunes and an oasis with a lake in the shape of the meniscus. If arranging beforehand, regular and budgeted visitation to both of the attractions only takes one day. However, most of the visitors decided to stay for two to three days to explore the minor attractions around the Dunhuang city, such as the Yumen Pass, Yang Pass, Yardang landscape,
the West Thousand Caves of Buddha, and the Dunhuang Museum. After three years of infrastructure construction and management training, on May 25th, 2017, the Dunhuang Geological Park was officially opened to the public, packaging both major and minor tourism attractions in the Dunhuang region.\textsuperscript{132} It marks the establishment of a systematic development approach integrating natural landscape, geo-area, scenic spot, and historic area in the Dunhuang region. One of the interviewed visitors especially complimented that all touristic attractions in the Dunhuang region have well-equipped and sanitized public infrastructures and facilities.

Unfortunately, while regional tours are developed and accepted by visitors, the visitation number as shown earlier has continued to rise. Moreover, the peak season at Dunhuang lasts for months during summer and the bracketed national holidays limit the duration for the vast majority of the visitors within the same few days. Constructing and developing new attractions could extend the number of choices and occupy visitors time when they are waiting for available time slots for Mogao Caves’ visitation. But how might these attractions divert the tourism volume or whether they would draw larger visitation volume would need to be further examined and tested by time. Thus far, the annual visitation volume to the Mogao Caves has constantly been on the rise. The diverting effect of the new attractions is difficult to measure, but the overwhelming amount of the emergency tickets being sold might be suggesting that the Mogao Caves is rather irreplaceable as a travel destination.

Meanwhile, since the Belt and Road Initiative has been officially announced in 2013, the Silk Road once again became a hot topic. Although the Belt and Road Initiative is an economically based initiative that focuses on major infrastructure construction projects, trades and business partnerships,\textsuperscript{133} the promotion of the Belt and Road Initiative tends to use cultural heritage along the Silk Road as an entry point into the historical connection and legitimacy of the cross-nation cooperation along this ancient trade route. Therefore, as one of the most famous sites on the historical Silk Road, Dunhuang and Mogao have frequently been put on the international platform echoing Silk Road’s contemporary renaissance, the Belt and Road

\textsuperscript{132} \textit{Dunhuang Geopark}, \url{http://dhdzgy.com/en/}

\textsuperscript{133} “Full text: Action plan on the Belt and Road Initiative” The State Council The People’s Republic of China, \url{http://english.gov.cn/archive/publications/2015/03/30/content_281475080249035.htm}
Initiative. From May 7th to September 4th in 2016, the Getty held one of the largest international exhibitions about the Mogao Caves encompassing scrolls and manuscripts collected by the British Museum, the British Library, the National Library of France, and Guimet Museum, as well as replica caves painted by the Dunhuang Academy and 3D virtual reality developed in collaboration with the Getty Institute.\textsuperscript{134} From May 8th to 12th in 2017, a small exhibition on the replications of Mogao’s mural is held at the United Nations in Vienna.\textsuperscript{135} From May 16th to June 14th in 2017, the Dunhuang exhibition was reorganized and relocated at the Prince’s School of Traditional Arts in London. The Prince’s School of Traditional Art has also been developed into a new international partner of the Dunhuang Academy in researching and studying ancient Buddhist art.\textsuperscript{136} From February 22 to April 8th in 2018, the Dunhuang exhibition will again be moved to Ca’Foscari University in Venice.\textsuperscript{137} Although at Chinese cultural heritage sites the visitation volume of international travelers is incomparable to the amount of Chinese domestic travelers, the consecutive international exhibition will no doubt generate attention and increase the number of international tourists at the Mogao Caves. Especially that since the exhibitions were held in the US, the UK, Austria, and Italy, the international audience is comparably more resourceful and have the economic viability to travel. The current Principle of the Dunhuang Academy, Wang Xudong, publicly announced that he hopes to establish and expand the existing scope of cross-national academic research on the history of the silk road through the Belt and

\textsuperscript{134} “Cave Temples of Dunhuang — Buddhist Art on China’s Silk Road” \textit{The Getty Research Institute, https://www.getty.edu/research/exhibitions_events/exhibitions/cave_temples_dunhuang/index.html}

\textsuperscript{135} “Silu, Dunhuang bihua jingpin zhan liangxiang lianheguo” 丝绸之路·敦煌壁画精品展”亮相联合国 [Silk Road: Dunhuang Art Masterpieces Exhibition at the United Nations (Vienna)], \textit{Dunhuang Research Academy 敦煌研究院}, May 19th, 2017 \textit{http://public.dha.ac.cn/content.aspx?id=505428818452}

\textsuperscript{136} “Exhibition: Sacred Art of the Silk Road, Dunhuang’s Buddhist Cave Temples” \textit{The Prince’s Foundation: School of Traditional Arts, https://www.psta.org.uk/news-and-events/dunhuang-exhibition}

\textsuperscript{137} “Buddhist Art of Dunhuang: from 22nd February at Ca’ Foscari,” \textit{Cafoscarinews}, June 2nd, 2018 \textit{https://www.unive.it/pag/16584/?tx_news_pi1%5Bnews%5D=4556&tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=1dd164fd59f61a9fb1de94e75e0393f}
Road Initiative. Henceforth, more international exhibitions are probably on the schedule. The Mogao Caves needs to be prepared in facing the definitive escalation of attention in the near future.

Meanwhile, multiple interviewed heritage professionals reveal that as the interests of cultural heritage preservation and interpretation in China continue to expand, more professional and economic resources are in need to feed into the development process. Preservation professional and scholar is always the core forces in proposing and executing new concepts and ideas. As the Director of Gansu Province’s Administration of Cultural Heritage Ma Yuping concludes, “the issue of technology can always be solved by the market. It is the issue of lacking adequately trained personnel that needs to be solved in priority.” The preservation issues and challenges by no means can be completely singled out into unrelated sections. Each problem is impacted, escalated, or inhibited by another. To solve the preservation issue and challenge of a site has to consider factors from all directions in diverse perspectives. When analyzing a site, preservationists frequently are confronted by an entangled lump than sometimes can be dissected into unrelated parts. How the preservation of a cave site might respond adequately to the contemporary social and economic situation in and itself a tremendous challenge.

138 “Wang Xudong da jizhe wen: Dunhuang yanjiu ruhe genghaode he ‘yidaiyilu’ de changyi jiehe” 王旭东答记者问：敦煌研究如何更好的和“一带一路”的倡议结合 [Wang Xudong answering Journalist question: How to better incorporate the promotion of the Belt and Road Initiative into research at Dunhuang], Dunhuang Research Academy敦煌研究院, October 24th, 2017, http://public.dha.ac.cn/content.aspx?id=973795347877

139 “Dunhuang Shiku wenwu jiasu ‘shuzihua’ rencai kunju jidai pojie’ 甘肃石窟文物加速“数字化” 人才困局亟待 破解 [Gansu Grottoes’ “Digitalization” urgently needs professionals], Dunhuang Research Academy, March 7th, 2018 http://public.dha.ac.cn/content.aspx?id=062247907930
Chapter V. Current Management and Visitation at the Mogao Caves

5.1 The Role of Dunhuang Research Academy

Since the establishment of the National Research Institute on Dunhuang Art in 1944 till now, the Dunhuang Research Academy has constantly been expanding its scope and functionality from only studying and researching to overseeing and administrating every step throughout the cultural heritage preservation process at the Mogao Caves. The academic focus of the Dunhuang Academy has long been extended to include not only fine arts but also historical manuscripts, conservation, archaeology, history, regional religion and culture, and beyond. From only studying the artistic achievement of the Mogao Caves’ murals, Dunhuang Academy has also been made responsible for the research, conservation, and preservation of the major cave-temple complexes in the Gansu province. Cultural properties that are now under the guardianship of the Dunhuang Academy also include Maijishan Grottoes in Tianshui, Bingling Temple Grottoes in Yongjing, Yulin Caves in Guazhou, Western Thousand Buddha Caves in Dunhuang, and Qingyang Bei Cave-Temples in Qingyang. Therefore, the vision, policies, objectives, and implications on conservation, preservation, visitation, and management applied at Mogao Caves are frequently actively adopted by regional cave sites. As the influence of the Dunhuang Academy continues to grow across the nation, preservation and management actions implemented at the Mogao Caves are closely monitor and modeling after by an increasing number of heritage management institutes.

Up till now, within the Dunhuang Academy, there are four executive committees, fourteen departments, eight administrative services, five regional institutes, and five registered corporations sharing Academy’s development and resources. Administrative services illustrated in the graph are supplementary branches for daily operational affairs. Meanwhile, the fourteen core departments constitute the curatorial provisions of Dunhuang Academy and serve as a pool of resources for the regional institutions and registered corporations under Dunhuang Academy’s supervision.
A considerable portion of the Dunhuang Research Academy now locates at Lanzhou, the provincial capital of the Gansu. What remains on the Mogao Caves are the core administrators and professional personnel that serves most intimately with the conservation, research, and management of the Mogao Caves. For Dunhuang Academy, the Mogao Caves is for sure the primary academic, research, and development resources for all its functionality and programming. However, for a regular visitor, the limited access of the Mogao Caves might have contributed to its image as a tourist destination than a resource. Comparing to the diverse
academic departments and resources enveloped by the Dunhuang Academy, visitors on the site of Mogao Caves would only interact directly with the management sector composed by the digital center, the reception department, the security department, and additional tourism services personnel. The visitation experience is composed of the visitation services provided by management sector and the products backed by the work of remaining departments. The “products” in this case range from movies, conserved caves, docents’ narration, on-site exhibitions, publications, to miscellaneous cultural creative tourism souvenirs.

5.2 Tourism Management Mechanism On-Site

In peak season, visitors are regarded as an undifferentiated mass group of subjects that needs to be moved across the confined space in a limited amount of time. Therefore, timing, preparation, and a continuous flow are essential to the management team. When a regular visitation process is initiated, the digital center would alert the visitation volume and composition (based on whether foreign language service is needed) to the reception department while the visitors are watching movies at the digital center. Before visitors arrive at the cave zone, dispatchers at the reception department would then assign docents and inform them as to the latest arrangement of the tour routes. Upon visitors’ arrival, the docents would then lead the guided tour according to the availability of designated caves. As the visitation progresses, the

---

visitation impact on the micro-climate of each cave would be instantly feeding back to the monitor center. From a management point of view, the visitation design at the Mogao Caves is highly efficient and has maximized the technologies and facilities available. The visitation design manages to prioritize the conservation and protection of the available caves while providing time for dispatchers and docents to react to the visitation volume and dynamics conditions.

Meanwhile, from the visitor’s perspective, a general flow of visitation and a possible primary impression of the site can be illustrated as demonstrated in the visitation diagram.

The tourism regulation and management frontiers are the securities (Security Department), docents (Reception Department), and the customer service personnel. Neglecting the content of visitation, the same diagram could be applied to any tourist destination. However, unlike many cultural heritage destinations that visitors could spend time at will during the touring process, the actual experience within the cultural heritage landscape (the cave zone and the caves) for visitors at the Mogao are highly limited.

Figure 5.4 Visitation Management Diagram

Figure 5.5 General Visitation Diagram and Peak Season Visitation Diagram
The visitation process at the Mogao Caves could be generally divided according to two time frames: peak season (May 1st to October 31st), and off-peak season (November 1st to April 30th).

**Peak season (May 1st - October 31st)**
- **Regular ticket**: could be preregistered online one month in priority, up to 6000 daily
- **Ticket Price**: 200 Yuan per person; 20 Yuan per person for foreign language guided tour.
- **Visitation Content**:
  - 2 movies at Digital Center:
    - *Quantum Origins*, thousand of years at *Mogao*
    - *Mengshen Fugong*, the dream-like Buddha palace (high-resolution display of seven major caves)
  - 8 caves at the *Mogao Caves’ cave zone*
  - Others: 4 museums and recreational facilities

**Emergency Ticket**
12000 daily on the following designated days during the peak season:
- Every odd-numbered days in July
- Every even-numbered days in August
- All group tours with over 100 participants will be assigned to emergency visitation in September
- **Ticket Price**: 100 Yuan per person
- **Visitation Content**:
  - 4 caves at the *Mogao Caves’ cave zone*
  - Others: 2 museums (outside of cave zone) and recreational facilities

**Off-peak season (November 1st to April 30th)**
- **Regular ticket**: could be preregistered online one month in priority
- **Ticket Price**: 100 Yuan per person; 20 Yuan per person for foreign language guided tour.
- **Visitation Content**:
  - 2 movies at Digital Center:
    - *Quantum Origins*, thousand of years at *Mogao*
    - *Mengshen Fugong*, the dream-like Buddha palace (high-resolution display of seven major caves)
  - 12 caves at *Mogao Caves’ cave zone*
  - Others: one museum and one souvenir shop

**Special Ticket for Lunar April 8th**: purchased at the ticket center in person.
- **Ticket price**: 5 Yuan per person (Only for residents from Dunhuang and its adjacent regions confirmed with their Residential Identity Cards)
- **Visitation Content**:
  - 1 cave: Cave 96.
  - 2 museums locate outside of the cave zone: Museum of the History of Dunhuang Research Academy and Exhibition of Relics From the Dunhuang Grottoes.
- **Ticket for Digital Center (2 movies) only**: 50 Yuan per person (both peak and off-peak season)
Emergency tickets are offered according to the daily visitation load during. Currently, the emergency tickets are only sold on designated days over the peak season and national holidays. In off-peak season, most of the facilities on-site are closed for energy-saving from late November to April, except the major museum that locates furthest away from the cave zone and a gift shop. However, visitors with specific interests could purchase additional guided visitation to special caves during off-peak season. The special caves are not included in the regular visitation tour routes. They are designated to be protected and preserved in priority due to their artistic values and historical significances. According to the regulation, the special caves are now only opened to public visitation in off-peak season. However, visitation to special caves remains to be an available option to qualified professionals at the same price. There are a total of ten special caves opened to the public each year. Four out of the ten costs 150 Yuan per person per cave and the remaining six costs 200 Yuan per person per cave. In comparison, because an off-peak season ticket is only 100 Yuan, a single guided visit to one of the most protected caves during the off-peak season would cost twice as much as the regular visitation package. Such a disparity reduces the visitation pressure to the special caves efficiently but also cutting off less resourceful audience’s access to the original artworks that are believed to be representing the highest achievement of Buddhist art in ancient Chinese history.

A selected few of the special caves are displayed briefly in the two movies presented at the digital center. The first movie *Qiannian Mogao* is only paving the way for the historical background of Mogao Caves, and the second movie *Canlan Fogong* is focusing on the high-resolution digital display of selected caves. As a result, visitation within the physical caves and docents’ narration along the trip become the key measure of knowledge acquisition. However, calculated according to the daily capacity of 6000 visitors, the visitation experience in each cave ranges from 3 to 5 minutes in the peak season and 5 to 6 minutes in the off-peak season. Overall, during the on-site visitation, the immense amount of research and study conducted by the Dunhuang Academy could only be transmitted through mediation—movies, docent’s narration, exhibitions, publications, and cultural creative products (i.e. souvenirs). Within the required visitation framework, only the movies and the docents’ guiding tours are the core media for knowledge and information transfer.
Figure 5.6 World Heritage Property Inscribed (upper)\textsuperscript{141}

Figure 5.7 The Digital Center (bottom)\textsuperscript{142}

\textsuperscript{141} “Mogao Caves - Map of the inspired property” \textit{UNESCO World Heritage Convention}, \url{http://whc.unesco.org/document/127711}

\textsuperscript{142} Imaged retrieved at KKNEWS, \url{https://kknews.cc/zh-cn/science/bk6y2oj.html}
Figure 5.8 Site plan of Mogao

Mogao Caves, [http://gallery.dha.ac.cn/mobile/](http://gallery.dha.ac.cn/mobile/)
5.3 Visitation Design in the Cave Zone

In 2014, the Reception Department developed three groups of travel tour routes that could be best explained by the following diagram created by the Dunhuang Academy. The newly designed dynamic tour routes reduced the former visitation of 15 caves to 8 or 12 but is described to encompass caves across different iconic artistic styles and historical timeframes. What highlighted in purple is a cross road. Such a design is said to be offering a more even distribution of the visitation bodies and a more dynamic experience for the visitor.

The cave zone is illustrated above. In the peak season when the site is not at an “emergency day,” visitors might enter the cave zone at nine-story temple (九层楼入口) or the small archway (小牌坊入口). There are seven tour routes originates from the small archway entry, while six routes from the nine-story temple. On “emergency day,” the only entry for regular visitors is the small archway. During off-peak season, the small archway becomes the only entry to the cave zone and four designed routes are proposed.

![Figure 5.9 Current visitation design diagram provided by Director Luo Yao](image)

At the beginning of each year, the Dunhuang Academy will publish a list of caves that are designated to be opened to the public. Whether a cave temple is accessible by visitors is determined according to their size and material integrity. The dynamic tour route design is set to maximize the distribution and fully utilize the scheduled public caves.

Across the tour routes, there are four set destinations on each regular visitation tour route: cave 96, 148, 16/17, and the Taoism Temple. Cave 96 hides behind the iconic architecture of the Mogao Caves, the Nine-Story Temple. The Nine-Story Temple is built right against the sandstone cliff face of the Mogao Caves. The temple seems to have been deeply embedded in the cliff face due to centuries of stand storm while half of it has just been excavated. However, the Nine-Story temple is not actually a tower with nine separate, functional stores but only a facade to the cave 96. Although the majority of murals in cave 96 has already been eroded away, what sits at the center of the cave is the largest Buddha Statue at the Mogao Caves, the Maitreya Buddha, erected in the early Tang period. With a height at 35.5 meters (around 116 feet), the giant
Maitreya Buddha statue is regarded to be the third largest ancient Buddha statue in China, following the Leshan Giant Buddha (62 meters, around 203 feet) and Rongxian Giant Buddha (36.6 meters, around 120 feet) from Sichuan. Because both the Leshan Giant Buddha and Rongxian Giant Buddha were directly carved out of the mountain, the Maitreya Buddha statue in cave 96 at Mogao is the largest ancient Buddha statue made out of mud in China.

Due to their iconicity and impressiveness, both cave 96 and cave 148 are included as two of the total four caves could be visited by emergency ticket holders. Cave 148 was excavated in the High Tang period. However, most of its murals were repainted in late Tang and Western Xia, and all of the sculptures were rebuilt in the Qing dynasty. Nevertheless, it is one of the few caves at Mogao completely dedicated to the theme of Nirvana. The structure of the cave resembles the

---

144 “Mogaoku 96 chutang” 莫高窟第96窟初唐 [Mogao Caves Cave 96 Early Tang], Dunhuang Academy, http://public.dha.ac.cn/content.aspx?id=525124140728

145 Image retrieved from Dunhuang Research Academy’s website.

146 Ibid.
interior view of a coffin. Extending from the South, West, to the North wall is a massive Nirvana sutra in the form of mural, surrounding the central “sleeping Buddha” and the monks as well as Bodhisattva standing behind him. The scale of the iconic repetitive pattern from the Western Xia period spanned across the entire ceiling of the cave creates a highly dramatic visual experience, elongating the triangular based cave and extending it to space beyond. The “sleeping Buddha” in cave 148 is only the second largest Nirvana Buddha statue at the Mogao Caves. The largest one is in cave 158. Unlike cave 148 which locates closer to the ground level, cave 158 resides at almost the top of the cliff. Moreover, because both murals and sculptures in cave 158 are dated back to the mid-Tang dynasty and determined to obtain a higher artistic value and historic value by Dunhuang Academy, the cave 158 is a special cave. Although cave 158 is incredibly well-known among artists especially sculptors and painters, cave 148 is as good as the general public could see without paying extra to visit the special cave.

Cave 16 sits within a small three-story temple right next to the northern cave zone, the ancient living quarter of the monks, painters, and laborers. The cave 16 is another large cave-temple excavated in the Tang dynasty, during the late Tang period. The cave itself was repainted in the Western Xia period into an abundant repetition of iconic Western Xia patterns, with its sculptures mostly rebuilt and re-colored in Qing dynasty as well. The most characteristic feature in cave 16 is the three-dimensional effect created by the Litu Duijin (gilding on top of the

---

147 Image treed from GettyImages.

148 Image retrieved from Dunhuang Research Academy’s website.
mounted “mud”) technique in the Western Xia period. It technique is best-illustrated by cave 16’s coffer, the masterful artwork at the center of the ceiling. If standing right below the caisson, the golden dragons and the gold floral decorations would seem to be protruding out of the ceiling, coming at the viewers. However, what makes cave 16 a fix destination on Mogao’s tour route is what once hided inside the walls of cave 16 for centuries, the library cave (cave 17), where hundreds of historical Dunhuang manuscripts, sutras, and scroll paintings once held.

Since the late 20th century, the loss of Dunhuang manuscripts has been built into the narrative of national identity. Nominated in the first one hundred of patriotic education bases in 1996 with iconic sites such as the Tiananmen Square, Old Summer Palace, and the Badaling Great Wall, story and narrative contributing to the construction of national identity becomes an inevitable facet at the Mogao Caves. Marc Aurel Stein and Paul Pelliot’s historical trafficking of Dunhuang manuscripts could be interpreted in two directions of discourse in the nationalist narrative. The first discourse is to create an instant opposition between “us” and “the western,” emphasizing on the brutality of the west in depriving and trampling a country in a disadvantaged stage. Therefore, as a country, China has to develop and advance in order to protect itself from being further deprived. This interpretation intensively flourished in the mid to late 20th century. A handful of elementary school Chinese textbooks include texts describing the Mogao Caves and the looting of Dunhuang manuscripts following the first discourse of interpretation. Although the Dunhuang manuscripts are now virtual shared among all research institutes that with the manuscript collections, the physical, original scrolls of texts and paintings remain to be stored and scattered across the globe. The second discourse is to emphasize the importance of cultural heritage preservation and the knowledge as well as the recognition of the cultural heritage’s values. The second discourse recognizes that the looting happened partially due to contemporary Taoism monk’s lack of understanding in the values of the ancient manuscripts. As a result, it is highly crucial to register the value of cultural heritage and the concept of cultural heritage preservation in the mind of the general public. And only when a country is developed and resourceful enough, it could generate sufficiently cultural heritage professionals, technologies,
and measurements to protect its cultural properties. In the past decade, the official nationalism narrative at the Mogao Caves has shifted gradually from the first narrative to the second as the field of cultural heritage preservation professionalized and eager to expand.

The last of the four set destinations is the Taoism Temple. Although it is listed on the journey of the tour and appears to be a fixed point on every visitation route in both peak season and in off-peak season, it is not an actual destination that docent would guide visitors through. The Taoism Temple locates right in front of the three-story temple structure that houses cave 16 and cave 17. The Taoism Temple was constructed in the late Qing dynasty. It was the practicing and living space for the Taoism monk who rediscovered and took care of the Mogao Caves. Since the monks being relocated out of the site in the mid to late 20th century, the temple has
been renovated into the Dunhuang Manuscript Museum, displaying the photocopies of important Dunhuang manuscripts and scroll paintings now located in UK, France, Russia, and many other countries. Due to the limited amount of time of a visitation, docents would point to the Temple Taoism without guiding the visitors through it. If the tour happens to end in front of cave 16, visitors can go and visit the temple on their own. But when cave 16 is not the final destination of the tour, the docent would mention the history of Taoism Temple as the tour carries on. So far, the Taoism Temple, or say the Dunhuang Manuscript Museum, is a rarely visited destination along the trip. Constructed alongside the nationalist narrative of cave 17, the museum occupies a crucial location inside the cave zone, but it is rarely visited or has only minimal attention paid to it, due to its lack of interpretation accompanying the aged photocopies.

Figure 5.18 Dunhuang Manuscripts Museum. The stone in front of it carved a sentence from the famous Chinese scholar Chen Yinke. “Dunhuang is the place of sorrow of our country’s academia.”

The four set destinations are the most famous features of the Mogao Caves among Chinese citizens due to the attention-grabbing titles (third largest ancient Buddha sculpture in China, or the largest mud-based ancient Buddha sculpture in China) and stories (the looting of manuscripts) that the destinations are associated with. These four destinations and their stories...
efficiently envelop the “touristic-attraction-ness” of Mogao. A considerable volume of visitors probably come to the Mogao Caves for them rather than for the immense information on art, history, and ancient societies embedded in Mogao Caves’ artworks. Meanwhile, the four fixed destinations construct a baseline interpretation of the Mogao Caves, which much of it is about building cultural identity and fostering the sense of nationalism. The grandeur of the Buddha statue in cave 96 showcases the masterful creation of ancient Chinese art, while cave 148 demonstrates the continuity of Chinese culture across dynasties. Cave 16/17 and the Taoism Temple compose a nationalist narrative of the Mogao Caves, implying the need and necessity in developing and advancing all facets of contemporary China.

Figure 5.19 The interior of the Dunhuang Manuscript Museum

Beyond the baseline narrative, the visitors will be exposed to five more caves in peak season and nine more caves in off-peak season and to learn the history, art, and ancient civilizations documented at the Mogao Caves. The following table created by author summarizes the visitation content of one of the seven regular tour routes started from the Small Archway in the peak season of 2017. The table concludes the basic information and the highlights in each cave. However, because each group could only stay in one cave around three minutes, a basic

---

The information is provided by the Dunhuang Academy’s Reception Department. The list of public caves in 2017 and the complete table on the characteristics of each public cave based on the information available at Dunhuang Academy’s website are attached in the appendix.
introduction to the cave and a highly abbreviated narration for one highlight could take up the three-minutes visitation.

Small Archway Route 1: Cave 323, 332, (16/17, Taoism Temple,) 427, 428, 71, (96, 148).\textsuperscript{151}

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
</table>
| 323                    | Early Tang | - Early Tang • Western Xia | Qing | - mural on regional tales of the history of Buddhism  
- pictorial representation of Buddhist regulations |
| 332                    | Early Tang | - Early Tang • Five Dynasties | main Buddha statue - Early Tang (renovated in later periods) • Qing | - Nirvana Buddha statue  
- Nirvana sutra mural  
- Sahasrabhuja Sahasranetra Avalokiteshvara |
| 427                    | Sui        | - Sui • Song | Sui (might have repainted sections in Qing) • Song | - intact sculpture group: III Buddha  
- front room plus central pillar main hall cave structure  
- small thousand Buddha |
| 428                    | Northern Zhou | Northern Zhou | Northern Zhou (might have repainted sections in Qing) | - Jarkata tales’ mural  
- Nirvana sutra mural and many other sutra-based murals  
- massive regional donors’ depictions  
- Central-piller cave structure  
- sculpture group |
| 71                     | Early Tang | Early Tang | Early Tang (might have renovated in Qing) | - sutra-based murals  
- The thinking Bodhisattva |
| 16/17                  | Late Tang | Western Xia | Qing | - Mount-earth gilding technique  
- small thousand Buddha  
- Library Cave  
- Caisson |
| 96                     | Early Tang | Heavily deteriorated | Early Tang (only repainted on selected regions in later dynasties) | - Nine-story architecture  
- Second largest Buddha statue in China  
- Carved-stone tiles |
| 148                    | High Tang | - High Tang • Late Tang • Western Xia | Qing | - the second largest Nirvana Buddha statue at Mogao  
- Nirvana sutra mural  
- Sahasrabhuja Sahasranetra Avalokiteshvara  
- Qing sculpture group |

On emergency days, emergency ticket holders would enter the cave zone and initiate their “emergency visits” from the Nine-story Temple. For instance, six out of the total thirteen regular tour routes are not accessible for the regular visitors on emergency days. Caves prepared for the emergency visits are 96, 148, 103, and 100 or 94 on rotation. Therefore, for emergency visitors, their visitation route can be dissected as follow. The diversity of the content is significantly reduced compared to the regular visitation. The following table represents one out of two emergency routes.

Emergency Tour Route Version 1: Cave 96, 148, 103, 100.

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
</table>

\textsuperscript{151} Summary of each tour route created by the author in table format from peak to off-peak season is included in the appendix.
When it comes to the off-peak season, the number of available caves in a single visitation rise from eight to twelfth, and the visitation duration within each cave is also doubled. However, the diversity is not necessarily increased if the docent only repetitively mentions the most basic information in each cave. Even though each visitation group could stay in each cave for up to six minutes, a basic introduction to the cave with concise narration on two or three core features could easily take up the six minutes. The docents would move on to the next cave and start narration from basic identification information all over again, consistently staying at a superficial level of interpretation regarding the content and values of the presented materials.

Off-Peak Season Route 1: (16-17 Taoism Temple) 335 332 329 420 428 445 259 244 237 (96 148)

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>335</td>
<td>Early Tang</td>
<td>Early Tang Song</td>
<td>main Buddha statue - Early Tang (renovated in later periods) Qing</td>
<td>grand scale sutra-based murals, Nirvana Buddha statue, Nirvana sutra mural, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>332</td>
<td>Early Tang</td>
<td>Early Tang Five Dynasties</td>
<td>main Buddha statue - Early Tang (renovated in later periods) Qing</td>
<td>Nirvana Buddha statue, Nirvana sutra mural, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>329</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Qing</td>
<td>Jarkata tales’ mural, sutra-based mural, small thousand Buddha, Caisson</td>
</tr>
<tr>
<td>420</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui</td>
<td>intact sculpture group: III Buddha, Persian influenced decorative motif, small thousand Buddha</td>
</tr>
<tr>
<td>428</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Northern Zhou (might have repainted sections in Qing)</td>
<td>Jarkata tales’ mural, Nirvana sutra mural and many other sutra-based murals, massive regional donors’ depictions, Central-pillar cave structure, sculpture group</td>
</tr>
<tr>
<td>445</td>
<td>High Tang</td>
<td>High Tang</td>
<td>High Tang (repainted in Qing)</td>
<td>Maitreya’s sutra-based mural with detail reflection on historical lifestyles</td>
</tr>
<tr>
<td>259</td>
<td>Northern Wei</td>
<td>Northern Wei partially Western Xia</td>
<td>Northern Wei</td>
<td>Carved niches and relief, intact sculpture group, Red color based mural, small thousand Buddha</td>
</tr>
</tbody>
</table>
Before the visitors embark on their trips, they would not have any idea which caves they are about to see or enter. Significances of Mogao Caves murals and sculptures can be broader categorized as the representation of the shifting artistic styles, the structural innovations during the cave-temples’ excavation, the historical pictorial record of regional minorities and cultural traditions, as well as the vivid transformation of classic sutra stories and Jarkata tales. Most of the routes, as demonstrated above, manage to cut across dynasties. None of the regular visitation routes can comprehensively reflect every aspect, considering the enormous information presented at the Mogao Caves. The core issue is that a visitor might not be aware of what might have been missed. Neither the exhibitions at on-site museums, Dunhuang Academy’s online catalog, or in docent’s narration reflect what crucial facet of the Mogao Caves has been skipped over in the assigned routes. For example, “small archway route 6” does not include any cave from the Sixteen Kingdoms period, of which the artistic style and painting techniques were highly distinct from the later dynasties. In the meantime, the vast majority of sculptures presence along the “nine-story temple route 2” was built in Qing dynasty and regarded to be the least aesthetically appealing artworks. For visitors that only come to the Mogao Caves once and have led to “small archway route 6” or “nine-story temple route 2”, their understanding and perception of the site would comparably be narrowed and limited than visitors assigned to other routes.152

It is also difficult to perceive a consistent narrative from any of the visitation routes simply based on the selections of the caves. The narrative has to come from docents’ narration. However, in front of the immense information set before the docents in each cave, they only need to speak continuously for three to six minutes, which could be one talking point that is

| 244 | Late Sui to Early Tang | Late Sui to Early Tang | Late Sui to Early Tang | • Buddha in preach  
• small thousand Buddha  
• Sculpture group |
|------|-----------------------|-----------------------|-----------------------|--------------------------------------------------|
| 16/17 | Late Tang | Western Xia | Qing | • Mount-earth gilding technique  
• small thousand Buddha  
• Library Cave  
• Caisson |
| 96 | Early Tang | Heavily deteriorated | Early Tang (only repainted on selected regions in later dynasties) | • Nine-story architecture  
• Second largest Buddha statue in China  
• Carved-stone tiles |
| 148 | High Tang | • High Tang  
• Late Tang  
• Western Xia | Qing | • the second largest Nirvana Buddha statue at Mogao  
• Nirvana sutra mural  
• Sahasrabhuja Sahasranetra Avalokiteshvara  
• Qing sculpture group |

152 Summarized content of all routes in 2017 see appendix.
highly synthesized in the “highlight” section on the presented tables. The quality of the tour eventually comes down to the interest and ability of the docents within a very limited time frame.

For visitors that only perceive the Mogao Caves as one of the numerous destinations on the bucket list, the number of caves and the amount of information covered along the trip might not matter much. But, for visitors that would like to repeatedly visit the site for better coverage and understanding, the whole process becomes a torment. First of all, the two movies at the digital center remain unchanged. Visitation to cave 96, 16/17, and 148 are on the set schedule. The travel routes are assigned randomly and some of the caves are also shared among several routes. Although a three or six minutes narration is highly limited and a visitor might want to enter the same cave multiple times, the narration will always remain at the most basic level which might not be helpful after the first round.

Another paradox is the number of available caves in opened the peak season and the off-peak season. In order to accommodate the visitation load, there are ten extra caves opened in the peak season for visitation volume adjustment. Henceforth, even when a visitor schedules to arrive in Mogao in the off-peak season and is highly determined to visit “all” of the caves, there is a considerable portion of materials that cannot be seen. Meanwhile, it is highly unlike for visitors to conduct multiple visits during the peak season since a regular visitation has to be secluded weeks before and might be accompanied by a considerable amount of traffic and chaos.

On emergency days, the guided tours would end after four to six caves of visitation and leave the regular visitors to merge with the emergency visitors. The actual, functional dynamic travel routes on emergency days are the ones initiated from the small archway. The original design of the thirteen tour routes is set to accommodate the maximum amount of visitors capped at 6,000. But on emergency days, all 6,000 visitors have to be crashed into the seven small archway routes. Since the primary responsibility for docents is to prevent visitors imposing any negative impact on material integrity and moving them along, when facing a highly packed caves, the docents would have to either wait for their turn to enter the cave after a group leaves or take a detour from the designated route. When any alternative is feasible, waiting is not encouraged, since it will undoubtedly impact the rate of mobility of the mass. Constant mobility during the peak season means not only efficiency but also safety in such a confined territory.
After the regular visitation ended, the regular visitors would have to line up with the emergent visitors in front of each emergency cave to continue their visit. Waiting time at cave 96, 100, and 94 could range from ten minutes to twenty minutes or more. Waiting time for cave 148 usually takes longer, which might last from twenty minutes to over forty minutes. Nevertheless, all of the waiting time inside the cave zone is only a fraction comparing to the amount of time an emergency ticket holder has to spend starting from lining up a day before to purchase the ticket, to get on a bus at the digital center at the day of visitation, and finally to enter the cave zone.

Eventually, after their free visitations to the museums and stores outside of the cave zone, all of the visitors do again have to join together the miles long line for the shuttle buses to take them back to the digital center.

For the management team, the existing plan and visitation design have already allowed them to move massive visitors across space according to a regulated time frame. It would be even better if every visitor can remain calm and peaceful during the hour-long waiting time under substantial heat in a desert environment. The management sector is regarding the visitation volume as a number that has to be accommodated. Meanwhile, the visitors generally feel rushed and disoriented when they are hurried from one destination to another while also being frustrated and anxious when they are waiting in line.

Between the enormous amount of research done by the Dunhuang Research Academy and the disoriented and anxious visitors lining inside and out of the cave zone, what could be done? What could mass visitation potentially conduct to become a resource for the management team and the preservation of the Mogao Caves? And in what way that the management and presentation of the Mogao Caves could convey information and knowledge more efficiently? As the education level of the visitors increase annually, how might a cultural heritage destination like Mogao Caves with immense to offer be regarded and utilized as an educational resource? All these questions are subjects to be explored by contemporary Chinese preservationists.

5.4 Situation and Visions of Mogao’s Travel Exhibition

During on-site interviews, several heritage professionals reflected that replica caves and travel exhibitions might become the core preservation method to accommodate the need of
promoting the cultural heritage, while preserving its material fabrics. The travel exhibition is also regarded to be the best circumstance to execute the education responsibility of a cultural heritage site. The current principle of the Dunhuang Academy envisions the travel exhibition to take the major role of educating the public about the historic and artistic significance of the Mogao Caves, and hopefully also diverting the visitation load off the site. In the meantime, the site itself will become a space for visitors to obtain the atmospheric component, which is composed of regular visitation to a very limited number of caves and the appreciation of Mogao’s landscape. As honestly commented by multiple heritage professionals and visitors at the Mogao Caves, although the site itself hosts a stronger sense of the history, the materials present at the travel exhibition (though are copies) are more instructive and better in artistic value then what can be accessed on site. Henceforth, though it has yet to be publicly announced, the Dunhuang Academy might be continuing to put more emphasis on composing travel exhibitions than on-site interpretation.

The travel exhibitions of the Mogao Caves encompass the hand-painted copies of a selection of the most valued Mogao Caves artworks range from murals to sculptures and the replica caves of several iconic, special caves that have determined to obtain highest historical and artistic values. Travel exhibitions are usually constructed as cooperation between the local agencies and the Dunhuang Academy. The process is initiated by a local agency inviting Dunhuang Academy to conduct an exhibition at a selected space either within a museum or an exhibition hall. The Academy would then allocate artworks and arrange exhibition content based on the volume of the exhibition space. The travel exhibition of the Mogao Caves originated as small, diplomatic exhibitions abroad in embassies and international research institutes. More recently, besides international destinations, the exhibition about Dunhuang culture and Mogao Caves has also traveled extensively within China including Beijing, Chengdu, Shanghai, Taipei, Shenzhen, and smaller cities and towns. Although the origins of individual visitors are not comprehensively documented by the tourism management sector, the management personnel at the Mogao Caves have sensed the same trend: the Mogao Caves travel exhibition is one of the major drivers of visitation growth. For example, after a four-month exhibition from the end of 2017 to April in 2018 held in the capital of Sichuan province, Chengdu, docents generally
detected a significant growth of the amount of Sichuan visitors in the summer of 2018. According to the news report, over one million visitors have visited the Dunhuang travel exhibition. In 2016, the site experienced a considerable growth of visitors from Shanghai after the Mogao travel exhibition held in Shanghai Himalayas Museum from the end of 2015 to the March of 2016. Starting from December 30th in 2017, the Mogao travel exhibition again has reached Shenzhen. The discussion and evolution of Mogao’s travel exhibition in this research focuses on the content and media presented in the 2017 Shenzhen exhibition.

*Mysterious Dunhuang* at OCT Exhibition Center in Shenzhen

The *Mysterious Dunhuang* exhibition opens from December 30th 2017 to March 30th 2018, similar to the previous major exhibitions held in Chengdu and Shanghai. It is highly possible that the Mogao Caves might be enjoyed a tremendous growth of visitors from Shenzhen and the Guangdong province in the summer of 2018.

According to the exhibition’s introduction, the exhibited materials include eight replica caves from Mogao and Yulin, 50 copies of representational murals and sculptures, and several printed replications of scrolls and major manuscripts currently stored in the British Museum and the National Library of France. Augmented Reality technologies are also incorporated into the exhibition. The entry ticket is 130 Yuan for an adult on weekdays, 150 Yuan on weekends and holidays. For children before 12 and students under the age of 21, the entry ticket is 100 Yuan per person. The exhibition also set a family ticket package which is 330 Yuan for two adults and one kid. The exhibition does not provide free guiding tour. The guiding service is an additional 300 Yuan, which also limits touring group to under ten people. The guiding service includes a general introduction of Dunhuang and explanation of the eight replica caves, which might last from one to two hour. Because the exhibited caves are the replication of the special caves, sometimes a detail interpretation of one cave could easily last twenty to thirty minutes. If a visitor has an interest in a specific topic or subject, the narration would adjust accordingly. Comparing to the regular visitation at the site, such an experience could be characterized as

---

luxurious. All of the guides presence at the exhibition are docents from the Mogao Caves and attempt to recreate an atmosphere that the visitors are visiting the real caves. Therefore, the docents would point to the feature he or she is talking about in the republic caves with the flashlight just as they do in the original caves. Some of the docents have participated in several travel exhibitions and the team might continue to travel to the next exhibition destination after this one is concluded.

Beyond the replica caves, are individual hand-painted representational murals and copies of Buddhist sculptures by artists from Dunhuang Academy. However, the murals and sculptures are not further interpreted beyond basic information documented on the labels. The large paintings on Jarkata tales and stories from sutras are left unexplained. It might be because the theme of this exhibition is “mysterious.” The Qiannian Mogao and Canlan Fogong that are included in the regular visitation at the digital center is also playing repeatedly in a small screening room. Such a choice is considered to be quite bizarre for visitors who have not yet been to the Mogao Caves. For those who are not planning to go to the site and choose not to visit with a guide, the movies are sources for basic information. But for those who are planning to go to the site, they might feel extra disappointment when they see the movies they have seen on exhibition and visit caves that are less dramatic than the copies. From the selected materials, it is fair to guess that the Dunhuang Academy might want to substitute the visitation at the site with the travel exhibition. But the visitors at the exhibition are not explicitly made aware of such an intention.

The augmented reality technology applied in the exhibition is projecting videos to the hemispheric ceiling of the exhibition center. Though many of the augmented reality performances are done through projections, they tend to create a dynamic relationship between the image being projected with the architecture or artifact projection rests upon. The augmented video in the exhibition shifting among the abstracted Buddhist figurative imageries and a scene that might be representing the universal. Again, no further explanation and very mysterious. The hemispheric ceiling aligns perfectly with the constellations. It is a very obscure interpretation of the site, but it is undoubtedly creative.
The exhibition general leaves an impression to the visitors that the Mogao Caves are absolutely diverse and astonishing. But as a theme based exhibition, it is difficult to name a “take away” beyond knowing it is beautiful. The history and culture so highly valued again are flattened to an art show. There seems to be no factual information that could be apprehended. The store attached to the exhibition is also selling souvenirs created based on the artworks rather than sources of information. The education function seems to be missing. If the goal of developing travel exhibition is to separate the education function from the touristic function, current travel exhibition do not fully satisfy such a vision. Theme based tours have been explored during the exhibition at the Shanghai Himalaya Museum and obtained great reflections from the general public, but such an interpretation method has yet been incorporated into the exhibition as part of its programming. “Only docents with more than ten years of experience might be able to conduct a theme based tour” commented by a younger docent. To execute its education function, theme-based tours, programming, and narration could serve as a baseline and develop into specified workshops and activities that feed into public engagement.

According to the docents at the exhibition, a regular visitor that is not familiar with the content, he or she might not be able to tell the replica cave for the real cave or not even perceive the visual experience at the exhibition and at the site to be highly different. But when two choices are conceptually similar to a regular visitor, as testified by the comparative case studies, the visitors will choose the authentic experience or at least to experience both. Thus far, the travel exhibition has yet been able to divert any visitation volume but create more as it instigates the interests of the audience.
Chapter VI: Global Trends and Issues: Case Studies

In an effort to slow down the decaying process of murals and sculptures, as discussed in the previous chapter, with the diligent work of generations of artists from the Dunhuang Research Academy and the availability of modern reproduction technologies, the Mogao Caves obtains a remarkable collection of the replicated murals and sculptural highlights from the most aesthetically appealing and iconic caves. The travel exhibitions are set to address and communicate the historical and artistic values of the Mogao Caves, serving as an educational asset. Meanwhile, the Mogao Caves remains to be a historical and cultural landscape for visitors to experience. Thus far, such an ideal scenario has yet been achieved. Not only that the education function has yet to come across at the travel exhibitions, but the visitation volume at the site also dramatically increased, fragmenting and impairing on-site experience even more, and leaving minimal capacity for further interpretation.

Henceforth, in searching ways and methods to preserve and interpret the Mogao Caves under tremendous visitation pressure, the following international case studies are closely examined. In their preservation projections, they have turned to similar actions and responses to conserve fragile archaeological cave sites while accommodating the need for education and visitation, regional tourism industry, and diverse academic research purposes. All of the five cases have chosen to construct replicas for various purposes as an approach to either amend visitation demand or diver visitation volume. Facing similar challenges and have taken similar resolutions as the Mogao Caves, the selected case studies illustrate how contemporary cultural heritage preservation measurements are incorporated at archaeological cave sites or cave-like, semi-enclosed underground structures to amend public visitation. This section aims to evaluate how replicas are used, for what purpose, and whether if the approach is effective in each case. Each case is further compared with the circumstance that the Mogao Caves currently situates in, enlightening what the Mogao Caves could achieve and shall accomplish in the near future.

The selection criteria of the case studies are:
1) Cave site or has cave-like structures that enclose a limited space.
2) Its significance is tied to the fragility of its content, more specifically, enduring conservation challenges due to the presence of cave paintings or wall painting.
3) It is under the pressure imposed by visitation.
4) Renowned visitor engagement methods have been explored to safeguard the original fabric.
5) Availability and accessibility of its information beyond the restriction of its physical location.

As a result, the final selections include the cave in Lascaux, France, the Cave of Altamira in Spain, the Tutankhamen’s Tomb in Egypt, the Takamatsuzuka Tumulus in Japan, and the Ajanta Caves in India.

6.1 Lascaux

Lascaux is located near Montignac, a small village in southwestern France. In 1998, then 2002, the most recent and convincing radiocarbon dating on a fragment of a reindeer antler baton excavated on the archaeological site has placed the Lascaux cave site between 18,600 and 18,900BP. Combining formal analysis of the painted figures and the geometric signs, art historians also agree that the site corresponds with Solutrean tradition, in comparison with other Paleolithic cave sites across a similar timespan, such as the Tête-du-Lion in Morocco and Cussac also in France.

Not far from Lascaux, more than 37 decorated shelters and caves are located in the village of Eyzies-de-Tayac Sireuil with greater numbers of habitat sites dated to Upper Paleolithic period. As a result, the Vézère Valley region is believed to have the highest concentration of Paleolithic cave sites in western Europe. A hundred and forty-seven prehistoric sites with a total of fifteen towns and villages along the Vézère Valley including Lascaux and Eyzies-de-Tayac Sireuil are catalogued under one World Heritage nomination in 1979. The nomination titled “Prehistoric Sites and Decorated Caves of the Vézère Valley,” following the cultural criteria of i and iii: “...represents a masterpiece of human creative genius


and cultural significance…” and “…to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared.” 157

After being discovered in 1940, Lascaux was opened to the public visitation soon after the World War II on July 14th, 1948. Nevertheless, even with an average amount of 1800 visitors daily, the rise of carbon dioxide and humidity levels caused destructive intervention to the microclimate of the cave site.158 In 1963, the cave was closed to the public. In that same year, biocide spray was used to control the growth of bacteria and algae. However, the effect only lasted for six years. Regular maintenance and cleaning was required since then.159 Fusarium solani (a white mold) and Pseudomonas fluorescens first appeared in Lascaux in 2001. With the outbreak of these two fungi and bacteria colonies Lascaux officially entered a “major microbial crisis.” An “intense treatment” was then applied in 2001, using benzalkonium chloride solutions, which were later replaced by mechanical cleaning and air extraction in 2004. In the meantime, observable black stains were recorded in 2003, and some of the black fungus colonies even migrated to the tinted painted regions in 2006.160

Through international research journals and news platforms, the outbreak of Lascaux’s severe, and uncontrollable fungus and bacterium crisis were passionately and broadly shared with the world by individuals concerned with heritage and art.161 162 In the Rock Art Research journal published in March 2007, Melody Di Piazza publicly protested that “according to their (French authorities) statements in public interviews, the cave is now recovering and the crisis is over. This could not be further from the truth.”163 As suggested by Di Piazza, from January 2008 to April 2008, the cave was entirely shut down. Even scientists and preservationists were not


allowed to enter. Only one individual was allowed in for a short inspection once a week to monitor conditions. The number of personnel gradually increased over the course of the year. Molly Moore from the Washington Post titled her report on Lascaux black fungus encroachment as “Debate Over Moldy Cave Art Is a Tale of Human Missteps.” In the following years, Lascaux was constantly announced to be “stable” or again falling into “crisis.” To date, Lascaux is still regarded to be one of the most known, well-studied, but unresolvable cases in the realm of cave site conservation facing the issue of microbial outbreak. The original Lascaux cave site remains closed to the public.

Meanwhile, Lascaux is among the first few cave sites to respond to the public interest through the use of full scale re-creations of the painted figures in their original position and forms on cave rock. The famous Great Hall of the Bulls, named Lascaux II, was created and exhibited in the vicinity to the original cave in 1983, which is now the most visited “prehistoric” cave in the world, receiving 250,000 to 270,000 visitors per year. Lascaux III was created in 2012 as a mobile Lascaux facsimile kit set with all characteristics captured and featured. Lascaux III is designed to travel and exhibit the “Lascaux” culture in leading museums around the world. Currently, the Lascaux III and prehistoric artifacts excavated from the cave site are exhibited in Japan. On December 15th in 2016, Lascaux IV was installed in the Centre of Prehistoric Art, or the new Lascaux center. Still hand-painted by artists, Lascaux IV incorporates a full range of the parietal art in Lascaux and is supported by multi-screen displays and interactive tours. Visitation review published on the North of the Dordogne documents the visiting process at Lascaux II as fully guided tours with detail explanations of the depicted images and artifacts and...

---


165 Fasi, Wu et al. 武发思 等, “Taiyuan beoti Xu Xianxiu mu bihua zhenjun qunluo zucheng yu junhai chengyin” 太原北齐徐显秀墓壁画真菌群落组成与菌害成因 [Fungal community composition on normal and moldy mural in Xu Xianxiu’s tomb of Northern Qi Dynasty, Taiyuan], Microbiology China 微生物学通报, Mar. 20, 2016, 43(3): 479-487 DOI: 10.13344/j.microbiol.china.150486


by incredibly knowledgeable guides, both in the Great Hall of the Bulls and the attached museum. The recreation of the Great Hall of the Bulls is said to be incredibly vivid and closely resemble a real cave.\(^{168}\) Similar remarks are attributed also to the exhibition of \textit{Lascaux IV}.\(^{169}\) Although the facsimiles of the cave rock substrates are constructed from high-resolution scan of the original rock surfaces, because the figures and the depth of colors upon the rock surfaces are all hand-painted by artists, audiences are not supposed to touch the recreations. \textit{Lascaux IV} emphasizes its interactive aspect more through other exhibition installations than focusing on the recreation itself.

Besides facsimiles, operated by the National Museum of Archaeology in France, the official website of Lascaux (\url{http://archeologie.culture.fr/lascaux/en}) features a virtual guided tour of Lascaux’s interior space.\(^{170}\) The virtual tour is composed of short, high-resolution fly-through videos of the significant features among Lascaux caves. However, the virtual tour has a designated path and pre-determined views. Viewers cannot navigate through the virtual space based on their own interest. Viewers cannot adjust their perspectives, or zoom in (“stand closer”) to the artworks. Although in high resolution, the virtual space still looks more animated than lively. The texture of the cave rock and the layering of pigments cannot be perceived.

Inspired by Lévi-Strauss’ theory of structuralism in \textit{Mythologiques},\(^{171}\) French paleoanthropologist André Leroi-Gourhan crafted the \textit{Le Geste et la parole I & II} (1964–65)\(^{172}\), two volumes that paved the way for analytically approaching human cognition through interpreting archaeological features such as Paleolithic art. Leroi-Gourhan argued that through the course of human history, human society as a whole has been increasingly emphasizing the boundaries and limits, across both space and time. Spatially, the “discovery” or construction of


\(^{170}\) \textit{Visit the Cave | Lascaux}, archeologie.culture.fr/lascaux/en/visit-cave/diverticule-axial.


humanity as a coherent identity imply its separation from the - presumably - objectively existing nature. The duration of time is also a conceptual construct that has been created to fracture and quantify a virtually boundless element.\textsuperscript{173} Henceforth, the human cognition and perception of the external world might also have been a boundless one. Both space and time shall be perceived as endless, and also as in one entity. In contrast to portraits and landscape paintings hanging in frames, Paleolithic art is not envisioned to have borders.

Art conservators always try their best to restore and accommodate the artist intends. It would be impossible to trace the artistic intent of the Paleolithic painters. Even articulating or communicating the concept of “art” to the Paleolithic artists across the table might be an impossible task. Nevertheless, according to the widely accepted while debated theories from Leroi-Gourhan, exhibiting discontinuous rock cave surfaces and extracting only sections of the caves from its original space will not recreate the same intention of the subjects as what the Paleolithic painters once had. A guided tour, whether a physical one or a virtual one, often implies a time restriction on the visitation. For instance, the existing Lascaux exhibitions and online tours are neither “boundless” nor “timeless.” Just as the medieval paintings exhibited in museums so far are not and cannot be perceived under candle lighting. The advancement of digital and fabrication technologies might one day achieve in mitigating and resolving the conflicts between diverse scholarly interpretation, public education, and unending conservation challenges through a highly globular mediation that could support dynamics interactions and interpretations.

Comparing to the Lascaux, although the Mogao Caves is not entirely closed to the public, the most extraordinary caves can only be viewed under specified conditions. Therefore, the replica of Lascaux and the Mogao Caves both having the objectives to bring forward what the general public cannot see during their regular visits to the site. Meanwhile, unlike the replica of the Mogao Caves that are still trying to figure out their roles and goals in facilitating the preservation process, Lascaux’ replica are specifically set to amend visitation desire, enhance interpretation, and communicate the value of the site at a global platform. Because Lascaux is

closed to the public, when visitors decide to visit Lascaux after they have seen its travel exhibition, there is a more comprehensive exhibition at Lascaux built by a grander replica and interactive technologies. As a result, visitors would not directly impact the fragile wall paintings within the caves while appreciating the historical natural landscape, and they can still bring economic growth to the region. On the contrary, travel exhibitions generate substantial attention for the Mogao Caves and drive up the visitation volume enormously. Because the Mogao Caves are opened to the public, in order to prevent massive population accumulation both on-site and within the city of Dunhuang, visitation content is intensively compressed while site capacity is constantly challenged. Moreover, since the highlights that are displayed on the travel exhibitions are presented neither during cave visitation nor at the exhibition center, the disconnection of interpretation further diminishes the interpretation of the Mogao Caves. Travel exhibition is only one section of the loop in the case of Lascaux. It is supported by the exhibition at the site. The Mogao Caves has successfully adopted the notion and form of the “travel exhibition,” but has yet linked this section into a compatible preservation agenda.

6.2 The Cave of Altamira (Cueva de Altamira)

The Cave of Altamira is located near Santillana del Mar, in Cantabria, Spain. It is regarded as the first Paleolithic rock art site discovered in recent history, 1879. Stratigraphic analysis reveals eight archaeological levels. Carbon-14 testing on the vegetation carbon found on some of the paintings have dated the painted figures to be from the Magdalenian period (16,800-19,000 BP). Meanwhile, Uranium-series testing has dated a red abstract symbol in the so-called Polychrome Room to 35,600 BP during the Aurignacian period. Unfortunately, archaeological remains have yet to be discovered at the Aurignacian level in the cave.

---


The Cave of Altamira was inscribed on the World Heritage list in 1985 via criteria I and III upon the Spanish government’s request. In 2008, that World Heritage entry was expanded to a total of eighteen sites under the nomination “Cave of Altamira and Paleolithic Cave Art of Northern Spain.” Comparing to the Cave of Altamira’s designation report in 1985. However, unlike the State-driven nominating process in 1985, the expansion of the original nomination was a more inter-collaborative journey. The collective documents (including the nomination proposal and annexes) of the nomination passed in 2008 emphasize further the overall management planning, as well as clarify the objectives for each regional governmental body involved. Just as the official website of the Altamira National Museum and Research Centre has stated, the expansion of the nomination is a way to compel the regional administration where the cave sites reside to ensure the conservation, protection, management, and evaluation of the Paleolithic history in Northern Spain. Exemplified by Lascaux and Altamira, conservation and management of one single Paleolithic cave site could be highly costly and demanding.

The tension and relationship between the state and the regional administration in Spain on the subject of guardianship of important cultural heritage existed as early as the 1970s. In the 1970s, a political dispute about the ownership of Altamira received a considerable amount of public attention. Meanwhile, 175,000 visitors came to Altamira in 1973 to have a glimpse of the prehistoric art. In the October 1977, Altamira was closed to the public due to deterioration after years of visitation and lack of adequate conservation. In 1978, the Spanish government took the opportunity to gain Altamira’s ownership and filed its World Heritage nomination subsequently. In 1982, a microclimate survey of the Altamira concluded that the cave was


stable enough to open to the public capping visitation. Sánchez-Moral recorded in a journal article that the limit was 11,000 visitors per year.\footnote{Sánchez-Moral, S. et al., *Sci. Total Environ.* 243-244, 67 (1999).} Whereas the Museum of Altamira states to be 8500 visitors per year.\footnote{Conservation - Museo Nacional y Centro De Investigación De Altamira - Ministerio De Educación, Cultura y Deporte - Gobierno De España, www.mecd.gob.es/mnaltamira/en/cueva-altamira/conservacion.html.} In September 2002, because of the intensive growth of phototrophic microorganisms accompanied by the appearance of a white mold (closely resembling the fungus in Lascaux), Altamira closed again. Scientists have attributed the major causes to: 1) the disturbance of Altamira original, nutrient-poor, microenvironment; 2) increase in water infiltration; 3) use of artificial lighting in areas where there was for long an absence of light (triggered the outbreak of phototrophic microorganisms).\footnote{Ibid. Footnote 26.}

From 2003 to 2005, the cave was monitored and reached an equilibrium stage after two years of implementing environmental controlling mechanisms designed by the Spanish National Resource Council, or CSIC by its Spanish name Consejo Superior de Investigaciones Científicas. An archaeological excavation taking place in 2006 once again disturbed the microenvironment and resulted in fungus outbreak; CSIC came back and enhanced its monitor and treatment for Altamira from 2007 to 2009.\footnote{Constenla, T. *El País*, 21 December 2010, www.elpais.com/articulo/english/The/prehistoric/art/that/won/t/be/ seen/elpepueng/20101221elpeng_4/Ten.} In 2010, reopening the cave to the public was again seriously considered in the context of facilitating the local tourism economy.\footnote{Ibid. 26.} Nevertheless, in order to come up with a comprehensive plan that conducts preventive conservation while accommodating public interests, a study was undertaken in 2012 to determine the relationship between microbial growth and visitation load. Microbiology research published in 2014 states that there is potentially pathogenic microorganisms present in the caves. Visitors shall be informed that individuals with “immunosuppressed, undergoing chemotherapy, or have lowered defenses” should not visit the site. Respiratory system and skin diseases are possible to be induced by the microorganisms identified in the Altamira cave. The research further recommends that visitors...
“should wear protective mask, gloves and clothing” during their visit.\textsuperscript{186} Starting from March 2015, the Altamira National Museum and Research Centre agreed to open and cap the access at five people per week in the context of further investigating the dynamics between human presence and the stability of Altamira’s microclimate.\textsuperscript{187}

Replicas of sections of the Cave of Altamira were installed at the Deutsche Museum in Munich as early as 1964. The second copy now lives in the Archaeological Museum in Madrid.\textsuperscript{188} Probably caused by the limitation of contemporary technology, the base material of the Altamira replica in Munich appears to be foam, which appears to be highly unrealistic in close-up photos.\textsuperscript{189} The replica in Madrid’s Archaeological Museum appears to be enjoying a fairly smooth surface as well.\textsuperscript{190} Meanwhile, the replicas in Anthropos Pavilion of the Moravian Museum\textsuperscript{191}, the Prehistoric Museum of Teberga\textsuperscript{192}, as well as the Neocueva at the Altamira National Museum all seem to utilize on thick plaster bases, generating a sense of rigid and granular that resembles more closely the original rock surface under adequate lighting. However, the plaster replicas still look quite “unreal” when they are observed closely. Pigments has begun to fail at groves and joints.

Similar to recreations of Lascaux, the replica in Altamira National Museum, the Neocueva, is also presented in a set-up that mimics its original cave. Just as Lascaux, all painted figures and major sections with the high concentration of symbols and figures are faithfully


\textsuperscript{187} Ibid. 29.

\textsuperscript{188} Archaeology Travel, 25 July 2017, archaeology-travel.com/news/altamira-cave-re-open-for-visitors/.


\textsuperscript{190} “Portion of Replica of Altamira Cave Painting. - Picture of Museo Arqueologico Nacional, Madrid.” TripAdvisor, www.tripadvisor.com/LocationPhotoDirectLink-g187514-d244277-i99306075-Museo_Arqueologico_Nacional-Madrid.html.

\textsuperscript{191} Category:Replica of Altamira Cave in Anthropos Pavilion of the Moravian Museum - Wikimedia Commons, commons.wikimedia.org/wiki/Category:Replica_of_Altamira_cave_in_Anthropos_Pavilion_of_the_Moravian_museum.

\textsuperscript{192} Category:Replica of Altamira Cave in Prehistoric Museum of Teberga - Wikimedia Commons, commons.wikimedia.org/wiki/Category:Replica_of_Altamira_cave_in_Prehistoric_museum_of_Teberga.
copied, but the remaining rock surfaces are more presumably atmospheric than accurate. Unlike the newly opened *Lascaux IV* which so far only have a total of nine reviews listed on the TripAdvisor on December 12, 2017, the Altamira National Museum has 1,889 reviews up to the same date. Among the 1,889 reviews, 42% of comments labeled the visitation as “Excellent” alongside with 33% “Very good,” 15% “Average,” 6% “Poor,” and 4% Terrible. Positive comments concentrate on complementing the content of the exhibition: the exact copy of the real cave and the thousands-year-old artifacts. Whereas besides warning future visitors about not being able to see the real cave, negative comments emphasize the long waiting time in front of the ticket office, and the crowded, rushed, unpleasant nature of their visit. Comments about long lines and rushing through the space take place largely in mid- to late June, July, August, and early September, the typical peak season for famous heritage sites.\(^{193}\) Comments also reveal that visitors can choose to follow the guided tour or not, but only very few English tours are available.

At the other end, the Altamira National Museum also has published the record of yearly visitation numbers and analyses of visitor composition via the Office of State Museums at the Ministry of Education, Culture, and Sport in the past few years. An average of 250,000 individuals visited Altamira National Museum from 2005 to 2017.\(^{194}\) Visitor data shown in the *Museo Nacional y Centro de Investigación de Altamira* published by the same ministry reflects that the Altamira National Museum has the highest percentage of children visitors in comparison to other state museums.\(^{195}\) It also explains why some of the reviews on TripAdvisor provides positive feedback on behalf of their kids, while some question whether the exhibition caters too much towards child entertainment and have left out recent archaeological discoveries and other scholarly research. Meanwhile, “real cave” experience is also not recreated as an alternative for the Cave of Altamira. However, if one persists to experience the authentic Paleolithic rock art in

---


\(^{195}\) “Composición del publico visitante del Museo,” *Conociendo a nuestros visitantes: Museo National y Centro de Investigación de Altamira*, Ministerio de Cultura, p. 17 http://es.calameo.com/read/00007533570e6bfe6baed
its original location, one could visit the Tito Bustillo Cave not far from the Altamira. Out of its twelve Paleolithic art collections, the main panel is opened for public visit in designated time of year to generate revenue for preservation and conservation.196

In the case of the Cave of Altamira, it is interesting to notice that it does not have a regular travel exhibition based on replicas but several proxies installed in multiple nations. The site does not have to endure waves of visitors attracted by the temporary travel exhibitions since its fame is out there and its values continuously communicated to the visitors through its replicas around the world. More importantly, the visitor report published by the Altamira National Museum indicates that although there is a regulatory capacity as part of museum’s visitation regulation, the visitation volume itself seems to have reached a natural cap. The number of visitors comes to the site is readily steady over the past few years. Although sending out replicas to be installed around the globe seems to be a bold move, it becomes an effective approach for both managing the prospective visitation volume and informing the public of the stories of Altamira. Thus far, the Mogao Caves do not have any physical long-term installation or exhibition created for them in any museum beyond Dunhuang. Travel exhibitions are bringing in various volumes of visitors in an unpredictable fashion. Installing permanent exhibition about the Mogao Caves across the nation could be a step to consider in the far future, but thus far the Mogao Caves would need to figure out a way to absorb or divert the visitation volume while comprehensively addressed the significances of the site. Such a visitation absorption mechanism, either it is in the form of a museum, a visitor center, or a new tour route, would need to be established before the construction of any permanent exhibition elsewhere.

6.3 KV62 (Tutankhamen’s Tomb)

The Tomb of Tutankhamen is the most famous archaeological finding in the early 20th century. Discovered by Egyptologist Howard Carter in 1922 and consecutively excavated for almost ten years (1923-1932), the treasures yielded by the tomb made Tutankhamen the most well-known pharaoh worldwide though he died at the age of 18 with a reign that only lasted for

---

nine years (ca. 1333-1323 B.C.). Although buried with an enormous amount of precious artifacts, the area of the tomb was relatively confined and mapped to be only 109.83 m², combining its entrance staircase, corridor, antechamber, and the burial chamber. The confinement of space is attributed to Tutankhamen’s sudden death, entailing that the tomb might have been intended for another personage of a lower rank.

Ancient Thebes with its Necropolis was enlisted as a World Heritage site in 1979 under criteria I, III, and VI. Ancient Thebes was recognized to be the city of Amon and the capital of Egypt in Middle and New Kingdoms. To date, the nomination encompasses the Temple of the Karnak, Temple of Luxor, and the Ancient Thebes Necropolis. KV62 was included as part of the Valley of the Kings, in the ancient Thebes Necropolis. The geographical and climate formation at Egypt determines that the archaeological sites locate at Thebes West Bank to be under the constant threat of seasonal flooding. The latest report submitted to the World Heritage Convention in 2017 identified the major affecting factors ranging from raising the water level, risks of flooding, lack of comprehensive management plan, encroachment of major infrastructure and development projects, encroachment of housing and agricultural use, to demolition and transferring of the local community. It further highlights the pressure of mass tourism. Physical damage has occurred due to visitor touching. Mass tourism has also incentivized the growth of an unregulated and unauthorized tourism recreational infrastructure. The pace of urban encroachment is likely to be escalated by the continuous increase of tourism.

KV62 serves as an Egyptological designation of Tutankhamen’s tomb marking the location of the tomb in the Valley of the Kings on the Thebes West Bank, Egypt. It falls into the territory of the modern city of Luxor. If the impact of mass tourism is put aside, most of the

---


The material conservation challenge of KV62 resides within the decadent nature that murals and wall paintings generally share. The remaining conservation issues on material fabric relate to the historical residues from early un-professionalized archaeological excavation and premature conservation actions. For example, the partition wall between chamber I and chamber J was removed by Carter and his team to take the larger artifacts and Tutankhamen’s funeral shrine out of the tomb. Early conservators once attempted to use gypsum casts to imprint and replicate murals from KV62, which directly introduced multiple physical damages to the original materials. In collaboration with Egypt’s Supreme Council of Antiquities (SCA), the Getty Conservation Institute conducted a five-year project titled Conservation and Management of the Tomb of Tutankhamen. The project primarily focused on scientific analyses and research but also achieved in establishing parameters for conserving material integrity in the long run. Meanwhile, recognizing the intensity of the visitation that has already occurred and might continue to evolve, the Getty Conservation Institute further proposed an overhang platform in the antechamber to minimize visitor impact on the burial chamber.

The history of preservation at KV62 might not sound as dramatic as the unending microbial invasion that happened at Altamira and Lascaux, but it faithfully documented the confrontation between the understanding of conservation and the urge of development in a developing country. Early in 2000 and 2002, the World Monuments Fund added the Valley of the Kings to its World Monuments Watch list to alert governmental and related agencies on the negative impact of tourism. In 2010, the Egyptian government decided to close the tomb “indefinitely” in concern for the potential human impact on the remaining material fabric. In 2011, the Guardian released an article claiming that due to the tremendous risk imposed by mass

---


202 Recovered by Factum Arte during the project “The Facsimile of Tutankhamun's tomb”.


visitation, “your last chance to see Tutankhamun’s tomb” might have arrived. Soon in 2012, the Guardian posted a short video titled “Tutankhamun's tomb reopened as Egypt hopes for tourism boost.” For preservationists, archaeologists, and historians, ancient Thebes as a historical and archaeological landscape speaks more profoundly about the Egypt and Egyptian history than the tomb of Tutankhamen alone. Today, KV62 still hosts the sarcophagus and the body of young pharaoh Tutankhamen. Though waves of visitors declared to be disappointed by the fact that the treasure of the Tutankhamen is no longer in his tomb but in the Cairo Museum, the global fever for King Tut does not relinquish. Thus far, KV62 and other pharaoh’s tombs in the Valley of the Kings are still opened to public visitation on a rotation basis.

On the April 30th of 2014, the facsimile of the tomb of Tutankhamen was opened to the public officially. It is located at the Howard Carter House north of the Valley of the Kings. The facsimile was produced by Factum Arte, a Madrid based team focused on recreating artifacts and cultural heritage with high-resolution three-dimensional scanning and dynamics printing technologies. The replication process was set to the highest possible standard. With a cost of $690,000, the facsimile is said to reach a level of detail indiscernible by eye. The facsimile of KV62 aims to divert visitors from the actual tomb. The facsimile allows the visitors to closely observe murals and take photos in front of them. Lost sections of the original murals are digitally restored and recreated on the facsimile. Visitors who have visited the facsimile generally complemented it on the level of completion. Some say it is better because it provides greater access while much less crowded. The others comment on the proximity of the real tomb and the fact that it is empty. Although the majority of comments characterized the experience at the facsimile “worthwhile” and many visitors even suggest to “go to Carters House (to see the

---


facsimile) instead,” interestingly, all of the visitors have visited the real tomb either before or right after seeing the facsimile.\footnote{“Tomb of King Tutankhamun (Tut),” TripAdvisor, https://www.tripadvisor.com/Attraction_Review-g294205-d472284-Reviews-Tomb_of_King_Tutankhamun_Tut-Luxor_Nile_River_Valley.html} The facsimile provided an opportunity for visitors that are highly interested in the King Tut’s story (to a point that even a recreated house of the tomb’s excavator could be on their visitation bucket list) to have a more intimate experience with the “tomb.” But it seems that no one would only visit the facsimile instead of the real tomb. As posted candidly by “avalon2020” from Cairo on the March 13th of 2017, “why visit a replica of King Tut’s tomb when you'll be walking right by the real one when you visit Valley of the Kings. And the real one has his mummy and one of his coffins.”\footnote{“Howard Carter House,” TripAdvisor, https://www.tripadvisor.com/Attraction_Review-g294205-d1637143-Reviews-or30-Howard_Carter_House-Luxor_Nile_River_Valley.html} No matter how marvelous and detailed the facsimile is, it would not be able to create the diverting effect that it aimed to establish. If the original tomb is closed, the facsimile will for sure be overloaded by visitors that want to see what the famous Tutankhamen’s tomb is like. Nevertheless, that would not be considered to be diverting tourists to the facsimile but relocating. The facsimile would then become (but easily replaced) the second replica of Altamira, demanding to be regulated as the original destination once was.

Although the high-resolution facsimile is attached to the Carter House and major treasures such as the Gold Mask of Tutankhamen is no longer allowed to leave Egypt, the Tutankhamen exhibition in Dorchester, England, still manages to recreate the antechamber of the tomb when it was first discovered and the burial chamber when the golden coffins was separated from the sarcophagus with “care and accuracy of the archaeologists and craftsmen.”\footnote{“The Exhibition,” The Tutankhamun Exhibition, https://www.tutankhamun-exhibition.co.uk/the-exhibition} If one is provided with the option of traveling to Dorchester or traveling to Luxor to see the tomb of Tutankhamen, the latter has a higher chance to win. Even if Dorchester has the most visually resourceful “tomb” it does not have the Valley of the Kings and the ancient Thebes Necropolis. On November 30, 2017, news came out for another world tour exhibiting King Tut’s treasure. The exhibition titled “King Tut: Treasure of the Golden Pharaoh” featuring golden jewelry, ritual objects, and sculptures, will debut in Los Angeles at the California Science Center on March 24,
2018. 150 original artifacts will be on display and 60 of which are said to have never traveled out of Egypt. “Egyptomania” became the word most used in the news coverage. It is plausible that such an action is taken to further stimulate the tourism industry and economic growth after the social and political turmoil from 2011 to 2014. In the following years as the treasures travel worldwide, the popularity of the tomb of the Tutankhamen would only be on the rise. The tomb probably will not be closed to the public, since the current vision is to attract visitation not to discourage it.

If there is not a disparity in price or any other regulatory mechanism, visitors would not automatically choose to see a replica instead of the original. In the case of the tomb of Tutankhamen, the Egyptian government has set a much higher ticket price for visiting the original tomb than to visit the facsimile, hoping for generating resources for other conservation projects while discouraging the visitation. However, as illustrated by the online discourses, the price disparity does not diminish visitors’ desire of going to the tomb. Even when several visitors documented that the facsimile provides a better experience, it might not impact future visitors’ decision in seeing the original tomb first, then the facsimile, or vice versa. As long as there is an option to see the original tomb of Tutankhamen, the tomb would remain to be among the most popular attractions around the world. Such a circumstance is very similar to the Mogao Caves. Because of regional and national interests, the Mogao Caves will remain open to the general public. Mogao Caves is one of the two most iconic attractions in Dunhuang. And because the city of Dunhuang and its adjacent towns locate in the northwestern part of China and on the edge of the largest desert in China, the Taklamakan desert, for most of the Chinese citizens and international travelers, going all the way to Dunhuang means a trip aiming unquestionable for the Mogao Caves. Therefore, adopting the lesson derived from KV62 and its facsimile, creating an exhibition on the same material visitors would see during their visitation right next to the site


Information provided by heritage professional Will Raynolds, who worked with Getty Conservation Institute to create compatible tourism infrastructures in Egypt’s Valley of the Queens.
would not diver visitation volume. The content would need to be different in order to divert visitation attention and time spent on the site to the exhibition or interactive display. The replicas of Mogao Caves, if called back from the travel exhibition to the site, needs to offer something other than a display of drawings and replica caves. The exhibited content would need to be subject-specific and integrated into a comprehensive narrative beyond the visual information presented.

6.4 Takamatsuzuka Tumulus

The Takamatsuzuka tumulus, or Takamatsuzuka kofun, is located in the Asuka region in Nara. Kofun is a term used interchangeably meaning ancient tomb, emphasizing the historical value of the tomb. Alongside with a series of small mounds of tombs attributed to the Emperor Mommu in the 7th century, the Takamatsuzuka tumulus appears to be one of the smallest in Asuka. J. Edward Kidder. Jr. believed, if the tomb was identified to be connected to the imperial family, it would not have been excavated by the Kashihara Archaeological Institute. As its chamber was “accidentally” opened on March 21, 1972, Takamatsuzuka tumulus astonished the Japanese scholars with highly vivid colored wall paintings depicting social and cultural life of the royalties in Mommu period. The mount was designated as a special historical site and the mural was designated separately as national treasure. Although the exterior appearance of the Takamatsuzuka tumulus is a small, green mound, the stone chamber of the tomb itself is nothing more than a rectangular chamber that is 2.655m in length, 1.035m in width and 1.134m in height.

The Takamatsuzuka tumulus is not listed individually as a World Heritage. However, it has been nominated as part of the Asuka-Fujiwara: Archaeological sites of Japan’s Ancient Capitals and Related Properties nomination submitted in 2007 under criteria ii, iii, iv, v, and vi. Before Empress Suiko relocated the ancient capital to Heijōkyo (Nara) in 710 A.D., the Asuka

---


218 Ibid.

219 Provided by the Takamatsuzuka Mural Hall in Nara Prefecture.
region encompassed the royal lives. Henceforth, the *Asuka-Fujiwara* listing envelopes a cluster of ritual and recreational features as well as a series of kofun located within the ancient capitals in Asuka region. A similar nomination was put on the tentative list in 2010 for a cluster of 49 kofun in the Osaka Prefecture, titled *Mozu-Furuichi Kofungun, Ancient Tumulus Clusters* under criteria ii, iii, and iv. Several sources deduct that driving intention for both of the listings is to encourage tourism in the region. However, the majority of the kofun has not yet been excavated and the Japanese government does not have any intention to excavate imperial tombs unless salvage archaeology is unavoidable. Visitors are mainly invited to appreciate the assembly of historical features across the landscape.

Meanwhile, Takamatsuzuka tumulus might provide a different expectation since it is already excavated. Nevertheless, Takamatsuzuka tumulus was never set to completely open to public visitation. Since early ages, only senior heritage professionals and government officials were allowed to enter the tumulus both out of the respect of possible families and as a conservation measurement. To protect the microenvironment within the confined stone chamber of the tumulus, three chambers and a series of facilities were built at the entrance of the stone chamber in 1976 to minimize the influence of external factors. Visitors or staff were required to put on biohazard suits and go through the controlled chambers. Temperature and relative humidity of the controlled chambers would then be adjusted to match the same measurements within the soil located adjacent to the stone chamber, henceforth preparing a stable environment for air circulation when the stone chamber is opened. However, during the early restoration period (1976-1981), fungi outbreaks still occurred and significantly impacted sections of the stone chamber. Para-formaldehyde fumigation was eventually adopted in 1981 and the mold colonies appeared to be in a decline for the following twenty years. In 2001, another series of microbial outbreaks happened. The revival of microbial encroachment was caused by rainwater

---


invasion when the environmental preservation facility was under renovation. The previously consolidated soil and stones were suddenly covered extensively by fungi colonies. Edges of several murals were also impacted.\textsuperscript{223}

Photography taken in 2002, 2003, and 2004 presented a distinct color degradation and increased fragility of the stones within three years.\textsuperscript{224} Meticulous conservation and restoration treatment that required the conservators to work for hours in an incredibly confined space in biohazard suits with limited options of equipment was incredibly difficult. In 2003, a conference was held to investigate the emergency conservation measurements of the national treasure Takamatsuzuka murals.\textsuperscript{225} In 2004, the conference evolved into a community and revised the mission to investigate preservation measurements of the Takamatsuzuka murals.\textsuperscript{226} In April of 2005, news had already broken out stating that the cultural affairs agency was considering taking Takamatsuzuka tumulus apart to save the wall paintings.\textsuperscript{227} On June 27th in 2005, the committee decided that to better preserve the national treasure permanently the stone chamber needed to be taken out of its current location and dismantled. However, Japanese archaeologists strongly opposed such an idea. On October 25th in 2005, the Japanese Archaeological Association published a statement requiring the conservation and protection of the special historical site Takamatsuzuka tomb. The statement argued that by removing and dismantling the stone chamber


\textsuperscript{224} “Takamatsuzuka kofun” 高松塚古墳 [Takamatsuzuka tomb], \textit{Asuka Historical National Government Park} 飛鳥歴史公園, https://www.asuka-park.go.jp/takamatsu/

\textsuperscript{225} “Kokuhō takamatsuzukakofun hekiga kinyū honzaku taisaku ni tsuite” 国宝高松塚古墳壁画緊急保存対策について [Conference on the emergency preservation measures of the imperial national treasures Takamatsuzuka tumulus mural], \textit{Agency for Cultural Affairs, Government of Japan} 文化庁, http://www.bunka.go.jp/seisaku/bunkashingikai/kondankaito/takamatsu_kitora/takamatsukento/01/sanko.html

\textsuperscript{226} “Kokuhō takamatsuzuka kofun hekiga kōkyū honzaku kentōkai” 国宝高松塚古墳壁画恒久保存対策検討会 [Conference on the permanent preservation measurements of the imperial national treasures Takamatsuzuka tumulus mural], \textit{Agency for Cultural Affairs, Government of Japan} 文化庁, http://www.bunka.go.jp/seisaku/bunkashingikai/kondankaito/takamatsu_kitora/takamatsukento/index.html

the murals might be preserved but the integrity and archaeological stratigraphy of the historical site would be definitely damaged. Eventually on October 2nd, 2006, the excavation, research, dismantle, and restoration project of the Takamatsuzuka tumulus was launched, promising to return the chamber back to its original location when it is fully restored and stabilized. In January 2007, a thermal and humidity insulation was constructed at Takamatsuzuka tumulus. The full mount was excavated in order to take out the stone chamber. After the chamber was dismantled and relocated to laboratories, the mount was restored to its original appearance. Visitors today could hardly tell a major excavation once dissembled the whole mount.

In 2014, a report came out stating that restoring the stone chamber and returning it to the original location would be impossible. Experts declared current science and technology cannot support in-situ preservation of the Takamatsuzuka murals. The original theory in underground archaeological features preservation led heritage professionals believed that to seal the entrance means a total control of the microenvironment. The preservation history of Takamatsuzuka tumulus demonstrated that in a country where earthquakes and geographical movements are substantially active, a sealed underground archaeological feature could still be exposed to external factors from any direction.

In the meantime, Takamatsuzuka Mural Museum was established adjacent to the Takamatsuzuka Tumulus. Its permanent exhibition includes replication of the recovered artifacts and murals. On TripAdvisor, among the forty-eight reviews (March 8th, 2018), only three

---

228 “Tokubetsu shiseki takamadzuka kofun no hozen hogo o motomeru seimei” 特別史跡高松塚古墳の保全・保護を求める声明 [Statement requiring conservation and protection of special historical site Takamatsuzuka tumulus], The Japanese Archaeological Association 日本考古学協会, http://archaeology.jp/maibun/seimei051025.htm


230 “Ishimuro kaitai no kyōkun kokuhō takamadzukakofun hekiga de eta mono” 石室解体の教訓 国宝・高松塚古墳壁画で得たもの [Lessons learned from dismantling the stone chamber of the Takamatsuzuka tumulus and the national treasure mural paints], Nikkei Style, May 11, 2014, https://style.nikkei.com/article/DGXNASFK0702E_X00C14A5000000?channel=DF130120166059&style=1&page=3

reviews were written in non-Japanese languages. Interestingly that the plain mount of Takamatsuzuka tumulus seems to have attracted more visitors (one hundred and one reviews with eight in non-Japanese languages) than the mural museum.

In the year of 2017, the conservation process of the dismantled Takamatsuzuka tomb has come to its tenth years. According to the Mainichi, the accumulative cost of the entire project reaches approximately 3.4 billion yen, around 32 million dollars. On April 30th, 2017, the *Conference on the Preservation and Utilization of Kofun Murals* led by the Agency for Cultural Affairs released an updated image of one of Takamatsuzuka murals marking the completion of the cleaning and consolidating stage of the paint layer. Future work was announced to be focusing on reducing the pace of deterioration of the plaster. On May 12, 2017, Asahi Shimbun released a message noting that a small group of the restored murals would be opened to the public at the National Treasures Takamatsuzuka Kofun Mural Temporary Restoration Facility. The visitation would be free but with a daily limit of 400 visitors. Same day, the Mainichi noted that the exhibition window would span from May 13th to 19th. Each tour would have a 10-minute visitation to the restored mural through glass. Eventually, three major

---


234 “Kaitai 10-nen, hozon-sakuru hekiga hobo shūfuku,” 解体10年、保存策探る 壁画ほぼ修復 [Disassembled for 10 years, exploration in preservation, the murals are almost restored], *The Mainichi* 毎日新聞 June 28th, 2017, https://mainichi.jp/articles/20170628/k00/00e/040/318000c

235 “Takamadzukakofun no hekiga, shūrī shūrīyō e shikkai sei kai no rekka mo kadai” 高松塚古墳の壁画、修理終了へ 漆喰・石材の劣化も課題 [Mural painting of Takamatsuzuka tomb, completion of repair. Degradation of plaster and stone is also an issue], *Asahi Shimbun* 朝日新聞 June 30th, 2017, https://www.asahi.com/articles/ASK6X72M5K6XPOMBR00F.html

236 “Asuka bijin,-iro azayaka ni takamadzukakofun no hekiga, shūrī gazō kōkai” 飛鳥美人、色鮮やかに 高松塚古墳の壁画、修理画像公開 [Asuka beautiful, colorfully painting mural paintings of Takamatsuzuka tomb, repaired image release], *Asahi Shimbun* 朝日新聞 May 12th 2017, https://www.asahi.com/articles/ASK5D36R1K5DPOMBR008.html

237 “Asuka bijin no shiroi sugao kirei ni saishin jōtai” 飛鳥美人の白い素顔きれいに 最新状態 [Asuka women beautiful white face clean up to date], *The Mainichi* 毎日新聞 May 12th 2017, https://mainichi.jp/articles/20170512/k00/00m/040/113000c
sections of the stabilized Takamatsuzuka murals were exhibited.\footnote{238} It was not the first, but the seventeenth time that the restoration laboratory of Takamatsuzuka murals was opened to the public. Since 2008, the laboratory has been conducting an opened week once or twice a year. In 2017 alone, the laboratory conducted four opened weeks throughout a year.\footnote{239} The Asuka Historical Museum also debuted an exhibition recollecting the methodology of excavation and construction of the Takamatsuzuka tumulus from October to December, widely appreciated among students.\footnote{240}

January 20th to January 26th was the first opened week in 2018 and the twentieth over the past ten years.\footnote{241} The public demand for viewing the stabilized murals is growing. Agency of the Cultural Affairs is also intentionally accommodating more opportunities for public engagement to attract tourism. Apparently, the original pieces, even though they could only be viewed behind glass, seems to be more powerful for the general audience.

The back and forth decision of material displace in tourism promotion in the case of Takamatsuzuka tumulus provides a powerful statement about exhibiting the original material. Even when the tumulus is disassembled and most of the wall painting can be exhibited as an integrated picture, it is a better resource in driving economic growth than the hand-painted full-scale replica. For a culturally and artistically significant feature as the Takamatsuzuka tumulus in
the history of Japan, even when the full picture cannot be seen, some exposures to the original fabrics are still deeply appreciated by the general public. Since regional municipalities would encourage any allowable condition to promote regional economy, a selected collection of caves at Mogao will probably always remain open. However, the Takamatsuzuka tumulus case offers an insight into how to build up an effective interpretation and interconnected relationship between the original materials and miscellaneous exhibitions composed by replica. The fragmented and heavily decayed original fabric attract visitation attention and generate interest in learning about the history and sociocultural life of Japanese royalties during the Mommu period. The learning process is then completed immediately by the exhibition and well-curated interpretation displace at the Takamatsuzuka Mural Museum. The Mogao Caves’ travel exhibition and on-site visitation are attempting to replicate such a loop, but the time lag between going to an exhibition in town to physically travel to Dunhuang and visit the Mogao Caves could range from months to years. The loop of learning might have long been broken. Therefore, if the physical site of Mogao Caves functions as the displaced, dissembled pieces of the Takamatsuzuka tumulus, there needs to be a Mogao’s “Takamatsuzuka Mural Museum” to complete the learning process by feeding targeted, purposefully curated complementary information of the content presented during the visitation. What is displaced on-site has to be integrated with the exhibition off-site to form of cohesive loop to maximize the visitation content and efficiency in learning.

6.5 Ajanta Caves

Among the five selected case studies, the Ajanta Caves are the most similar to the Mogao Caves in terms of theme and form. The Ajanta Caves are situated on a cliff face adjacent to the Ajanta village around a hundred kilometers north of Aurangabad in India. There is a total of thirty caves along the cliff, one of which is an unfinished excavation. The thirty caves can be categorized either according to their structural forms or historical phases and styles. If grouped by structural form, five of the caves (no. 9, 10, 19, 26, and 29) are chaityagrihas, which are similar in function to temples and shrines. The remaining twenty-five caves are viharas, the
Buddhist monks’ monasteries.\textsuperscript{242} If the caves are grouped according to historical phases and styles, a different group of five (cave no. 9, 10, 12, 13, and 15A) were considered to be constructed in the “Hinayana Buddhist” period from 100 B.C. to 100 A.D.. After over three hundred years being dormant as Hinduism expanded and flourished in the Ajanta region, the Ajanta caves experienced a dramatic renaissance due to a series of royal commissions by Harisena of the Vakataka Dynasty in mid to the end of 5th century. However, the sudden death of Harisena in 477 brought social and political tumults to the region. Eventually, the monks and craftsmen left as the livelihood at the Ajanta Caves was no longer sustainable. By the time when peace was reestablished, the site had been largely abandoned and Hinduism gradually regained its influence in the local population.\textsuperscript{243}

The wall paintings within the Ajanta Caves are attributed with invaluable artistic achievements as well. An international news report claims it to be “nothing less than the birth of Indian art.” \textsuperscript{244} In 1983, the Ajanta Caves were listed as a World Heritage site under criteria i, ii, iii, and vi, emphasizing its technological, historical, artistic, and cultural importance. In January 1992, the \textit{Ajanta-Ellora Conservation and Tourism Development Project} was launched by the Ministry of Tourism of India. The Ellora Caves is another cave site enlisted as a World Heritage site in 1983 and is located north of Aurangabad, featuring a massive amount of magnificent Buddhist, Hindu, and Jain sculptural masterpieces.\textsuperscript{245} The project aimed at promoting a cultural tourism economy in the Maharashtra region through conservation and developing basic tourism infrastructure. The phase I of the project spanned from 1992 to 2002. A 3,745 million yen’s Official Development Assistant Loan was provided with an interest of 2.6% per year by the Japan International Co-operation Agency (JICA).\textsuperscript{246} However, in the state of conservation report

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{242} “World Heritage Sites - Ajanta Caves,” \textit{Archaeological Survey of India}, \url{http://asi.nic.in/asi_monu_whs_ajanta.asp}
\item \textsuperscript{244} William Dalrymple, "The Ajanta cave murals: 'nothing less than the birth of Indian art,'” \textit{The Guardians}, August 15th 2014, \url{https://www.theguardian.com/artanddesign/2014/aug/15/mural-ajanta-caves-india-birth-indian-art}
\item \textsuperscript{246} “Ellora Caves,” \textit{UNESCO World Heritage Convention}, \url{http://whc.unesco.org/en/list/243}
\end{itemize}
\end{footnotesize}
submitted to the World Heritage Convention in 1997, heritage professionals identified the major affecting factors as material deterioration, biohazard by tree roots and animal activities like bats, unregulated visitation, humidity variation caused by mass visitation, and the lack of conservation skills at the local level. Cracks in the stones were filled with cement. The maximum visitation load in each cave was forty people, however, almost a hundred people could enter a cave at once with no supervision. In 2001, the local conservators were still using cement mortar to restore sculptures. Issues such as leakage created by vegetation growth, unregulated visitation, fungus growth and bat activities still occurred within the caves. In the Periodic Report submitted in 2003, a discussion of visitation was omitted. Material conservation became the primary focus of the report. How to properly conserve the deteriorating wall paintings and the rock surface and how to regulate the scribbling by minor human agencies became the core concerns.

In the evaluation report on Ajanta-Ellora project phase I published by JICA in 2007, the majority of specific objectives are marked proceeded as planned. Infrastructure development included drainage system repairmen, road and airport construction, establishing eco-friendly bus system, installing signs, and preparing pamphlets. The tourism revenue also had grown from 2.7 billion rupees to 3.4 billion rupees after the project’s completion. However, although the total expanse by the project was only 92% of the planned budget, the project took 205% of the expected construction duration to complete. The evaluation report also points out that confirming the technical capacity of the recipient region is crucial for a long-term loan on a cultural heritage conservation project because in applicable scenarios building necessary capacity should be considered as part of the process.


The second phase of the Ajanta-Ellora project ranged from 2004 to 2014. The financial assistance was again from JICA with an estimation of 7,331 million yen, as part of a major loan assistant package from Japan to India. The second phase objectives were set to enhance the material conservation of the murals and sculptures, infrastructures improvement, visitor center construction, tourism promotion, and development of local products. Under the commission of the Agency for Cultural Affairs, the National Research Institute for Cultural Properties, Tokyo launched a collaboration with the Archaeological Survey of India (ASI) on mural conservation at Ajanta Caves. From 2008 to 2010, five one-month long conservation missions were conducted at the Ajanta Caves, researching and sharing conservation techniques among the professionals. The project concluded with an expert meeting on the subject of conserving the Ajanta Caves in 2011. In 2012, the vision of the Ajanta Visitor Centre debuted to the public. The visitor center was set to have the replication of the four main caves (cave no.1, 2, 16, and 17) in full scale for visitors that would like to appreciate the murals, carved columns, and sculptures up closely. Visitation to the major original caves was characterized as briefly for material conservation purposes. In September 2013, the tourist facility centers at Ajanta Caves and Ella Caves were officially opened, expanding a greater volume of visitation especially international arrivals. On January 2nd, 2014, Gulf News India happily announced that the world-class visitor center

252 “AJANTA ELLORA,” Maharashtra Tourism Development Corporation (MTDC), https://www.maharashtratourism.gov.in/ajantaelloraconservation


referral=PM


and the replication caves have prepared the Ajanta and Ellora to be able to live forever. The news specifically mentioned the achievement of the conservation and tourism development project, stating that the visitation at Ajanta Caves during weekends increased from 10,000 to 18,000.\(^{259}\) If the statistic is accurate, the daily visitation at the Ajanta Caves over weekends in 2014 has already reached 9,000.

The issue of the replica caves reveals itself in 2017. The Times of India reported in the July issue of 2017 that the power supply was cut off at both Ajanta and Ellora Visitor Centers. The Maharashtra Tourism Development Corporation (MTDC) that is managing both of the visitor centers failed to pay May and June’s electricity bills due to the lack of funds. Officials commented that the duplicate caves located at an arm’s length to the original structures did not attract much visitors. Comparing to the mass visitation happened at the Ajanta Caves, the visitation at the visitor center barely crossed double digits.\(^{260}\) Eventually, the power was restored a few days later as the MTDC managing director promised the Maharashtra State Electricity Distribution Company Limited (MSEDCL) to clear the bill in August when the previously requested government assistance was allocated.\(^{261}\)

Despite all the struggles that the site and its visitor center is going through, TripAdvisor is flooded with compliments about the Ajanta Caves. Most of the caves are opened to the public, if not going through restoration. Visitors are free to choose to have a guide or visit on their own. Reviews reflect that the guides tend to cramp the visitation time and content. Many visitors, though might not have sufficient knowledge about the site, chose to take time experiencing the site without a narrator standing by their sides. The major issue brought up by the travelers is the difficulty in locating transportation, since the Ajanta Cave are located relatively far from the major city centers. To an extent, its location might have diverted a substantial portion of visitors. Among the 1,834 reviews (as on March 10th 2018), 23 of them mention the visitor center.


Facilities at the visitor center are remarked highly. The information provided at the replica caves is considered to be constructive and relevant as well. Nevertheless, many reviews advice visitors to see the replica caves before visiting the original caves to learn about the artistic and cultural background of the site. Henceforth, according to the visitor reviews, the replica caves at the Ajanta Visitor Centers are efficient interpretation methods.262 If a survey could be employed to demonstrate the visitors who have seen the replica caves stayed shorter in the original caves than those who have not seen the replica caves, the diversion effect of the replica cave could be interpreted as achieved. However, since most of the visitors more or less go directly to the actual cave site first, when such a diversion effect is at play, its effect might have been minimal.

Similar to Indian local audience, the Chinese audience tends to cut-off “unnecessary” expanse during their travel. As demonstrated by the previously unintegrated Digital Center at the Mogao Caves, most of the visitors would choose to only visit the site, even the introductory movies would provide a more globular understanding of the Mogao Caves history. In the case of the Ajanta Caves; even the visitor center is described to effectively facilitate visitors’ understanding of the highly culturally and religiously complex history and stories revealed by the content within the caves, without constant outside economic support, the visitor center cannot survive on itself due to lack of visitation. The educational and informational purposes of the Digital Center of the Mogao Caves and the Visitor Center of the Ajanta Caves might only be understood when the visitors are reflecting on their visitation experience retrospectively.

Moreover, for the massive technological supported displaces to run with profit or at least fit an economic balance, it would be economically more viable to the site to incorporate the facility into regular visitation, calculate the cost of the entire trip, and present a total price. Therefore, within the context of contemporary China, if more extensive exhibitions that echoes with the provided choices of on-site visitations are created, it would need to be integrated into the visitation process to function as a whole.

6.6 Reflection

Demonstrated by the five case studies, conservation of the fragile materials under massive visitation seems to be an issue that is incredibly difficult to reach a stage of balance accommodating both. All of the five cases have gone on a similar path—creating replications and limiting visitation. Replicating the fragile material at the most intact stage could be with the best technologies available become a general consensus. Such a consensus is invaluable also from a documentation standpoint. The applied technologies and the replications provide important references for future scholars if the original material is unfortunately lost or degraded.

All of the case studies presented, as well as the Mogao Caves, are in the context of regional economic development. Such a context lays out a fundamental challenge. There is no incentive for regional investors, economic and political stakeholders, to rigorously control or limit the visitation volume, unless the resource is so seriously affected that it ceases to exist. The visitation desire could be effectively channeled to another designation nearby.

Nevertheless, replication does not entirely solve the problem of visitation when the original pieces are available, and available at ease. Lascaux and Altamira are closed to the public most of the time. Therefore, the replica caves function as the sacrificial sites to absorb the visitation volume generated by either the travel exhibition or permanent exhibitions around the globe. In the meantime, with the presence of high-resolution facsimiles and disparity in the ticket price, KV62’s adjacent replication has yet been able to divert the tourism volume. Visitors who are interested in the murals in KV62 would visit the facsimile on top of the original. But the original remains to be their primary choice. The stone chamber of the Takamatsuzuka tumulus was eventually dismantled and is unlikely to be restored as one piece. Its replications also have not yet been able to attract much visitation, so the dismantled pieces are now regularly on display at its restoration laboratory to attract tourism volume. Therefore, given the context of regional economy stimulation, as long as the option of displaying the original piece is made available, it would probably inevitably be employed. Similar to the situation of KV62, the replica caves at the Ajanta Visitor Center are only serving a small proportion of the visitation, not diverting the mass. The struggle of keeping the Visitor Center opens demonstrates that the interpretation mechanism would be more effective and economically viable when it is incorporated into the visitation process and not provided as an optional add-on.
In the circumstance of the Mogao Caves, when both replica and original are partially available, the replica would be more effectively utilized as an educational tool when serving a complementary purpose in completing the on-site visitation. Because the Mogao Caves’ current infrastructures on-site cannot absorb the visitation volume generated from the travel exhibition, or take in any attention created by permanent collections that might be created in future, the travel exhibition shall be called back to the site to facilitate the visitation experience and education process on-site (or at a close vicinity to the world property inscribed area to protect the surrounding natural landscape). And instead of listing as an alternative destination, the proposed interpretation mechanism is necessary to integrate the replica or related exhibitions into the visitation process to effectively regular visitation access and flow.

Moreover, the interpretation mechanism at the Mogao Caves has to form an integrated loop, which links the visitation content within the cave zone to the information presented out of the cave zone. With governmental support in both financial and technological resources, it would not be difficult for a deeply rich in content and highly valued cultural heritage destination like the Mogao Caves to install any kind of interpretation mechanism. However, if the interpretation mechanism cannot work as an integrated whole, the diverse significances and values of the site might not be able to effectively communicate. And the mechanism might repeat a similar paradox generated by the travel exhibitions, which is not efficiently helping but challenging the preservation and conservation visions of the site.
7.1 Envisioning the Significances of the Mogao Caves

Current interpretation presents at the Mogao Caves through visitation and exhibitions primarily based on the authorized discourses framed by heritage professionals and governmental agencies. Heritage professionals’ discourse revolves around the designated World Heritage criteria, ranging from a representation of human creative genius, a testimony of cross-cultural communication, an historical evidence of ancient civilizations, an example of iconic architectural ensemble, and an unique tradition of human settlement. Academic research conducted by the Dunhuang Academy is predominately based on the historic, artistic, and scientific values of Mogao guided by the characteristics recognized by the World Heritage Convention. Besides the discourse contributed by its World Heritage site status, the Mogao Caves is attributed by another fundamental discourse promoted by its essential role in the national cultural identity building, illustrated by the importance and popularity of the giant Buddha statues and stories about the Library Cave. Thus far, interpretations on-site are limited to either the “technical” academic understanding or the nationalist narrative which has been universally adopted by recognized cultural heritage sites in China.

During the research process, another layer of values and significances of the Mogao Caves has been recovered. Although the Mogao Caves is an acknowledged world heritage and also as a national treasure, it is first and foremost a sacred and highly cherished place for the regional residents. As demonstrated by the Buddhist birthday gathering on the lunar April 8th at the Mogao Caves, the religious connotation is highly valued by the participants through traditional practices such as incense burning and statue-circling, but its value as a day of celebration among the regional residents has even surpassed the religious nature of the day. Regional residents’ access to the site now concentrates on the lunar April 8th. Students would be able to experience longer and more extensive visitation than regular visitors at the Mogao Caves on class field trips that organized by regional elementary or middle schools in collaboration with the Dunhuang Academy. Most of the staff at the security department and related tourism facilitation departments are local citizens of Dunhuang or Juiquan, which is 245 miles away. Meanwhile, the origins of heritage professionals and academic researchers are comparably more
diverse. Although having a closer cultural and emotional tie to the Mogao Caves, Dunhuang residents are mostly limited to act as only facilitators of the local tourism economy. As the lunar April 8th becoming well-known among both Buddhist practitioners and the general public, staffs at the Mogao Caves management team of Dunhuang origins reflected that their family members tend to stay at their posts on lunar April 8th in the past few years, in order to harvest the tourism economy brought to the local restaurants, hotels, retail stores, or other family businesses on that day. The fragile relationship between the local residents and the Mogao Caves may continue to fade as the tourism industry persist to be professionalized. The connection between the Mogao Caves and the regional residents is also essential to develop interpretations that can combine local socio-economical tradition with the historical evidence documented by the Mogao Caves. Scholars and academics from other regions may not be able to grasp such a tie immediately. Although the Mogao Caves is an archaeological site, it is still manifesting both the social and religious values attributed by the local communities. Such a layer of significance may be more important to the long-term survival of the values and importance of the Mogao Caves than the World Heritage destination and the national cultural identity building narrative which can be found at many other cultural heritage sites. The regional significance and connection of the Mogao Caves needs to be prioritized, protected, and should be provided with a broader space to grow (resuscitate).

Envisioning the future, it is even more essential for contemporary preservationists to consider why and for whom are we protecting the cultural heritage. What exactly are we leaving for the future? And what would we want the future generations to see? High-resolution digital documentation, of course, can serve as crucial references and sources, but the material fabric of the cultural heritage remains to envelop higher scientific, historical, societal, and economic values in driving regional to the national economy as demonstrated by case studies and the Mogao Caves. Even when the original fabrics are not shown to the public, the existence of the

---

original material fabrics pertain to be held to a towering status. There is always a better possibility for new knowledge, theories, and ideas to develop and evolve as the subject still exists and scientists and scholars can turn to if necessary.

Thus far, many of the interviewed heritage professionals at the Dunhuang Academy reveal that they still believe the importance and power of the public to witness the original fabric. Even though public access may be further limited due to the physical conditions of the caves, the experience of being inside an original cave is incomparable. Such an experience has been described by many professionals to be their fundamental drives in pursuing cultural heritage preservation. Allowing the public to share such an experience is assumed by professionals to be an effective measurement to evoke their recognition of the importance of preservation. Following such a persistent cognition and tradition of the Dunhuang Academy, the Mogao Caves is highly unlikely to be fully closed to the public in future.

However, for a site that has been recognized as world heritage and national treasure, and a site which physical integrity is inherently tightly connected to its survival, the Mogao Caves has to prioritize the protection of its structural stability and material integrity. The stories and narratives about the site can be continuously explored through examining the high-resolution digital records, deciphering the Dunhuang manuscripts, involving the local communities. The significance of the Mogao Caves can be highly diverse, but the process of diversification has to be established upon the recognition that no further damage should impose to the material fabric. There are many ways to valorize a site, from composing movies and novels, holding religious or communal events, to narrating its history and artistic values. Current design provides visitors opportunity to access the original material fabrics but leaving them little understanding of what has been presented to them. For future scholars and scientists, the materials need to be preserved in priority. For contemporary and future visitors, the ability and persistence in generating and efficiently communicating the diverse interpretations and values of the site should be considered as the most important role of the guardians of the Mogao Caves.
7.2 Foreseeable Limitations of Current Visitation Design

As illustrated in the previous chapters, the continuous growth of visitation volume is progressively encroaching the material integrity of the site and generating conflicts between the management team and visitors. To accommodate the growing visitation load, many cave sites and fragile heritage destinations including the Mogao Caves decide to limit visitors access to continue to introduce the visitors to the significance of the site without damaging the original fabrics. However, as demonstrated by the case studies, if the alternatives are not integrated and effectively justified as part of the visitation, the diverting effect is minimal. Current visitation design and the inconclusive virtual platforms fragmented audience’s opportunity to utilize the cultural heritage as an education resource and push the cultural heritage destination towards the image of “tourist attraction.” Such an image reciprocally restrains the public’s understanding and interests to a superficial level. Meanwhile, limiting the access of the general public also blocks the possibility of engaging and integrating them as part of the conservation and preservation resource. Looking forward, preservationists have to tackle each presented issue in order to better transcribe the significance of cultural heritage resources to the public and let the public to foster and attribute their recognition and values to their heritage.

The principal objective for the management team at Mogao Caves and the Dunhuang Research Academy is to protect this World Heritage and national treasure’s material integrity in the long run. In 2002, the Ninth Standing Committee of the Gansu Province People’s Congress officially passed the Dunhuang Mogao Caves’ Protection Ordinance, cooperating the preservation and conservation of the Mogao Caves into regional legislation framework. The ordinance set four core premises regulating the plan and development of the Mogao Caves: preservation as the primary (goal), salvage (conservation) as the foremost (goal), rational utilization, and reinforcement in management. Therefore, regional governance and policy makers have already been on board for the long-term protection of Mogao. The protection ordinance was drafted as a response to a proposal put forward by the regional government in

264 “Gansu sheng Dnhuang Mogaoku baohu tiaoli” 甘肅敦煌莫高窟保護條例 [Dunhuang Mogao Caves’ Protection Ordinance], Dunhuang Research, 2004. No.1

265 Original text, “保护为主、抢救第一、合理利用、加强管理,” translated by author.
1998, attempting to package the Mogao Caves’ tourism development plan as part of a local tourism company’s public listing promotion agenda. Eventually, this proposal and many other overly aggressive tourism promotion plans were ended after the establishment of Dunhuang Mogao Caves’ Protection Ordinance.

In the meantime, the popularity of cultural tourism in China and the overwhelming economy driven by the cultural tourism industry have spread the recognition of cultural heritage destinations as essential tourism attractions nationwide. On March 13th, 2018, the State Council of the People’s Republic of China handed in a structural reform proposal on the First Conference of the 13th National People’s Congress. The proposal aims to increase the efficiency of governmental agencies by fusing departments with similar or related functions, therefore reducing the total number of governmental agencies. In the proposal, the Ministry of Culture of the People’s Republic of China and China National Tourism Administration is merged into one department, Ministry of Culture and Tourism. On March 17th, 2018, the structural reform proposal has been passed officially. Because provincial and municipal governmental structures are modeled after the national framework, it is foreseeable that such a functional merging will soon extend throughout the nation. An active promotion on tourism development at cultural heritage destinations with the support of national resources can be expected. Meanwhile, such a reform also implies an opportunity to promote the role of education at cultural heritage destinations through the increasing amount of tourism and visitation. There is always a percentage of learning and a percentage of superficial touristic sightseeing within a regular visitation. How to shift the cultural heritage destinations towards education assets within contemporary active tourism development framework and how to utilize the increasing visitation volume as a resource to facilitate the historic preservation are the core challenges that preservationists need to focus on.

266 “Ceng lizu Mogaoku shangshi cheng Dunhuang kaogu zhi wanchengle 1%” 曾力阻莫高窟上市 称敦煌考古只完成了1% [Forcefully prevented the public listing of Mogao Caves only 1% of the archaeological research has been accomplished], ChinaNews, February 24th 2017, http://www.chinanews.com/cj/2017/02-24/8158347.shtml

Since future development and promotion in tourism and visitation are unavoidable, prioritizing the conservation and preservation of the site yields three possible future directions for current management and visitation design at the Mogao Caves: 1) continuously expanding the number of available caves to further distribute visitation volume across the cave zone; 2) keeping the caves at current available volume while rigorously controlling and limiting the visitation volume towards calculated site capacity; 3) reducing the number of available caves and shift the concentration to dynamic, interactive exhibition based visitation.

The first scenario is to increase the number of the opened caves. In theory, if more caves are opened and more tour routes are created, more visitors can be accommodated. However, there is a physical capacity to maintain the structural stability of the cave zone. For regular visitors that involves with stepping up and down the cliff face, such a physical capacity is calculated to be 1,200 people. For the entire cave zone (especially during emergency days), the proposed maximum number of visitors for heritage protection and security purposes is 2,000. For instance, even if all four hundred and ninety-two cave-temples are opened to public visitation, there is still a limit of visitation volume that the site can physically bear. Moreover, pushing the visitation volume to a site’s physical limit is not only highly unsafe but also undesirable.

Adding up the announced number of public caves and visitation volume adjustment caves, sixty caves are available in the peak season. So far, cross referencing the caves listed in the designed tour routes, only fifty-one caves appear to be on the designed routes, which seems to suggest that in the current visitation design, the number of available caves is more than what is needed to accommodate the current regular visitation. Now, the site capacity is set at 6,000 visitors daily, therefore around seven hundred visitors an hour within the cave zone. An average regular visitation within the cave zone during the peak season lasts around thirty minutes due to the 6,000 visitors capacity. Supplementing more caves to the visitation process will allow to further distribute the visitation volume across the cave zone, but the visitation duration within each cave would also be further reduce. Adding the time visitors would have to spend on walking from cave to cave, the actual visitation within each cave would then only be one or two minutes. As a result, when more caves are opened up for public visitation, distributing the visitation load

---

268 Information provided by Dr. Su Boming, the head of conservation department at Dunhuang Academy.
by breaking the visitors into smaller groups may be a better option. In such case, the number of docents must also increase. The management team would have to resolve the demand of economic and human resources driving by such a change.

The best possible vision for this scenario is when all visitors have reached a level of understanding and conscientious, all pre-registered visitors can conduct autonomous visitation to the announced “public caves” of that year within the agreed time frame at the site with or without a guide upon request. In such a scenario, visitors not only share the basic knowledge of cultural heritage protection and respect but would also automatically divert visitation volume when they encounter caves that have already been occupied by a considerable number of visitors. Thus far, visitor behavior monitoring is still a core objective for docents and cave zone security. Such vision may only be fulfilled in the distant future.

The second scenario is to rigorously guard the visitation set of the destination. As the visitation volume increase annually, the occurrence of emergency days has grown from only days into half of a month in July and August. In 2017, there were several times when even the emergency ticket sale reached its limit of 12,000 daily, and therefore the visitors can only purchase emergency tickets for the next emergency day in advance. During interviews, a few administrators reflected on the possibility to allow emergency day every day during the peak months of the peak season. Such a decision is made on the presumption that the visitation volume will eventually reach its natural capacity, and such natural capacity can be digested by setting up emergency days daily on top of the regular ticket sale within the most packed days of a year. However, there is also a possibility that as the cultural heritage tourism industry persists to evolve, even when emergency day procedure conducts on each day of the peak months, the visitation volume cannot be fully accommodated. The site would not be able or should not try to risk accommodating a larger number of crowd. Eventually, the cap of the cap will have to be established and promoted rigorously by the management team. In such a circumstance, massive daily visitation is only to test the physical limit of the site and the management personnel. Since the issue of safety, as well as conflicts between the management team with visions and among different groups of visitors, have already become a concern during current peak days, pushing the situation to its limit can only expect the existing issues to be amplified. Therefore, a better
alternative may be actively broadcasting and promoting the current carrying capacity of the site through all possible media, tourism companies, as well as travel counseling websites, and not to take the current capacity any further.

The third scenario is to further reduce the number of caves on current visitation scheduled and shift the visitation focus towards replica caves and other interactive interpretation methods that can minimize the impact of visitation to the original fabric while broadening the accessible information and enhancing the learning experience. Many of the case studies discussed in the early chapter have turned to this scenario as their development and long-term preservation strategy. Such a strategy can be highly effective. In the meantime, as illustrated by the case studies, the audience should not be left with the opportunity to choose between seeing an alternative and visiting the “authentic” piece. The third scenario is also in the discussion among professionals at Dunhuang Research Academy. Although the new visitation design has reduced the amount of visitation duration in each cave and decreased the number of caves that visitors can enter in peak season, more museums and exhibitions are opened up at the site for visitors to understand the history of Mogao from diverse perspectives. However, maybe partially due to the obscure locations of the museums and partially due to the set concept of “visiting” a cultural heritage destination, the predominant number of visitors only comment and evaluate their visitation within the cave zone as their experience at the site. More visitors complemented the spherical screen stereoscopic movie at the digital center than the museum. Although the movie cannot divert visitation volume, it is appreciated by the visitors as an attempt to diversify the visitation experience and broaden visitors’ knowledge about the site. Therefore, it is possible that at least the major exhibition (e.g. replica of representational caves and artworks) may have to be incorporated into the scheduled visitation process to better accomplish its role as an education avenue.

A fully developed plan based on the third scenario will eventually be able to accommodate a larger volume of the visitors. For example, if all visitation within the cave zone is reduced to four caves, the visitation duration can be further reduced to fifteen minutes per group, thus pushing the visitation volume per hour to the physical capacity of the cliff face, 1,200. However, if the third scenario is employed, there will be around three hundred people per
fifteen minutes to join the exhibition space. To accommodate such traffic, the incorporated
exhibition or any dynamic display would then have to be able to host from three to four hundred
per fifteen minutes and 1,200 visitors within an hour as well. Meanwhile, it is close to impossible
for a museum to digest such a volume of visitation while still be able to provide an effective
learning experience. Therefore, in the third scenario, reducing visitation content in the cave zone
would lead to a necessary diversification of the visitation option in the on-site museum or
exhibition cluster. Currently, there are four different museums on-site. If the visitation volume
needs to be distributed among the four museums, then each group of visitors can only visit one.
The availability of the museums would then become another issue since four museums do not
have the same exhibition and same items on display. Each visitor would again only receive a
fragment of the picture. In the end, the original idea of using exhibition and interactive display to
provide a globular understanding of the site would be unlikely to achieve based on existing
infrastructures on-site. A globular understanding can only be achieved by visitors revisiting the
site for multiple times. However, one advantage is that the visitation processes can be divided
into four clear themes. Those who decides to revisit the site would not have to go through
repeated information, as if one goes through revisitations under the current visitation design
system would have to face.

In conclusion, since the cliff face has a physical limit of capacity and the preservation and
conservation of the material fabric is the first and foremost priority, continuously attempting to
accommodate larger visitation volume by increasing or decreasing the available opened caves
would further fragmentize the already highly fragmented visitation experience. Therefore, it is
necessary to perceive the site from a different perspective that may not be solely dominated by
the role of the caves.

7.3 Proposals: Envisioning the Future of the Mogao Caves

**Premises**

- The Mogao Caves will continue to be a cultural heritage tourism destination with various
degrees of public accessibility.
- The conservation and preservation of the material fabric will continue to be prioritized.
The historical cultural connection between the Mogao Caves and residences in the Dunhuang region shall be valued, reestablished, protected, and integrated into the management strategy and interpretation of the Mogao Caves.

Because cultural heritage preservation is an essential regional economic stimulant and itself needs to received constant economic support, cultural heritage sites are inevitable to take on their roles in economy development. But the major challenges of a fragile cultural heritage site like the Mogao Caves remain to be preserving its structural and material integrity as well as improving its interpretation and diversifying its narratives. It would need to support and facilitate regional economic development, but conservation and its regional interpretation needs to be prioritized.

Thus far, the Mogao Caves has established visitation adjustment system that allows the management team to transfer refund or provide additional visitation time slots when the site is closed during undesirable weathers such as heavy rain episodes. Such a mechanism not only can downgrade the rate of material deterioration, but also can drive the cognition of cultural heritage site conservation and preservation to the general public. However, current vision of the Mogao Caves still set it first and foremost as a touristic attraction. The Mogao Caves serves a vital role in the regional tourism industry, which is the core economy drive to the regional development. Though many of the archaeological cave sites worldwide have decided to eliminate public visitation, the Mogao Caves will remain open to the general public. Nevertheless, it is possible to discern the image of the Mogao Caves to visitors that come with different agenda and expectation. In the realm of historic preservation, making a heritage site is regarded to be a place-making process. Especially for modern monuments like the “Ground Zero,” the significance and story behind the place itself constitute the importance of that specific location. The “iconicity” of a cultural heritage place or a monument alone may composite a satisfying manifestation for a general tourist, such as taking a selfie in front of the Eiffel Tower or Taj Mahal. To a considerable number of the tourists, the importance of standing in front of the Eiffel Tower may be more important than being able to climb up it. The vision of looking at the Taj Mahal as a whole may be more important than being able to navigate through each room within it and feeling the architectural relationship among its uniquely designed structural components. A
well-construct touristic attraction shall be the embodiment of its own “iconicity” while satisfies its visitors with exactly what it promotes, the iconicity. Thus far, the Mogao Caves is promoted to be a treasure house that has born witness to cross-cultural communications among ancient regional societies and the evolution of Buddhist imageries in Central China. The significance of the Mogao Caves resides more upon the content of the murals and sculptures, not the importance of the place itself.

Proposal

Goals:

• [Interpretation] Regional cultural connection rebuilding.
• [Conservation] Visitation volume diversion.
• [Planning] Channeling resources into the “place-making” process of the Mogao Caves.
• [Education] Excavating and enhancing the education function of the site.
• [Professional Training] Structuring continuous academic or professional training tracks for docents. Highlighting and strengthening the importance of professionality in being a modern preservationist and cultural heritage destination caretaker.
• [Research Community Development] Fostering a scholarly community of the Mogao Caves within the management community and beyond.

Proposals:

• [Interpretation] Opening up the Northern Caves Zone (historic living quarter of the monks and laborers.
• [Interpretation, Conservation] Construct a “baseline” visitation of the Mogao Caves on understanding the livelihood of its ancient residents and acknowledging the entanglement of the site to current residents in the in the Dunhuang region.
• [Interpretation, Conservation, Education, Professional Training] Transforming fragmented visitations within the caves into theme-based tours and curating the content of each tour into a well-constructed, complete narration on the selected subject.
• [Conservation, Preservation, Planning] Relocating on-site visitation and recreational facilities to current Digital Center and its future expansion.
• [Interpretation] Opening up the site to regional residents on traditional and cultural dates of significance.
• [Education, Research Community Development] Synthesizing published Mogao Caves materials on one cohesive online platform.
Henceforth, with the premise of the site reaming accessible to the public, the author proposes that the Mogao Caves should have two visions of visitations and interpretations of its values and importance. The first vision emphasizes the regional cultural significances of the Mogao Cave as a place and its connection with the individuals once lived and are still living revolving the Mogao Caves. Then, the second vision falls upon the importance of the content within the caves, appreciating and exploring the artistic and historic significances of the murals and sculptures.

The design objective for both visions is to divert the growing visitation volume. Because the visitation volume continues to grow and there is a safety capacity to the visitation volume upon the cliff face, the first vision of visitation intends to meaningfully shift audience attention away from the caves, creating a possibility for visitation volume to grow while protecting the material integrity of the site. Meanwhile, the second vision within the proposal intends to provide better conditions and opportunities for those who are highly interested in studying and appreciating the sculptural and pictorial content of Mogao to have an immersive and constructive learning process by creating establishing focused and clear guidance.

Thus far, the regional significance of the Mogao Caves has yet to be activated. Upon activation, it will become the core narration supporting the first layer of interpretation. The regional significance includes the northern caves zone that has yet been opened to the public. The northern caves zone has several painted cave-temples but overwhelming was the living quarter of monks, painters, and laborers. Archaeological research done by the Dunhuang Academy has recovered several objects associated with daily living as well as tools in the excavation and construction of the caves. Because the cliff face of the northern caves zone is not structurally reinforced by and rebuilt in concrete\(^\text{269}\) like the southern cave zone, visitors would not be allowed to climb up or enter the caves. However, the cliff face of the northern caves zone represents what the Mogao Caves would have been like when it was rediscovered in the 18th century. The eroded cliff face speaks of an even more powerful history. As visitors, due to the planning and design of the South cave zone, it is quite difficult to take a photo claiming their

\(^{269}\) Done in mid-20th century. The concrete used a mix that has attempted to resemble the color of the original cliff face.
presence at the site. Photography is forbidden in caves. Taking photos on the trackway cannot actually capture anything besides the concrete wall. Taking photos at the Nine-Story Temple Square can envelop the Nine-Story Temple and a few closed doors of the caves into the picture frame, but the flourishing planting surrounding the square would block the rest of the cliff. The remaining option is to take a photo with the Small Archway, which holds a plaque with the title of Mogao Caves written on it. If the northern caves zone is turned into a core destination in the visitation process, photography with an unmodified surface of the historical Mogao Caves may become a hot spot for photography. Visitors can take photos as they wish with an even more original and authentic appearance of Mogao.

Figure 7.1 Northern Caves Zone

Meanwhile, the archaeology department at Dunhuang Academy has already constructed models from architectural surveys recreating the structures of several caves historically used by monks and laborers. The miniature models are exhibiting in the major museum at the Mogao Caves. Combining with the artifacts already on display, they can serve as a starting point in

270 Chen Tiger, “Dunhuang Mogaoku beiqu dongku” 敦煌莫高窟北区洞窟 [The Northern Cave Zone of Dunhuang Mogao Caves], http://mapio.net/pic/p-60726070/
narrating the story of monks and laborers that once lived on the site of Mogao. The movie *Qiannian Mogao* also has short, less eloquently-explained scenes reenacting the life of monks and works, which can be expanded into series of stories.

Valorizing the space and the site would also allow the regional residents to have more frequent and intimate contact with the Mogao Caves. Since the overall visitation volume can be enlarged as the visitation capacity is redefined, regional residents’ access at the Mogao Caves can be widened to more dates with traditional significance, such as the first day and the fifteenth day of each month according to the lunar calendar. Access to Mogao Caves by the regional residents on a much lower price for the entire year or over the entire off-peak season can also be the long-term goal. Since a predominant percentage of the Dunhuang citizens are the facilitators of the local tourism industry, it is fair to assume the rise of tourism would result in a decrease of Dunhuang citizens’ visitation to the site. (Or more likely, presented with the option of going at any time throughout an entire year, the citizens would actively avoid going to the Mogao Caves during the peak season.) Opening access to regional communities and re-establishing and solidifying the traditional social and cultural connection may instigate more positive factors than negative ones. In the meantime, the access can still be oversaw, regulated and monitored by the Dunhuang Academy and the Mogao Caves management team according to the anticipated visitation volume and condition of the site of each day.

Therefore, the first vision of visitation is oriented to visitors that perceive the Mogao Caves as only a destination written on their bucket list and to whom are arriving at the site for the first time. It is composed by introductory information about the history of Dunhuang and the Mogao Caves in the form of movie or via any other media of choice, guided exhibitions revolving around the “lifestyle” at the Mogao Caves, guided visitation to the northern caves zone, and a bonus participation of the religious or communal gathering depending on the date. To tie the first layer of interpretation with the second layer, I would advise to adding special caves exhibition at the end of the tour, when visitors are back from the site. A few special caves would be sufficient to those who are here just for a touristic trip (after snapping another series of photos), and would also be enough to attract who are interested in exploring more of them and encourage them revisiting the site and take part in exploring the second layer of interpretation.
The second vision of visitation is similar to current visitation design, emphasizing a physical interaction within the caves while learning the content of the caves. The proposed visitation in form is identical to a previous visitation design at the Mogao Caves, which is a two to two and a half hour tour to fifteen caves (or even longer and with more caves). The total capacity would have to be reduced to 3,000 visitors daily or lower. However, each visitor would be granted longer time with the presented materials. A consistent narration across the visitation shall include the basic informant of each cave while having a continuous theme developed along the tour. Henceforth, all tours shall be theme based and crafted towards both the interest of the docents and the interest of the visitors. Each docent shall choose a topic they interested at will and develop their own tour. The selection of the caves shall combine the factors of the theme of the tour and the condition of the caves. For example, a tour on sculpture may include visitation to both cave 148 and cave 158 as a comparison. The cost of the tour can be determined by the base cost of the ticket and the number of special caves included on the designed tour route. The theme of tours together with the caves that will be visited along the tour can be published online in-priority. Visitors may register accordingly.

In such case, docents would have to be retrained according to the selected them. Nevertheless, multiple heritage professionals voiced the same concern in their interviews stating the issues of lacking human resources at the Mogao Caves. By continuously retraining the docents and reshaping their knowledge upon the subjects of their selections, it would be possible for them to become researchers at the Dunhuang Academy as they have acquired their seniority. In a way, reshaping a portion of the docents towards academic specialty can foster a pool of researchers for the institute. Building up academic specialty is also a way to build up the resilient of Mogao Caves’ docents, diverting their focus from a heavily visitor dependent industry to a broader scope of their choice.

The First Stage of Redevelopment

- **[Interpretation, Conservation, Visitor Activation]** Visualizing visitors’ movement and impact to the visitors within the caves through interactive smartphone applications or webpage. Communicating the importance of conservation and preservation through visualizing visitation pressure.
• **[Interpretation, Education]** Constructing the narration and peppering the exhibition about the stories of the northern cave zone and the site’s historical regional connections—the livelihood at the Mogao Caves in the past and presence.

• **[Planning]** Carving out the visitation routes of the tour on northern cave zone.

• **[Professional Training]** Re-training docents and volunteers for the new narrative.

To redevelop the Mogao Caves into author’s goals and visions, I propose three transitional stages and series of objectives to complete in each stage to achieve the final goal. The first stage of redevelopment focusing on preparing both visitors and the management team for the upcoming changes.

Several “add-ons” can be utilized additional to current visitation design to raise the awareness of visitation pressure to the caves among the visitors. Although visitors might have already sensed the overwhelming visitation load by standing in line, visualizing the number of visitors in caves that visitors went to might be effective in communicating the preservation challenges and promoting the awareness of preserving fragile cultural heritage. For example, a real-time visitation survey could be conducted among smartphone users to evaluate their visiting experience and collecting visitation volume by head counts along the tours. Visitors can be provided with a QR codes when they are lining up outside the cave zone. Scanning the QR code will take them to a survey that asks the visitors to fill out the designated number of caves (e.g. 96, 148). The survey could be designed as sending and receiving instant feedback every time a visitor type in and submit a number. The amount of visitors typing in the same number indicates the number of visitors present in the cave by reporting his or her own presence (as the visitor type in another number when entering a different cave, the visitor could be subtracted from the previous caves’ data pool). Therefore, every time the visitor submits a cave number, he or she could instantly see the visitation load within the cave. The instant feedback could even add another layer of calculation, showcasing the average square meters or square feet acquired by each visitor. This instant feedback be able to might alert the visitors to behave more delicately. After submitting the full survey, the visitor will be notified specific visitation data documented by the system after the final round of visitation regarding the visitation volume of that day. An instant feedback could be like “you are the 2000th visitors out of 5980 visitors to Cave 96 today.” For an iconic cave like Cave 96, such a number would be even more dramatic on an
emergency day, such as “you are the 2000th visitors in Cave 96 out of the 17980 visitors of the day.” After all, Cave 96 is the largest cave-temple complex at Mogao. But if a visitor has visited some of the smaller caves along the visitation and get notified that from 1,000 to 2,500 visitors have traveled through these confined space, the load of traffic could contribute to the awareness of how visitation volume would encroach the material integrity of the site.

Thus far, the issues of visitation volume and its statistical analyses have only been discussed among heritage professionals and researchers. Media would report the total visitation number to Mogao Caves during the peak months of the peak season, while either praising its growth or alerting the public of its intensity. In fact, it is more than common for a Chinese touristic attraction to be heavily overloaded. Nevertheless, total visitation number reported as dangerous at the Mogao Caves might only be a fraction compared to less fragile destinations. For the general public, seeing the numbers might not be immediately linked to why the site could not be further exploited. Therefore, reporting numbers cannot do much unless the unstoppable growth of visitation and its impact is shown and illustrated to the audience. Although there are series of photo comparisons put together showing the degradation of the material fabric in the past a hundred years, there has not been a section of the exhibition devoted to graphically representing the growth of visitation. The growth of visitation may need to have its own section in the exhibition or even in the introductory narration as part of the history of the site, showing the pressure imposed on the material integrity, aligning with its effect on material integrity and structural instability.

Such a design could not only be helpful in supporting a conservation and preservation-oriented narrative within the first stage of redevelopment, but also be extended to later stages and even evolving into an iconic feature incorporated into the visitation at the Mogao Caves. In the later stages as the visitation number increases in Cave 96 and Cave 148, the number would become even more dramatic and alarming to the visitors. Meanwhile, in the final stage when scholars and students are encouraged to explore diverse subjects and theme-based tours, they could be rewarded with a sense of affirmation in their research and learning process, describing them as the “second” or “fifth visitor in Cave X out of the ten visitors today.” As the visitors are

271 Detail see the new tour route design in later stages.
self-reporting their presence in the caves, they are building a direct connection with the caves they have encountered. Such a virtual intimate connection can also foster a sense of accountability, showing the visitors that their behavior is traceable, reminding them their visitation has contributed to a tiny part of overall deterioration, pushing the advocacy for conservation and preservation forward.

While the visitors are learning about the negative impact of growing visitation to the physical caves, docents shall start learning and retraining on the new layer of interpretation of the Mogao Caves. Not only docents, prospective volunteers should take the lead in learning the new narrative of Mogao. During peak seasons, the quality of the guiding tour is a core factor determining visitation experience and efficiency of learning. Comparing to get familiar with all sixty designated public caves in the designed tour routes in two weeks or a month of training, learning about one or a few narratives of the northern caves zone might be easier. It would be also easier to conduct quality control for a new series of narration in its stage of preparation and the first debut. The new interpretation, as suggested, would emphasize focusing on the northern caves zone, the historical “lifestyles” of the monks and laborers, and contemporary regional connection with the Mogao Caves. Many of the volunteers working at the Mogao Caves during the peak season are university students from the region. The reorientation of the values and significances of the Mogao Caves would be highly meaningful to the docents as well but might be a more acceptable idea among the volunteers, on the blank canvas. Moreover, the shift is not only a shift in the visitation design but a cognitive shift about self-empowering, which could be beneficial to take upon by volunteers whom are themselves also the regional residents.

The formation of a consistent narrative on the livelihood of the Mogao Caves would need major support from the archaeology department of the Dunhuang Academy. The display of recovered archaeological artifacts and models of the “living” caves at the exhibition needs to be rearranged into a clear narrative navigating towards Mogao’s place-making process. In the first stage, the exhibition only needs to develop on current displayed materials, hinting the upcoming theme and instigating the curiosity of the viewers. It is not until the intermediate stage that a complete exhibition with diverse media and technological representation of the first layer of interpretation would need to grow into full blossom.
Meanwhile, it would also be necessary to start preparing to relocate the shops and some of the museums at the site out of the buffer zone, maybe next to where the Digital Center currently sits. If the total visitation volume needs to grow and expand, and with around 18,000 visitors on an emergency day could result in massive number of visitors waiting in line up to hours for visitation or transportation to and out of the site, cumulating visitors on the site would not be a reasonable decision. To reduce entities on-site and relocate the dynamics interpretation off-sites not only provides the entities a larger space to develop and involve but also allows the flow of mass more predictable.

The Intermediate Stage of Redevelopment

- [Interpretation, Conservation] Replacing the emergency ticket with the northern cave zone tour during the peak season.
- [Interpretation, Education] Creating a small exhibition on the mural and sculptural highlights of the special caves at the exit of the Digital Center.
- [Education, Professional Training] Retraining senior docents into their academic or professional directions of choice.
- [Interpretation, Education] Composing and designing theme-based tours with scholars for the Dunhuang Research Academy.
- [Planning] Constructing the infrastructures that would house the relocated museums, exhibitions, and recreational facilities.
- [Conservation, Education, Planning] Highlighting the central role of the exhibition center and its exhibit on the material conservation and preservation history of the Mogao Caves.

The intermediate stage is the transition stage. It incorporates the most of current visitation design with slight reorientation. It also marks the implementation of the first layer of interpretation and visitation.

In this transitional period, the first layer of visitation content can be composed of one movie at the Digital Center, a guided tour at the northern caves zone, a guided glimpse of Cave 96 and Cave 148, a guided tour through the northern caves theme exhibition, and the free access to remaining infrastructures on-site, including any souvenir shop or museum that has yet been relocated off the site. In the intermediate stage, the half-developed “northern caves tour” shall not be offered year round but only during the peak months of the peak season. The “northern
caves tour” tickets can be available daily from July and August at a capacity of 6000 visitors daily. If visitors have responded to the tour well, within the intermediate stage, the tour could be offered from late June, July, August, to early September, and during the national holiday at the first week of October. Because current emergency tickets are capped at 12,000 (sold out on most of the days) and the emergency day is conducted on every other day of July and August, eliminating the emergency ticket and adding the “northern caves tour” with a 6000 daily allowance will not diminish the total visitation volume in peak season.

In this transitional stage, the daily amount of audience would be limited by the capacity of the Digital Center. The maximum capacity of the screening equipment at Digital Center is 30 times per day (200 people per screening). 6000 people daily is the maximum figure that each movie at Digital Center could provide service for under current condition. Although it seems to be more efficient to circumvent the Digital Center and will be able to receive more visitor daily, just as current emergency visitation’s design. But it is preservationists job to stand by the importance of communicating the historic information about the Mogao Caves and the Dunhuang region to the audience, making sure such a baseline interpretation being provided to the visitors. The Qiannian Mogao movie that currently plays at the Digital Center serves an efficient role in introducing the basic historical context of the Mogao Caves. Moreover, it includes selective scenes of reenactment about the construction process of the caves, the making and painting of murals and sculptures, the life of the monks, and historical ritual practices. Although current exhibition also includes tools and artifacts presented in the reenactment, the connection and narrative have yet been rigorously built. During the guided tour of the northern caves zone and at its theme-based exhibition, volunteers can constantly refer to the reenactment shown in the movies and discuss it within the context of historical place and at the presence of historical artifacts.

The tour routes of the “northern caves tour” at the intermediate stage could be illustrated as below. As demonstrated, the tour could go in both directions to further divert visitation volume across the site. Docents and volunteers of the “northern caves tour” shall be organized as to lead the tour in the clockwise for one month and in the counter-clockwise for the other. If taking the tour clockwise, visitors would first go through the exhibition, and major large caves
(96 and 148), and arrived at the northern caves zone at the end of their tour. If taking the tour counter-clockwise the visitors could go through the cave zone first, see the larger caves (96 and 148), and end at the northern caves exhibition. In such case, each docent or volunteer can submit an evaluation comparing which way of visitation they feel to be a more efficient learning process for visitors. Such a result would be playing a meaningful role in designing the visitation pathway after exhibitions and souvenir shops are relocated off-site.

Meanwhile, the regular visitation remains largely unchanged. It can still set its limit at 6000 daily with an eight-caves visitation in the Southern cave zone. However, because there are only two movie theaters at the Digital Center and one of them would be fully in-use for the “northern caves tour”, regular visitation during the peak season would not only have fewer caves to visit but also one movie less than a tour in the off-peak season. Nevertheless, regular visitors will get to see the spherical stereoscopic movie, Canlan Fogong, which includes the digital reconstruction of seven caves and the virtual reconstruction of the entire site of Mogao Caves.
Therefore, an intentional differentiation would then be established. The “northern caves tour” is more about the Mogao Caves itself, and the so-called “regular visitation” is primarily focusing on cave visitations. For those who are not incredibly interested in hooping from cave to cave, the distinction would be instructive in informing their decisions.

It is important to note that the “northern caves tour” shall be charged about the same price as the regular visitation. Currently, a regular ticket during the peak season is 200 Yuan and an emergency ticket is 100 Yuan. The disparity of cost immediately seems to imply the difference in quality (and in fact it is). Because the regular visitation in this context will watch one less movie, it could be labeled at 180 Yuan. Comparably, the “northern caves tour” could be designated at 150 Yuan or even more as a response to the intensive long narration process and the extensive walking that a docent or volunteer has to conduct. Although a larger difference in price might be more effective in channeling audience to choose the northern caves tour to some extent, there shall not be a presuppose de-valuation in the content presented in the northern caves tour. In the final stage of redevelopment, the theme-based caves tour could be labeled at a higher price. But because the northern cave tour is the future “regular visitation,” it should have been perceived as no difference in price but content comparing to current regular visitation. It is essential to have a consistent conscientious among both the Dunhuang Academy and Mogao Caves management team to not perceive the “northern caves tour” as a replacement of the emergency ticket. It is a new interpretation and understanding of the site rather than only a method to digest a larger visitation volume. It shall be woven together meticulously and with great efforts. Such an attitude would be important in building up to the final stage and fully reorient the significances and values of the Mogao Caves.

During each off-peak season in the intermediate stage, docents that have over ten years of experience in leading the cave site visitation shall participate in professional training and design process of the theme-based cave visitations with scholars and academics at the Dunhuang Academy. Dunhuang Academy shall take the lead in putting together academic workshops and training programs targeting diverse research topics and themes that have derived from the Mogao Caves. All docents and volunteers are encouraged to select subjects out of their interests and join
the workshops, but the senior docents could be trained in priority since they have more experience and have accumulated a larger pool of knowledge.

In the meantime, the site can start experimenting opening to the regional residents on the first day and the fifteenth day of a lunar month and other public holidays during the off-peak season. The first day and the fifteenth day of a lunar month tends to mark coincides with many of the significant days in traditional Chinese festivals, especially in the first month of the lunar year and the fifteenth day of the lunar August. Although the fifteenth day of the lunar August mostly falls into the peak season, the first month of the lunar year will always remain in the off-peak season. The management team can closely monitor the volume of regional residents come to the site during the dates, thus deciding whether continue expanding the access would be possible. Such an act can create more opportunities to resuscitate the regional cultural relationship while enhancing the importance of the Mogao Caves as a place of significance.

As the new infrastructure is being constructed next to the Digital Center, before relocating exhibitions and shops, the exhibition team can start working on the small exhibition on the replica of special caves and a selection of the copies of their highly protected murals. Upon completion, the representation artworks shall be the first exhibition incorporated into the existing tour route. It could open to the public even before the entities relocate to the new space. Visitors coming back to the Digital Center from the site shall be directed to walk through this small exhibition. As suggested previously, those who are not interested in cave hooping may be satisfied with appreciating and taking photos with the replica of the special caves. Meanwhile, those who are interested in the content might decide to revisit the Mogao Caves via the cave hooping tour route. As a result, the audience with a different expectation and need could be sorted. Sustainable tourism means sustaining the tourism resource and tourism economy in the long-run. Meanwhile, the “tourism resource” could be referred to the cultural heritage fabric or the tourism body itself. When sustaining material fabric confronted by mass visitation become a challenge, besides diverting visitation, creating layers of visitation and the demand of revisitation could also be a way to sustain long-term tourism resource, which in this case refers to the sustaining of the tourism volume.
Because all replica caves exhibited on-site are hand painted and each of them would take a team up to five years, to fully fabricate such a small exhibition from scratch might take ten years or more. It would be efficient to call several iconic replica caves and copies of artworks back from their travel exhibition. Meanwhile, as the “northern caves tour” is debuted on-site, the travel exhibition of the Mogao Caves shall also restructure its narration. The Mogao Caves shall be framed primarily as a historically significant place to the ancient and contemporary regional residents, then an architectural, artistic, or cultural achievement. Henceforth, the content that has been subtracted from the travel exhibition can be completed by artifacts and displays on the “new” stories of Mogao.

Moreover, the author also believes that exhibitions locate on or right next to the site shall be equipped with better content, resources, and interpretive mechanisms than the travel exhibitions. Especially in the case of Mogao, as the values and significances of the Mogao Caves is not only intertwining with its historic structures but also its geographical landscape: an oasis standing in an unending desert. An exhibition is nothing more than a consistent series of interpretation on a cohesive subject. And only when the exhibition is directly connected to the social, cultural, and historical geographical context that the audience is immersive in, the subject could be best understood. Henceforth, in the process of valorizing the Mogao Caves as a historically an culturally significant place, it would be important to leave the viewers an impression that their physical presence and experience at the site is irreplaceable.

The Final Stage of Redevelopment

- **[Planning]** Recreational facilities relocated to the new infrastructure.
- **[Education, Interpretation]** Readapt facilities on-site into a research center and workshops for docents, volunteers, and any educational or professional training programs.
- **[Conservation, Interpretation, Education]** Extending the northern cave tour to full year-round and establishing it as the regular visitation at the Mogao Caves.
- **[Conservation, Interpretation, Education]** Expanding the visitation content but reducing the visitation volume of past “regular visitation,” now theme-based cave tours.
- **[Interpretation]** Opening up the site to regional residences full-year round.
• **[Research Community Development]** Fully cultivating an open communication platform among the Dunhuang Research Academy, Mogao Caves management team, and the global students and scholars on the published Mogao Caves materials.

In the final stage of redevelopment, the site will be fully opened to the regional residents at on year-round basis at a low cost. The Cave 96 can remain to be only accessible on significant occasions such the birthday of Buddha on the Lunar April 8th, while the site itself can be opened for regional residents at all time.

The completion of shops and exhibitions’ relocation could be set as the beginning of the final stage of the redevelopment. In the final stage, the “northern caves tour” shall be set as the regular visitation schedule that operates on a daily basis. An exhibition with more cohesive and better-integrated measurements on the interpretation of the northern caves tour’s historical entanglement with the traditional ways of living and the Mogao site’s connect with contemporary Dunhuang regional communities shall be established at the new infrastructure. The exhibition shall address the lives at Mogao Caves supplemented by archaeological artifacts, cohesive stories based on the analyses of artifacts, and interactive displaces reconstructing the process. The exhibition shall also reflect cultural traditions in the Dunhuang region illustrated by selections of mural depictions and virtual recreations.

A complete regular visitation at the Mogao Caves would include one movie unveiling the basic history of the Mogao Caves (off-site), an guided tour through the major exhibition (off-site), a guided tour through the northern cave zone and in Cave 96 and Cave 148 (on-site), any bonus activity if runs into religious significant dates or communal gathering event, a small (on-site), exhibition composed by the replica of special caves and representational artworks (off-site), and additional seasonable exhibitions if available (off-site). The entire time that the regular visitors have spent on-site has been significantly reduced. Because the shopping area and recreational infrastructures have already been located off-site, visitors can experience the tranquility of the space and may not stay on the site for too long. In such case, the daily capacity for this visitation could be enlarged from 6,000 to 8,000 or 10,000 daily during the peak months.

Meanwhile, the second layer of interpretation, which is the tour in the southern cave zone will be fully reshaped into extended tours focusing on cave visitation with specific themes. The
content of narration shall be approved by senior scholars and academics from the Dunhuang Research Academy institute and related scholars in the field before debut. Senior docents with adequate training and younger generations of scholars at the Dunhuang Academy shall give the debut of the tour in the first few months to set the standard. The caves tour will reinstitute a previous visitation design at the Mogao Caves. The caves tour will envelope fifteen or sixteen caves across a two to two and a half hour visitation with a specific theme, selected by the guide of the tour. The tour can include no special caves, or one or even two special caves according to the theme and content of the tour. Visitation capacity will set at 3000 people daily.

The design of the tour (caves selection specifically) shall be proposed by the docents and approved or adjusted by the Dunhuang Academy accordingly. Alternative caves shall also be listed in case there is any of the selection not in a viable condition to visit. Each tour could be composed with no special cave, one special cave, or multiple, as long as it is justifiable by the guide of the tour. However, because the addition of the special cave implies an addition of the cost, it might be more reasonable to include up to one special cave in each theme-based tour. Moreover, as the cave visitation system has been up and running for a few months or a year, Dunhuang Academy can start inviting scholars and researcher to conduct research on-site and public tours about their research projects, pushing new themes and subjects to occur. Besides themes and subjects, visitors can also choose the level of the information they would like to receive. Tour guided by senior docents will be comprehensive, intact, and highly informative. Meanwhile, tours guided by younger scholars or visiting scholars might be more academics or professional. As the education level of the Chinese citizens increased, the younger generations are preparing to receive a higher level of intellectual challenges from diverse channels. Thus far, it is predominately the visitation design and content at the cultural heritage sites limit the knowledge that viewers can receive. Therefore, transferring the cave tours into more academic, cohesive, and integral themes and narratives will not discourage the visitation but encouraging the visitation especially from the audience that has already have a deep affiliation and appreciation of cultural heritage. The date and time of the tour, subject of the tour, caves selection, and the information of the guide shall all be made available on the online registration system in advanced.
Because the cave visitation tour might have a substantial rise in cost, it is important to carve out educational opportunities for children and teenagers that are more less economically equipped families. As a result, free cave visitations for children under the age of 10 shall also be established. The children tour can include 8 caves instead of 16, in case a two to two and a half hour visitation might be too excessive. The time slots of children tours shall be highlighted on the register system to let the parents be aware of such an opportunity. From the age 10 to age 16, children or teenagers can participate in any of the cave tour upon registration with a quarter of the full ticket price. Meanwhile, from 16 to one year after their undergraduate graduation, teenagers and young adults can participate in the cave tour with a half price. In such case, children, teenagers, and young professionals are encouraged to experience and learn about the art, history, and culture in greater details at a lower cost.

As the infrastructures and facilitations on-site are evacuated. The building does not need to be demolished or massively modified. Instead, they could be reused as space for hosting training and study programs. Thus far, there has yet been a living quarter for independent scholars and researchers established adjacent to the Dunhuang Research Academy. The architectural cluster that is currently housing the souvenir shops and other recreational facilities right across the Mogao Caves are built in the space where the founders and the first generation of researchers, academics, and artists lived. Such a design could be perceived as an echo and tribute to previous generations of conservators and preservationists’ efforts in preserving the Mogao Caves. Therefore, re-appropriating the space into a research center and educational forum for scholars, researchers, students, and even the professional personnel of the institute will be an adequate transformation. Moreover, in the off-peak season, the Dunhuang Academy and the Mogao Caves management team can transform the space into workshops. Besides academic workshops for docents, the workshops can range from introduction to material conservation and introduction to Chinese art history hosted by the conservators and scholars from the Dunhuang Academy, to language courses in English, Japanese, Russian, Germany, and etcetera hosted by the multi-language guides. These workshops will be oriented to local students. The education resources in the Gansu province is not exceptional comparing some of the more economically advanced provinces. Although the Dunhuang Research Academy might not position education...
service as a core, driving objective, hopefully through the workshops, it can help the local students as essential educational access to envision a larger world and be ready to see the world in more perspectives and with better intellectual preparation. These programs may also plant the seeds for future professional resources for the Dunhuang Academy as a growing force going forward.

As the final stage of redevelopment laid out accordingly, the last vital action is to construct a channel that systematically summarizes, updates and improves the published, henceforth accessible, information of the Mogao Caves and the cave-temple complexes in the region. The Digital Dunhuang website is the current attempt to display the digitalized caves to the public. Although an immense amount of information is provided in different forms, there is not a cohesive and systematic search engine to integrate all available information. All overall information expansion and integration would be needed to open up the academic research forum to a broader audience, attracting attention and forces to the Mogao Caves in participating in the process of continuous interpretation of the Mogao Caves.

Closing Remarks

Management of a site is a continuously evolving and revisioning process. Although the proposal is designed in response to contemporary needs and challenges, upon actual application, it may find itself the needs to address numerous unexpected issues along the way. The guiding ideology of preservation and conservation is also on a constant shift. However, as along as the site is still valued and appreciated by the contemporary society, preservation will always be on demand. Not matter what the dominant factor or driver is behind the preservation and conservation of a cultural heritage site, the objectives of preservationists are always passing along the beauty (beyond aesthetics) and stories (of undifferentiated significance) of the site to future generations.
Appendix A: Related Demographic and Visitation Statistics

Chapter II. Research Background

The following data are retrieved from the National Bureau of Statistics of the People’s Republic of China (http://www.stats.gov.cn/tjsj/) and translated by the author:

Statistics on Chinese Demographic Information:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population (in ten thousands)</td>
<td>123626</td>
<td>125761</td>
<td>127674</td>
<td>127672</td>
<td>128453</td>
<td>129227</td>
<td>129588</td>
<td>130756</td>
<td>131448</td>
<td>132129</td>
<td>132802</td>
<td>133450</td>
<td>134091</td>
<td>134735</td>
<td>135840</td>
<td>136072</td>
<td>136782</td>
<td>137462</td>
<td>138271</td>
<td></td>
</tr>
<tr>
<td>Male (in ten thousands)</td>
<td>63131</td>
<td>63940</td>
<td>64692</td>
<td>65437</td>
<td>65972</td>
<td>66115</td>
<td>66596</td>
<td>66976</td>
<td>67375</td>
<td>67728</td>
<td>68048</td>
<td>68357</td>
<td>68447</td>
<td>68748</td>
<td>69068</td>
<td>69395</td>
<td>69728</td>
<td>70079</td>
<td>70414</td>
<td>70815</td>
</tr>
<tr>
<td>Female (in ten thousands)</td>
<td>60495</td>
<td>60821</td>
<td>61094</td>
<td>61306</td>
<td>61955</td>
<td>62338</td>
<td>62671</td>
<td>63012</td>
<td>63381</td>
<td>63720</td>
<td>64081</td>
<td>64445</td>
<td>64683</td>
<td>65343</td>
<td>65667</td>
<td>66009</td>
<td>66344</td>
<td>66703</td>
<td>67048</td>
<td>67456</td>
</tr>
</tbody>
</table>

Statistics on Domestic Tourism in China:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Tourism Visits (in millions)</td>
<td>644</td>
<td>695</td>
<td>719</td>
<td>746</td>
<td>784</td>
<td>878</td>
<td>870</td>
<td>1102</td>
<td>1212</td>
<td>1394</td>
<td>1610</td>
<td>1712</td>
<td>1902</td>
<td>2013</td>
<td>2641</td>
<td>2957</td>
<td>3262</td>
<td>3611</td>
<td>4000</td>
<td>4440</td>
</tr>
</tbody>
</table>

Statistics on International Tourism in China:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>International Arrivals (in ten thousands)</td>
<td>742.8</td>
<td>710.7</td>
<td>843.23</td>
<td>1016.04</td>
<td>1122.64</td>
<td>1343.99</td>
<td>1140.29</td>
<td>1692.25</td>
<td>2055.21</td>
<td>2260.03</td>
<td>2160.97</td>
<td>2243.53</td>
<td>2193.75</td>
<td>2162.89</td>
<td>2112.15</td>
<td>2191.09</td>
<td>2693.09</td>
<td>2608.08</td>
<td>2586.54</td>
<td>2815.12</td>
</tr>
<tr>
<td>International Arrivals, Male (in ten thousands)</td>
<td>501.36</td>
<td>481.79</td>
<td>553.07</td>
<td>655.97</td>
<td>728.83</td>
<td>875.71</td>
<td>778.58</td>
<td>1120.4</td>
<td>1321.15</td>
<td>1435.65</td>
<td>1659.05</td>
<td>1744.15</td>
<td>1774.30</td>
<td>1702.07</td>
<td>1700.51</td>
<td>1661.19</td>
<td>1982.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Arrivals, Female (in ten thousands)</td>
<td>241.41</td>
<td>228.9</td>
<td>260.16</td>
<td>300.37</td>
<td>393.81</td>
<td>464.66</td>
<td>431.11</td>
<td>572.58</td>
<td>706.52</td>
<td>783.65</td>
<td>855.98</td>
<td>871.64</td>
<td>763.6</td>
<td>933.81</td>
<td>958.79</td>
<td>981.4</td>
<td>926.96</td>
<td>928.57</td>
<td>987.11</td>
<td></td>
</tr>
<tr>
<td>Domestic Tourism Visits (in millions)</td>
<td>387</td>
<td>445</td>
<td>435</td>
<td>415</td>
<td>409</td>
<td>493</td>
<td>519</td>
<td>643</td>
<td>716</td>
<td>818</td>
<td>998</td>
<td>1009</td>
<td>999</td>
<td>1038</td>
<td>954</td>
<td>1024</td>
<td>1076</td>
<td>1128</td>
<td>1180</td>
<td>1240</td>
</tr>
</tbody>
</table>

Chapter IV: Preservation Issues and Existing Challenges

The raw data of Mogao Caves’ 2015, 2016, and 2017 emergency days and monthly visitation volume of 2017 is provided by the Dunhuang Research Academy.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1月 January</td>
<td>7861</td>
<td>人数 Number</td>
<td>人数 Number</td>
</tr>
<tr>
<td>2月 February</td>
<td>17267</td>
<td>7月 July</td>
<td>116303</td>
</tr>
<tr>
<td>3月 March</td>
<td>16807</td>
<td>8月 August</td>
<td>166765</td>
</tr>
<tr>
<td>4月 April</td>
<td>49177</td>
<td>9月 September</td>
<td>2720</td>
</tr>
<tr>
<td>5月 May</td>
<td>79178</td>
<td>10月 October</td>
<td>55841</td>
</tr>
<tr>
<td>6月 June</td>
<td>134512</td>
<td>总人数 Total</td>
<td>341629</td>
</tr>
<tr>
<td>7月 July</td>
<td>294217</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8月 August</td>
<td>353796</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9月 September</td>
<td>183459</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10月 October</td>
<td>179539</td>
<td>7月 July</td>
<td>28788</td>
</tr>
<tr>
<td>11月 November</td>
<td>20718</td>
<td>8月 August</td>
<td>73976</td>
</tr>
<tr>
<td>12月 December</td>
<td>10161</td>
<td>9月 September</td>
<td>0</td>
</tr>
<tr>
<td>合计 Total</td>
<td><strong>1346692</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>总人数 Total</td>
<td><strong>151088</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B. On-site Visitor Interviews

Chapter IV: Preservation Issues and Challenges

On-site, semi-structured, and conversation based interviews with 52 units of visitors were conducted in the Exhibition Of Relics From the Dunhuang Grottoes (Exhibition Center for short) from December 19th to December 25th in 2017. The general outline of the core questions was pre-structured by the interviewer. However, the content reflecting visitation experience and visitation expectation came from conversational based discussions with the interviewed visitors. Because the on-site interview was arranged in late December, the sample pool and sample size were limited to off-peak season visitors and a very small amount. Due to the extreme climate in the desert region, visitors in disadvantage health condition (such as elders) might have also avoided visiting the Mogao Caves in winter.

Nevertheless, the disparity among the visitors became apparent in such a circumstance. Interviewees who perceived Mogao Caves as merely a touristic attraction and interviewees who had high expectation about the site in learning and appreciating its content provided polarized feedbacks. For interviewees who had no previous knowledge about the Mogao Caves, current visitation has provided a basic introduction briefly touching different aspects of the site. Interviewees who had researched the site in-depth, finding current visitation content unsatisfactory and with no channel to provide further understanding.

Question 1: Where are you from?
• Mostly domestic and from major cities in China

Question 2: What is your occupation?
• Highly diverse. Generally middle class.

Question 3: How old are you?
• All interviewees falls between twenty and fifty-one.

Question 4: Do you travel here by yourself or in a tour group (developed by tourism company)?
• Only four out of fifty-two units of interviewees are traveling in pre-packaged tour groups, corresponding with information on visitor composition provided by Luo Yao. More discussion sees chapter four, the section on the audience in 4.3.

Question 5: Have you come to Mogao Caves before?
• Only three out of fifty-two units of interviewees have been to Mogao Caves before.

Question 6: How was the trip planned? Why did you choose to come in this time of year?
• They question might not be highly instructive. Because most of the answers

Question 7: Have you been to similar cultural heritage sites as the Mogao Caves?
• Two thirds of the interviewees
Question 8: How many caves have you visited today?
• The set visitation is 12 caves. The answers show some variations in the actual number of caves being visited among different visitors following different docents.

Question 9: What are the most impressive features you have seen today?
• Most of the visitors reflect that the most impressive features are major attractions on-site, including big Buddha statues (in Cave 96 and Cave 148), grand, massively decorated Cao family’s cave (61), the Library cave (Cave 17) or Jarkata tales depicted on the murals. Only a small portion visitors mention specific terminologies on Chinese art and painting or sculpturing techniques. Visitors who showed a broader knowledge about the Mogao Caves seem to have more reflection and critic on their visitation experience.

Question 10: What is the most enjoyable complementary feature (movies, exhibition, replica caves, gift shops, or book store)?
• The spherical screen panoramas is the most popular infrastructure.

Question 11: On a scale of 1-10, how satisfy would you score your experience?
• Interestingly, higher the visitor expectation is, lower the score becomes.

Question 12: Why did you give such a score?
• The answers to this question are very diverse. This question is also the most constructive question in collecting visitors’ evaluation and opinions on their visitation experience in general. See the interview log for detail.

Question 13: Where are you going next after the Mogao Caves?
• Mingsha Mountain is another major attraction in the city of Dunhuang. The other smaller cultural sites mentioned by visitors are developed in the recent years to maximize the tourism economy.

Question 14: How long are you going to stay in the Dunhuang region?
• If the visitor does not arrive in Dunhuang on a business trip or work schedule, the usual length of stay ranges between two to four days. During the peak season, since Mogao Caves’ regular visitation ticket needs to be reserved weeks in advance, visitors without knowing to preregister and have arrived in Dunhuang with such a short turnaround are the major audience for “emergency ticket.” A better alternative than constructing more miscellaneous sites to accommodate visitation demand or elongate visitors’ period of stay might be to actively promote the registration system.

Question 15: In retrospect, if you have come here during a peak season, how long would you wait in line for this visit? 15mins, 30mins, 1hr, 1.5hr, 2hr, over 2hr, or as long as it needs?
• This question was suggested by a visitor on the second to last day of visitor interviewing process. The small sample displaces a full spectrum of acceptable waiting time. A larger sample pool would be needed in order to derive a valid conclusion from this question.
<table>
<thead>
<tr>
<th>연번</th>
<th>일시</th>
<th>사항</th>
<th>내용</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2023.06.30</td>
<td>사업비 출원</td>
<td>비용 분담 및 예산 조정</td>
</tr>
<tr>
<td>2</td>
<td>2023.07.01</td>
<td>인력 배치</td>
<td>신규 고용 및 체계 구축</td>
</tr>
<tr>
<td>3</td>
<td>2023.07.02</td>
<td>팀 동의</td>
<td>팀 구성 및 역할 명확화</td>
</tr>
<tr>
<td>4</td>
<td>2023.07.03</td>
<td>프로젝트 진행</td>
<td>프로젝트 스케줄 및 일정 설정</td>
</tr>
<tr>
<td>5</td>
<td>2023.07.04</td>
<td>근로자 교육</td>
<td>안전 교육 및 능력 개발</td>
</tr>
<tr>
<td>6</td>
<td>2023.07.05</td>
<td>협력사 관리</td>
<td>협력사 협력 및 관리 정의</td>
</tr>
<tr>
<td>7</td>
<td>2023.07.06</td>
<td>사업보고</td>
<td>사업보고 및 평가</td>
</tr>
</tbody>
</table>

(그러한 내용이 포함된 탭표를 나타낸다.)
<table>
<thead>
<tr>
<th>タイトル</th>
<th>ページ</th>
<th>場所</th>
<th>タイムスケジュール</th>
</tr>
</thead>
<tbody>
<tr>
<td>テスト</td>
<td>1</td>
<td>A1</td>
<td>2023年1月1日</td>
</tr>
<tr>
<td>テスト</td>
<td>2</td>
<td>A2</td>
<td>2023年1月2日</td>
</tr>
<tr>
<td>テスト</td>
<td>3</td>
<td>A3</td>
<td>2023年1月3日</td>
</tr>
<tr>
<td>テスト</td>
<td>4</td>
<td>A4</td>
<td>2023年1月4日</td>
</tr>
<tr>
<td>テスト</td>
<td>5</td>
<td>A5</td>
<td>2023年1月5日</td>
</tr>
</tbody>
</table>

**注:** 以上の情報は仮想的なものであり、実際の内容は読む者によって異なる場合があります。
Appendix C. Current Tour Routes and Public Caves

Chapter V: Management and Visitation and the Mogao Caves

Caves Opened to Visitation in 2017:
1. Caves open for public visitation
2. Caves open temporarily for visitation volume adjustment in peak season
   9, 23, 44, 79, 100, 103, 138, 146, 152, 204, 172, 201, 256, 311, 323, 328, 331, 386, 390, 419.
3. Special Caves
   45, 57, 156, 158, 217, 220, 254, 275, 321, 322.
* The overall cave selections for 2016, 2017, and 2018 has remained unchanged.
* There are more than ten “special caves” at the Mogao Caves. The selected ones are at a better stage of conservation and stabilization.
* The actual availability of the caves are subjected to their conditions monitored on that day of visitation.
* In the following tables, NA stands for information not available.

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
<th>Broad Textural Information provided by Dunhuang Academy Online</th>
<th>Panorama or VR provided by Dunhuang Academy Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Qing</td>
<td>Seven sutras’ depictions highly intact</td>
<td>Yes.</td>
<td>VR Panorama</td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>Mount-earth gilding technique small thousand Buddha Library Cave Caisson</td>
<td>Yes.</td>
<td>Cave. 17 VR Panorama</td>
</tr>
<tr>
<td>25</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>29</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Qing</td>
<td>Mount-earth gilding technique small thousand Buddha Multi-layers mural</td>
<td>Yes.</td>
<td>NA</td>
</tr>
<tr>
<td>46</td>
<td>High Tang</td>
<td>Five Dynasties Song</td>
<td>Qing Tang Song</td>
<td>a small Nirvana cave</td>
<td>Yes.</td>
<td>NA</td>
</tr>
<tr>
<td>55</td>
<td>Song</td>
<td>Song</td>
<td>Song</td>
<td>fifteen sutras’ depictions intact sculpture group from Song</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>Page</td>
<td>Dynasty</td>
<td>Period</td>
<td>Depictions</td>
<td>VR</td>
<td>Panorama</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>--------</td>
<td>------------</td>
<td>----</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Wutai Mountain mural, Depictions of Ugyhur and Khotan female, Twenty-eight mansions and the Zodiac from Yuan</td>
<td>Yes</td>
<td>VR, Panorama</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Early Tang (might have renovated in Qing)</td>
<td>Yes</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Song, Underneath: late Tang, Qing, Song - renovated in Qing</td>
<td>Multi-layers mural, small thousand Buddha, Taoism figure depiction</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang (only repainted on selected regions in later dynasties)</td>
<td>Nine-story architecture, Second largest Buddha statue in China, Carved-stone tiles</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>171</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>sutra story based murals, apparent color degradation</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>334</td>
<td>Early Tang</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>NA</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang, Late Tang, Western Xia</td>
<td>Qing</td>
<td>the second largest Nirvana Buddha statue at Mogao, Nirvana sutra mural, Sahasrabhuja Sahasranetra Avalokiteshvara, Qing sculpture group</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>202</td>
<td>Early Tang to Mid-Tang</td>
<td>Early Tang, Mid-Tang, partially Song</td>
<td>Qing</td>
<td>sutra based murals incorporated daily living scenes</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>203</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Tang, Song, facial features might have been renovated in Qing</td>
<td>sutra based murals, sculptures from Tang and Song</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>231</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>—</td>
<td>Jarkata tales mural, sutra-based mural, Gandharan Bodhisattva depictions, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>237</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>Qing</td>
<td>sutra based murals, Central Asia’s influence, Tibetan Tsenpo and chancellors depictions</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>244</td>
<td>Late Sui to Early Tang</td>
<td>Late Sui to Early Tang</td>
<td>Buddha in preach, small thousand Buddha, Sculpture group</td>
<td>Yes</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dynasty 1</td>
<td>Dynasty 2</td>
<td>Dynasty 3</td>
<td>Description</td>
<td>VR</td>
<td>Panorama</td>
</tr>
<tr>
<td>---</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
<td>----</td>
<td>----------</td>
</tr>
<tr>
<td>246</td>
<td>Northern Wei</td>
<td>Western Xia</td>
<td>Western Xia</td>
<td>small thousand Buddha • sculptural group • Western Xia green mural</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>249</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>Central Asia figurative depictions • Red color based mural • Taoism influence</td>
<td>Yes</td>
<td>• VR • Panorama</td>
</tr>
<tr>
<td>251</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>Central Asia figurative depictions • small thousand Buddha • Red color based mural</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>257</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Jarkata tales’ mural • Central Asia figurative depictions • Red color based mural</td>
<td>Yes</td>
<td>• VR • Panorama</td>
</tr>
<tr>
<td>259</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Carved niches and relief • intact sculpture group • Red color based mural • small thousand Buddha</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>292</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui (repainted in Qing)</td>
<td>sculpture group: Ill Buddha • small thousand Buddha • Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>296</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Jarkata tales’ mural • sutra-based mural • small thousand Buddha • sculpture group</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>314</td>
<td>Sui</td>
<td>Sui</td>
<td>NA</td>
<td>Caisson</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>329</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Qing</td>
<td>Jarkata tales’ mural • sutra-based mural • small thousand Buddha • Caisson</td>
<td>Yes</td>
<td>• VR • Panorama</td>
</tr>
<tr>
<td>332</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Qing</td>
<td>Nirvana Buddha statue • Nirvana sutra mural • Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>335</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Qing</td>
<td>grand scale sutra-based murals • Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>340</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>NA</td>
<td>Caisson • Khotan eight Dharmapalas</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>341</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>NA</td>
<td>sutra-based murals</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>384</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>multiple Tibetan Bodhisattva depictions</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>Cave No.</td>
<td>Dynasty</td>
<td>Excavated Dynasty</td>
<td>Excavated Dynasty</td>
<td>Sculpture Details</td>
<td>Highlight Details</td>
<td>Visitation</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>397</td>
<td>Sui</td>
<td>Song</td>
<td>Qing</td>
<td>• Caisson</td>
<td>• small thousand Buddha</td>
<td>Yes</td>
</tr>
<tr>
<td>407</td>
<td>Sui</td>
<td>Sui</td>
<td>Qing</td>
<td>• Caisson</td>
<td>• small thousand Buddha</td>
<td>NA</td>
</tr>
<tr>
<td>409</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>• Depictions of Uyghur royalties</td>
<td>• small thousand Buddha</td>
<td>Yes</td>
</tr>
<tr>
<td>420</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui</td>
<td>• intact sculpture group: Ill Buddha</td>
<td>• Persian influenced decorative motif</td>
<td>Yes</td>
</tr>
<tr>
<td>427</td>
<td>Sui</td>
<td>Song</td>
<td>Song</td>
<td>• Sui (might have repainted sections in Qing)</td>
<td>• Song</td>
<td>Yes</td>
</tr>
<tr>
<td>428</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Northern Zhou (might have repainted sections in Qing)</td>
<td>• Jarkata tales’ mural</td>
<td>Nirvana sutra mural and many other sutra-based murals</td>
<td>Yes</td>
</tr>
<tr>
<td>445</td>
<td>High Tang</td>
<td>High Tang</td>
<td>High Tang (repainted in Qing)</td>
<td>• Maitreya’s sutra-based mural with detail reflection on historical lifestyles</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Partially Song, partially Yuan</td>
<td>Qing</td>
<td>• multiple sutra-based mural</td>
<td>Architectural depictions</td>
</tr>
<tr>
<td>23</td>
<td>High Tang</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>• Caisson</td>
<td>Sutra-based mural with scenes of historic daily life</td>
</tr>
<tr>
<td>44</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Mid Tang, Five Dynasties</td>
<td>NA</td>
<td>• Nirvana theme based cave multiple deterioration syndroms</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Dynasty 1</td>
<td>Dynasty 2</td>
<td>Dynasty 3</td>
<td>Note 1</td>
<td>Note 2</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
<td>--------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>High Tang</td>
<td>High Tang</td>
<td>High Tang (repainted in Qing)</td>
<td>Yes</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>mural depiction of regional historical events</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>103</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>multiple sutra-based mural • blue and green landscape painting</td>
<td>Yes</td>
<td>VR • Panorama</td>
</tr>
<tr>
<td>138</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Qing</td>
<td>Figurative depictions of regional minorities • sutra-based mural</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>146</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>NA</td>
<td>sutra-based mural with detail depiction of sutra's story</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>152</td>
<td>Song</td>
<td>Song • Western Xia</td>
<td>Qing</td>
<td>sutra-based murals in Uyghur painting techniques • small thousand Buddha</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>204</td>
<td>Late Sui to Early Tang</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Caisson • Jarkata tales’ mural • early Tang’s Bodhisattva sculpture</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>172</td>
<td>High Tang</td>
<td>High Tang • Song</td>
<td>Qing</td>
<td>sutra-based murals • architectural depictions • Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>VR • Panorama</td>
</tr>
<tr>
<td>201</td>
<td>Mid Tang</td>
<td>Mid Tang • Song</td>
<td>NA</td>
<td>sutra-based murals • architectural depictions</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>256</td>
<td>Song</td>
<td>Song</td>
<td>Qing</td>
<td>Iconic Song painting color palate, styles, and techniques • Multi-layers mural</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>311</td>
<td>Sui</td>
<td>Sui</td>
<td>Qing</td>
<td>Caisson</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>323</td>
<td>Early Tang</td>
<td>Early Tang • Western Xia</td>
<td>Qing</td>
<td>mural on regional tales of the history of Buddhism • pictorial representation of Buddhist regulations</td>
<td>Yes</td>
<td>VR • Panorama</td>
</tr>
<tr>
<td>328</td>
<td>Early Tang</td>
<td>Early Tang • Western Xia</td>
<td>Early Tang</td>
<td>intact sculptural group from Early Tang • multiple sutra-based murals • artistic influence from the Central Asia</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>331</td>
<td>Early Tang</td>
<td>Early Tang • Five Dynasties</td>
<td>Qing</td>
<td>sutra-based murals • architectural depictions</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Special Cave No.</td>
<td>Excavated</td>
<td>Mural (latest layer)</td>
<td>Sculpture</td>
<td>Highlight</td>
<td>Broad Textural Information provided by Dunhuang Academy Online</td>
<td>Panorama or VR provided by Dunhuang Academy Online</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------</td>
<td>----------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>---------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>386</td>
<td>Early Tang</td>
<td>Mid Tang</td>
<td>Mid Tang</td>
<td>• Caisson</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mid Tang</td>
<td></td>
<td>• Tibetan occupation period</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mid Tang</td>
<td></td>
<td>• Five Dynasties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>Sui</td>
<td>Sui</td>
<td>Qing</td>
<td>• depictions of diverse canopies of Buddha</td>
<td>Yes</td>
<td>• VR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Five Dynasties</td>
<td></td>
<td>• numerous donors' depictions</td>
<td></td>
<td>• Panorama</td>
</tr>
<tr>
<td>419</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui</td>
<td>• sutra-based murals</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• intact sculpture group</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Cave No.</th>
<th>Excavated</th>
<th>Mural (latest layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
<th>Broad Textural Information provided by Dunhuang Academy Online</th>
<th>Panorama or VR provided by Dunhuang Academy Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>High Tang</td>
<td>• High Tang</td>
<td>High Tang</td>
<td>• Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Song</td>
<td></td>
<td>• sutra-based murals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• highly intact sculpture group</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>and murals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Early Tang(repainted in Qing)</td>
<td>• sutra-based murals</td>
<td>Yes</td>
<td>• VR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• highly intact sculpture group</td>
<td></td>
<td>• Panorama</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>and murals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• “the beauty” - recognized to be the most beautiful Bodhisattva in Mogao mural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>• Sahasrabhuja Sahasranetra Avalokiteshvara</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• intact large scale mural</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• mural depiction of regional historical event</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• depictions of regional minority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>158</td>
<td>Mid Tang</td>
<td>Mid Tang</td>
<td>Mid Tang</td>
<td>• The largest Nirvana Buddha statue at Mogao</td>
<td>Yes</td>
<td>• 360 spherical photography only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Highly intact mural and sculpture groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• mural with vivid depictions of different ethnic groups from Central Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>217</td>
<td>High Tang</td>
<td>• High Tang</td>
<td>High Tang</td>
<td>• highly vivid color</td>
<td>Yes</td>
<td>• VR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Late Tang</td>
<td></td>
<td>• meticulous architectural depictions</td>
<td></td>
<td>• Panorama</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Five Dynasties</td>
<td></td>
<td>• large scale sutra-based murals and with blue and green landscape painting techniques</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Other caves that are with textural description and available in virtual reality as well as panorama views online: 285, 3, 465, 301, 302, 303, 66, 194, 320, 112, 107. Other caves with 360 spherical photography published online includes: 248, 245, 196, 35.

2017 Peak Season Tour Routes:
• Small Archway Route 1: Cave 323, 332, (16/17, Taoism Temple,) 427, 428, 71, (96, 148)²²²

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>323</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Qing</td>
<td>mural on regional tales of the history of Buddhism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western Xia</td>
<td></td>
<td>pictorial representation of Buddhist regulations</td>
</tr>
<tr>
<td>332</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>main Buddha statue - Early Tang (renovated in later periods)</td>
<td>Nirvana Buddha statue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>Nirvana sutra mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>427</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui (might have repainted sections in Qing)</td>
<td>intact sculpture group: III Buddha</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Song</td>
<td>Song</td>
<td>front room plus central pillar main hall cave structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>small thousand Buddha</td>
</tr>
<tr>
<td>428</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Northern Zhou (might have repainted sections in Qing)</td>
<td>Jarkata tales’ mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nirvana sutra mural and many other sutra-based murals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>massive regional donors’ depictions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Central-pillar cave structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>sculpture group</td>
</tr>
<tr>
<td>71</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Early Tang (might have renovated in Qing)</td>
<td>sutra-based murals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The thinking Bodhisattva</td>
</tr>
</tbody>
</table>

²²² Summary of each tour routes from peak to off-peak season in table format is included in the appendix.
<table>
<thead>
<tr>
<th>Cave No.</th>
<th>Period</th>
<th>Region</th>
<th>Excavation</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>Mount-earth gilding technique, small thousand Buddha, Library Cave, Caisson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>328</td>
<td>Early Tang</td>
<td>Northern Zhou</td>
<td>Early Tang</td>
<td>Early Tang (only repainted on selected regions in later dynasties)</td>
<td>Small thousand Buddha, Library Cave, Caisson</td>
<td></td>
</tr>
<tr>
<td>341</td>
<td>Early Tang</td>
<td>Northern Zhou</td>
<td>NA</td>
<td>Small thousand Buddha, Library Cave, Caisson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>296</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Northern Zhou</td>
<td>Buddhist sculpture group, mural, Carved-stone tiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>292</td>
<td>Sui</td>
<td>Five Dynasties</td>
<td>Sui (repainted in Qing)</td>
<td>Sculpure group: III Buddha, Small thousand Buddha, Carved-stone tiles, Library Cave, Caisson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Corridor: Yuan</td>
<td>Wutai Mountain mural, Depictions of Ugyhur and Khotan female, Twenty-eight mansions and the Zodiac from Yuan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>Mount-earth gilding technique, small thousand Buddha, Library Cave, Caisson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang</td>
<td>Nine-story architecture, Second largest Buddha statue in China, Carved-stone tiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>the second largest Nirvana Buddha statue at Mogao, Nirvana sutra mural, Sahasrabhuja Sahasranetra Avalokiteshvara, Qing sculpture group</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Small Archway Route 2: Cave 328, 341, (16/17, Taoism Temple,) 296, 292, 61, (96, 148)
<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
</table>
| 329                    | Early Tang| Early Tang            | Qing      | • Jarkata tales’ mural  
• sutra-based mural  
• small thousand Buddha  
• Caisson |
| 407                    | Sui       | Sui                   | Qing      | • Caisson  
• small thousand Buddha |
| 428                    | Northern Zhou | Northern Zhou (might have repainted sections in Qing) | Northern Zhou (might have repainted sections in Qing) | • Jarkata tales’ mural  
• Nirvana sutra mural and many other sutra-based murals  
• massive regional donors’ depictions  
• Central-pillar cave structure  
• sculpture group |
| 55                     | Song      | Song                  | Song      | • fifteen sutras’ depictions  
• intact sculpture group from Song |
| 71                     | Early Tang| Early Tang            | Early Tang (might have renovated in Qing) | • sutra-based murals  
• The thinking Bodhisattva |
| 79                     | High Tang | Five Dynasties        | High Tang (repainted in Qing) | • depictions of kids in different activities  
• Folding screen-like pictorial arrangement  
• Sahasrabhuja Sahasranetra Avalokiteshvara |
| 16/17                  | Late Tang | Western Xia           | Qing      | • Mount-earth gilding technique  
• small thousand Buddha  
• Library Cave  
• Caisson |
| 96                     | Early Tang| Heavily deteriorated  | Early Tang (only repainted on selected regions in later dynasties) | • Nine-story architecture  
• Second largest Buddha statue in China  
• Carved-stone tiles |
| 148                    | High Tang | High Tang             | Qing      | • the second largest Nirvana Buddha statue at Mogao  
• Nirvana sutra mural  
• Sahasrabhuja Sahasranetra Avalokiteshvara  
• Qing sculpture group |

- Small Archway Route 4: Cave 29, 332, (16/17, Taoism Temple,) 314, 296, 61, (96, 148)

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
</table>
| 29                     | Late Tang | Late Tang             | Qing      | • Mount-earth gilding technique  
• small thousand Buddha  
• Multi-layers mural |
| 332                    | Early Tang| Early Tang            | main Buddha statue - Early Tang (renovated in later periods) | • Nirvana Buddha statue  
• Nirvana sutra mural  
• Sahasrabhuja Sahasranetra Avalokiteshvara |
<p>| 314                    | Sui       | Sui                   | NA        | • Caisson |</p>
<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>335</td>
<td>Early Tang</td>
<td>Early Tang, Song</td>
<td>main Buddha statue - Early Tang (renovated in later periods)</td>
<td>grand scale sutra-based murals, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>340</td>
<td>Early Tang</td>
<td>Early Tang, NA</td>
<td></td>
<td>Caisson, Khotan eight Dharmapalas</td>
</tr>
<tr>
<td>420</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui</td>
<td>intact sculpture group: III Buddha, Persian influenced decorative motif, small thousand Buddha</td>
</tr>
<tr>
<td>428</td>
<td>Northern Zhou</td>
<td>Northern Zhou (might have repainted sections in Qing)</td>
<td></td>
<td>Jarkata tales’ mural, Nirvana sutra mural and many other sutra-based murals, massive regional donors’ depictions, Central-pillar cave structure, sculpture group</td>
</tr>
<tr>
<td>55</td>
<td>Song</td>
<td>Song</td>
<td>Song</td>
<td>fifteen sutras’ depictions, intact sculpture group from Song</td>
</tr>
<tr>
<td>79</td>
<td>High Tang</td>
<td>High Tang, Five Dynasties</td>
<td>High Tang (repainted in Qing)</td>
<td>depictions of kids in different activities, Folding screen-like pictorial arrangement, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia, Qing</td>
<td></td>
<td>Mount-earth gilding technique, small thousand Buddha, Library Cave, Caisson</td>
</tr>
<tr>
<td>Regular Public Cave No.</td>
<td>Excavated</td>
<td>Mural (surface layer)</td>
<td>Sculpture</td>
<td>Highlight</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------</td>
<td>-----------------------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>23</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>Caisson</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sutra-based mural with scenes of historic daily life</td>
</tr>
<tr>
<td>331</td>
<td>Early Tang</td>
<td>Early Tang and Five Dynasties</td>
<td>Qing</td>
<td>sutra-based murals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>architectural depictions</td>
</tr>
<tr>
<td>341</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>NA</td>
<td>sutra-based murals</td>
</tr>
<tr>
<td>419</td>
<td>Sui</td>
<td>Sui</td>
<td>Sui</td>
<td>sutra-based murals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>intact sculpture group</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang (only repainted on selected regions in later dynasties)</td>
<td>Nine-story architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Second largest Buddha statue in China</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Carved-stone tiles</td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang and Late Tang and Western Xia</td>
<td>Qing</td>
<td>the second largest Nirvana Buddha statue at Mogao</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nirvana sutra mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Qing sculpture group</td>
</tr>
</tbody>
</table>

**Small Archway Route 6: Cave 23, 331, 341, (16/17, Taoism Temple,) 419, 61, (96, 148)**

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>334</td>
<td>Early Tang</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>depictions of diverse canopies of Buddha</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>numerous donors’ depictions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>390</td>
<td>Sui</td>
<td>Sui and Five Dynasties</td>
<td>Qing</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Small Archway Route 7: Cave 334, (16/17, Taoism Temple,) 390, 409, 428, 79, (96, 148)**
- Small Archway Route 8 (full-day visitation for professionals and students from art institutes): Cave 311, 384, 386, 397, 445, 138, 256, 172, (96, 148, 16/17 and other public caves to according to visitation load)

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>311</td>
<td>Sui</td>
<td>Sui</td>
<td>Qing</td>
<td>- Caisson</td>
</tr>
<tr>
<td>384</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>- multiple Tibetan Bodhisattva depictions</td>
</tr>
<tr>
<td>386</td>
<td>Early Tang</td>
<td>Mid Tang</td>
<td>High Tang</td>
<td>- Caisson</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tibetan occupation period</td>
<td>Mid Tang</td>
<td>- Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>397</td>
<td>Sui</td>
<td>Song</td>
<td>Qing</td>
<td>- Caisson</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- small thousand Buddha</td>
</tr>
<tr>
<td>445</td>
<td>High Tang</td>
<td>High Tang</td>
<td>High Tang</td>
<td>- Maitreya`s sutra-based mural with detail reflection on historical lifestyles</td>
</tr>
<tr>
<td>138</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Qing</td>
<td>- Figurative depictions of regional minorities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Five Dynasties, Yuan, Qing</td>
<td></td>
<td>- sutra-based mural</td>
</tr>
<tr>
<td>256</td>
<td>Song</td>
<td>Song</td>
<td>Qing</td>
<td>- Iconic Song painting color palate, styles, and techniques</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Multi-layers mural</td>
</tr>
<tr>
<td>Regular Public Cave No.</td>
<td>Excavated</td>
<td>Mural (surface layer)</td>
<td>Sculpture</td>
<td>Highlight</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>-----------------------</td>
<td>-----------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>201</td>
<td>Mid Tang</td>
<td>Mid Tang</td>
<td>NA</td>
<td>• sutra-based murals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Song</td>
<td></td>
<td>• architectural depictions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Nine-story architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Second largest Buddha statue in China</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Carved-stone tiles</td>
</tr>
<tr>
<td>237</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>Qing</td>
<td>• sutra based murals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Central Asia's influence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Tibetan Tsenpo and chancellors depictions</td>
</tr>
<tr>
<td>246</td>
<td>Northern Wei</td>
<td>Western Xia</td>
<td>Western Xia</td>
<td>• small thousand Buddha</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Sculptural group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Western Xia green mural</td>
</tr>
<tr>
<td>259</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>• Carved niches and relief</td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially</td>
<td></td>
<td>• intact sculpture group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western Xia</td>
<td></td>
<td>• Red color based mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• small thousand Buddha</td>
</tr>
<tr>
<td>46</td>
<td>High Tang</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>• a small Nirvana cave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Song</td>
<td>Tang</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Song</td>
<td></td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>• Mount-earth gilding technique</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• small thousand Buddha</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Library Cave</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Caisson</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang</td>
<td>• Nine-story architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(only repainted on</td>
<td>(only</td>
<td>• Second largest Buddha statue in China</td>
</tr>
<tr>
<td></td>
<td></td>
<td>selected regions in</td>
<td>repaint</td>
<td>• Carved-stone tiles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>later dynasties)</td>
<td>ed on</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>selected</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>regions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>in later</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dynasties</td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>• the second largest Nirvana Buddha statue at Mogao</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Late Tang</td>
<td></td>
<td>• Nirvana sutra mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western Xia</td>
<td></td>
<td>• Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Qing sculpture group</td>
</tr>
</tbody>
</table>

- **Nine-story Temple Route 1: Cave (96, 148,) 201, 237, 246, 259, 46, (16-17, Taoism Temple)**

- **Nine-story Temple Route 2: Cave (148,) 152, 202, (96,) 231, 251, 44, (Taoism Temple, 16-17)**
<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>152</td>
<td>Song</td>
<td>Song, Western Xia</td>
<td>Qing</td>
<td>sutra-based murals in Uyghur painting techniques, small thousand Buddha</td>
</tr>
<tr>
<td>202</td>
<td>Early Tang to Mid-Tang</td>
<td>Early Tang, Mid-Tang, partially Song</td>
<td>Qing</td>
<td>sutra based murals incorporated daily living scenes</td>
</tr>
<tr>
<td>231</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>—</td>
<td>Jarkata tales mural, sutra-based mural, Gandhāran Bodhisattva depictions, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>251</td>
<td>Western Wei</td>
<td>Western Wei, partially Western Xia</td>
<td>sculptures repainted in Qing</td>
<td>Central Asia figurative depictions, small thousand Buddha, Red color based mural</td>
</tr>
<tr>
<td>44</td>
<td>High Tang</td>
<td>High Tang, Mid Tang, Five Dynasties</td>
<td>NA</td>
<td>Nirvana theme based cave, multiple deterioration syndroms</td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>Mount-earth gilding technique, small thousand Buddha, Library Cave, Caisson</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated, Early Tang (only repainted on selected regions in later dynasties)</td>
<td>Sculpture group</td>
<td>Nine-story architecture, Second largest Buddha statue in China, Carved-stone tiles</td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang, Late Tang, Western Xia</td>
<td>Qing</td>
<td>the second largest Nirvana Buddha statue at Mogao, Nirvana sutra mural, Sahasrabhuja Sahasranetra Avalokiteshvara, Qing sculpture group</td>
</tr>
</tbody>
</table>

- Nine-story Temple Route 3: Cave (96,) 100, (148,) 171, 203, 244, 257, (Taoism Temple, 16-17)

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>mural depiction of regional historical events</td>
</tr>
<tr>
<td>171</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>sutra story based murals, apparent color degradation</td>
</tr>
<tr>
<td>203</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Tang, Song</td>
<td>sutra based murals, sculptures from Tang and Song</td>
</tr>
<tr>
<td>244</td>
<td>Late Sui to Early Tang</td>
<td>Late Sui to Early Tang</td>
<td>Late Sui to Early Tang</td>
<td>Buddha in preach, small thousand Buddha, Sculpture group</td>
</tr>
<tr>
<td>No.</td>
<td>Period 1</td>
<td>Period 2</td>
<td>Period 3</td>
<td>Period 4</td>
</tr>
<tr>
<td>-----</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>257</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>- Nine-story architecture</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang</td>
<td>(only repainted on selected regions in later dynasties)</td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>- the second largest Nirvana Buddha statue at Mogao</td>
</tr>
</tbody>
</table>

- Nine-story Temple Route 4: Cave 146, (148,) 203, (96,) 94, 249, 23, (16-17, Taoism Temple)

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>146 Five Dynasties</td>
<td>Five Dynasties</td>
<td>NA</td>
<td>- sutra-based mural with detail depiction of sutra’s story</td>
</tr>
<tr>
<td>203 Early Tang</td>
<td>Early Tang</td>
<td>Tang Song</td>
<td>- sutra based murals</td>
</tr>
<tr>
<td>94 Late Tang</td>
<td>Song</td>
<td>Underneath: late Tang</td>
<td>Qing Song - renovated in Qing</td>
</tr>
<tr>
<td>249 Western Wei</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>- Central Asia figurative depictions</td>
</tr>
<tr>
<td>23 High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>- Caisson</td>
</tr>
<tr>
<td>16/17 Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>- Mount-earth gilding technique</td>
</tr>
<tr>
<td>96 Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang</td>
<td>(only repainted on selected regions in later dynasties)</td>
</tr>
<tr>
<td>148 High Tang</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>Late Tang</td>
<td>Song</td>
<td>Qing</td>
<td>Multi-layers mural, small thousand Buddha, Taoism figure depiction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Underneath: late Tang</td>
<td>Song - renovated in</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>multiple sutra-based mural, blue and green landscape painting</td>
</tr>
<tr>
<td>237</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>Qing</td>
<td>sutra based murals, Central Asia’s influence, Tibetan Tsenpo and chancellors depictions</td>
</tr>
<tr>
<td>259</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Northern Wei</td>
<td>Carved niches and relief, intact sculpture group, Red color based mural, small thousand Buddha</td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially Western Xia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td>Mount-earth gilding technique, small thousand Buddha, Library Cave, Caisson</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang</td>
<td>Nine-story architecture, Second largest Buddha statue in China, Carved-stone tiles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(only repainted on</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>selected regions in</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>later dynasties)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>the second largest Nirvana Buddha statue at Mogao, Nirvana sutra mural, Sahasrabhuja Sahasranetra Avalokiteshvara, Qing sculpture group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Late Tang</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western Xia</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially Song</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially Yuan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Nine-story Temple Route 6: Cave (96, 148,) 152, 204, 231, 251, (Taoism Temple, 16-17,) 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular Public Cave No.</td>
<td>Excavated</td>
<td>Mural (surface layer)</td>
<td>Sculpture</td>
<td>Highlight</td>
</tr>
<tr>
<td>152</td>
<td>Song</td>
<td>Song</td>
<td>Qing</td>
<td>sutra-based murals in Uyghur painting techniques, small thousand Buddha</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western Xia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>204</td>
<td>Late Sui to</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Jarkata tales' mural, early Tang’s Bodhisattva sculpture</td>
</tr>
<tr>
<td></td>
<td>Early Tang</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>—</td>
<td>Jarkata tales mural, sutra-based mural, Gandhāran Bodhisattva depictions, Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>251</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>sculptures</td>
<td>Central Asia figurative depictions, small thousand Buddha, Red color based mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially Western Xia</td>
<td>repainted in Qing</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Late Tang</td>
<td>Late Tang</td>
<td>Qing</td>
<td>multiple sutra-based mural, architectural depictions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially Song</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>partially Yuan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2017 Emergency Days - Emergency Tour Routes

- **Emergency Tour Route Version 1**: Cave 96, 148, 103, 100.

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>• mural depiction of regional historical events</td>
</tr>
<tr>
<td>103</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>• multiple sutra-based mural</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang (only repainted on selected regions in later dynasties)</td>
<td>• Nine-story architecture</td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>• High Tang</td>
<td>Qing</td>
<td>• the second largest Nirvana Buddha statue at Mogao</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Late Tang</td>
<td></td>
<td>• Nirvana sutra mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Western Xia</td>
<td></td>
<td>• Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Qing sculpture group</td>
</tr>
</tbody>
</table>

- **Emergency Tour Route Version 2**: Cave 96, 148, 103, 94.

<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Five Dynasties</td>
<td>Five Dynasties</td>
<td>Qing</td>
<td>• mural depiction of regional historical events</td>
</tr>
<tr>
<td>103</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td>• multiple sutra-based mural</td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang (only repainted on selected regions in later dynasties)</td>
<td>• Nine-story architecture</td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>• High Tang</td>
<td>Qing</td>
<td>• the second largest Nirvana Buddha statue at Mogao</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Late Tang</td>
<td></td>
<td>• Nirvana sutra mural</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Western Xia</td>
<td></td>
<td>• Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Qing sculpture group</td>
</tr>
</tbody>
</table>

### 2017 Off-Peak Season Travel Routes:

- **Off-Peak Season Route 1**: (16-17 Taoism Temple) 335 332 329 420 428 445 259 244 237 (96 148)
<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>335</td>
<td>Early Tang</td>
<td>Early Tang Song</td>
<td>• main Buddha statue - Early Tang (renovated in later periods) - Qing</td>
<td>• grand scale sutra-based murals - Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>332</td>
<td>Early Tang</td>
<td>Early Tang Five Dynasties</td>
<td>• main Buddha statue - Early Tang (renovated in later periods) - Qing</td>
<td>• Nirvana Buddha statue - Nirvana sutra mural - Sahasrabhuja Sahasranetra Avalokiteshvara</td>
</tr>
<tr>
<td>329</td>
<td>Early Tang</td>
<td>Early Tang Qing</td>
<td>• Jarkata tales' mural - sutra-based mural - small thousand Buddha - Caisson</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>Sui</td>
<td>Sui</td>
<td>• intact sculpture group: III Buddha - Persian influenced decorative motif - small thousand Buddha</td>
<td></td>
</tr>
<tr>
<td>428</td>
<td>Northern Zhou</td>
<td>Northern Zhou Northern Zhou (might have repainted sections in Qing)</td>
<td>• Jarkata tales’ mural - Nirvana sutra mural and many other sutra-based murals - massive regional donors’ depictions - Central-pillar cave structure - sculpture group</td>
<td></td>
</tr>
<tr>
<td>445</td>
<td>High Tang</td>
<td>High Tang High Tang (repainted in Qing)</td>
<td>• Maitreya’s sutra-based mural with detail reflection on historical lifestyles</td>
<td></td>
</tr>
<tr>
<td>259</td>
<td>Northern Wei</td>
<td>Northern Wei Northern Wei partially Western Xia</td>
<td>• Carved niches and relief - intact sculpture group - Red color based mural - small thousand Buddha</td>
<td></td>
</tr>
<tr>
<td>244</td>
<td>Late Sui to Early Tang</td>
<td>Late Sui to Early Tang Late Sui to Early Tang</td>
<td>• Buddha in preach - small thousand Buddha - Sculpture group</td>
<td></td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia Qing</td>
<td>• Mount-earth gilding technique - small thousand Buddha - Library Cave - Caisson</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated Early Tang (only repainted on selected regions in later dynasties)</td>
<td>• Nine-story architecture - Second largest Buddha statue in China - Carved-stone tiles</td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang Late Tang Western Xia</td>
<td>• the second largest Nirvana Buddha statue at Mogao - Nirvana sutra mural - Sahasrabhuja Sahasranetra Avalokiteshvara - Qing sculpture group</td>
<td></td>
</tr>
</tbody>
</table>

- Off-Peak Season Route 2: 323 332 (16-17 Taoism Temple) 386 390 407 296 292 61 71 (96 148)
<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
</table>
| 323                     | Early Tang| Early Tang            | Qing      | • mural on regional tales of the history of Buddhism  
                                               • pictorial representation of Buddhist regulations  
|                         |           | Western Xia           |           |           |
| 332                     | Early Tang| Early Tang            | main Buddha statue - Early Tang (renovated in later periods) | Nirvana Buddha statue  
                                               • Nirvana sutra mural  
                                               • Sahasrabhuja Sahasranetra Avalokiteshvara  
|                         |           | Five Dynasties        | Qing      |           |
| 386                     | Early Tang| Mid Tang              | Mid Tang  | Caisson  
                                               • Sahasrabhuja Sahasranetra Avalokiteshvara  
|                         |           | Tibetan occupation period |           |           |
|                         |           | Five Dynasties        |           |           |
| 390                     | Sui        | Sui                   | Qing      | • depictions of diverse canopies of Buddha  
                                               • numerous donors’ depictions  
|                         |           | Five Dynasties        |           |           |
| 407                     | Sui        | Sui                   | Qing      | Caisson  
                                               • small thousand Buddha  
|                         |           |                       |           |           |
| 296                     | Northern Zhou | Northern Zhou       | Northern Zhou (possibly repainted in Qing) | Jarkata tales’ mural  
                                               • sutra-based mural  
                                               • small thousand Buddha  
                                               • sculpture group  
|                         |           |                       |           |           |
| 292                     | Sui        | Sui                   | Sui (repainted in Qing) | sculpture group: III Buddha  
                                               • small thousand Buddha  
                                               • Sahasrabhuja Sahasranetra Avalokiteshvara  
|                         |           | Five Dynasties        |           |           |
| 61                      | Five Dynasties | Five Dynasties      | —         | Wutai Mountain mural  
                                               • Depictions of Ugyhur and Khotan female  
                                               • Twenty-eight mansions and the Zodiac from Yuan  
|                         |           | Corridor: Yuan        |           |           |
| 71                      | Early Tang | Early Tang            | Early Tang (might have renovated in Qing) | sutra-based murals  
                                               • The thinking Bodhisattva  
|                         |           |                       |           |           |
| 16/17                   | Late Tang  | Western Xia           | Qing      | Mount-earth gilding technique  
                                               • small thousand Buddha  
                                               • Library Cave  
                                               • Caisson  
|                         |           |                       |           |           |
| 96                      | Early Tang | Heavily deteriorated | Early Tang (only repainted on selected regions in later dynasties) | Nine-story architecture  
                                               • Second largest Buddha statue in China  
                                               • Carved-stone tiles  
|                         |           |                       |           |           |
| 148                     | High Tang  | High Tang             | Qing      | the second largest Nirvana Buddha statue at Mogao  
                                               • Nirvana sutra mural  
                                               • Sahasrabhuja Sahasranetra Avalokiteshvara  
                                               • Qing sculpture group  
|                         |           | Late Tang             |           |           |
|                         |           | Western Xia           |           |           |

- Off-Peak Season Route 3: 29 23 (16-17) 9 (Taoism Temple) 427 428 259 257 231 94 (96 148)
<table>
<thead>
<tr>
<th>Regular Public Cave No.</th>
<th>Excavated</th>
<th>Mural (surface layer)</th>
<th>Sculpture</th>
<th>Highlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-Peak Season Route 4: 331 (Taoism Temple 16-17)</td>
<td>23 46 55 251 249 244 237 (96 148) 171</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Period</td>
<td>Dynasty</td>
<td>Depictions</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>----------------</td>
<td>------------------</td>
<td>----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>331</td>
<td>Early Tang</td>
<td>Early Tang</td>
<td>Qing</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>High Tang</td>
<td>Five Dynasties</td>
<td>Qing, Song</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Song</td>
<td>Song</td>
<td>Qing</td>
<td></td>
</tr>
<tr>
<td>251</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>Qing, Central Asia figurative depictions</td>
<td></td>
</tr>
<tr>
<td>249</td>
<td>Western Wei</td>
<td>Western Wei</td>
<td>Qing, Central Asia figurative depictions</td>
<td></td>
</tr>
<tr>
<td>244</td>
<td>Late Sui to</td>
<td>Late Sui to Early Tang</td>
<td>Buddha in preach, small thousand Buddha, Sculpture group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Early Tang</td>
<td>Early Tang</td>
<td></td>
<td></td>
</tr>
<tr>
<td>237</td>
<td>Mid-Tang</td>
<td>Mid-Tang</td>
<td>Qing</td>
<td></td>
</tr>
<tr>
<td>171</td>
<td>High Tang</td>
<td>High Tang</td>
<td>Qing</td>
<td></td>
</tr>
<tr>
<td>16/17</td>
<td>Late Tang</td>
<td>Western Xia</td>
<td>Qing</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>Early Tang</td>
<td>Heavily deteriorated</td>
<td>Early Tang (only repainted on selected regions in later dynasties)</td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>High Tang</td>
<td>High Tang, Late Tang, Western Xia</td>
<td>Qing</td>
<td></td>
</tr>
</tbody>
</table>

- Early Tang
- Five Dynasties
- Qing

- Caisson
- Sutra-based mural with scenes of historic daily life
- a small Nirvana cave
- fifteen sutras' depictions
- intact sculpture group from Song
- Central Asia figurative depictions
- small thousand Buddha
- Red color based mural
- Central Asia figurative depictions
- Red color based mural
- Taoism influence
- Buddha in preach
- small thousand Buddha
- Sculpture group
- sutra based murals
- Central Asia’s influence
- Tibetan Tsenpo and chancellors depictions
- sutra story based murals
- apparent color degradation
- Mount-earth gilding technique
- small thousand Buddha
- Library Cave
- Caisson
- Nine-story architecture
- Second largest Buddha statue in China
- Carved-stone tiles
- the second largest Nirvana Buddha statue at Mogao
- Nirvana sutra mural
- Sahasrabhuja Sahasranetra Avalokiteshvara
- Qing sculpture group
Bibliography

Publications
Athens Charter: First International Congress of Architects and Technicians of Historic Monuments, 1931
Cai, Weitang 蔡伟堂, “Chongding mogaoku gejia bianhao duizhaobiao shuoming” 重丁高窟各家编号对照表说明 [Clarification on the Correction of Mogao Caves’ Numbering], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2005 No.6
Chen, Ming 陈明, “Dunhuang mogaoku dongbimen shang gongyangxiang de tuxiang yiyi” 敦煌莫高窟东壁门上供养像的图像意义 [An Iconological Study of the Donor Figures on the Wall above the East Entrance of the Dunhuang Mogao Grottoes], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2016 No.6
Chen, Qi and Chen Haitao 陈琦 陈海涛, “Mogaoku di 254ku gerou maoge tu de yishu biaoxian tezheng” 莫高窟第254窟割肉贸鸽图的艺术表现特征 [On the Characteristics of the Artistic Expression of the Sibi Jataka in Mogao Cave 254], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.5
Chen, Qingxiang 陈清香, “Dunhuang mogaoku di76ku batabian fozhuan tuxiang yuanliu tantao” 莫高窟第76窟八塔变佛传图像源流探讨 [A Study on the Source of Images of Buddha’s Life Story in the Eight-Pagoda Illustration in Mogao Cave 76], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2017 No.2
Fan, Jinshi. Dunhuang: sichou zhi lu mingzhu fojiao wenhua baozang [Dunhuang: A Pearl on The Silk Road A Treasure Trove Of Buddhist Culture], Zhong Guo Lu You Chu Ban She 中国旅游出版社, 2014. p.36.

Fan, Jinshi. “shouwang dunhuang” 守望敦煌 [Keeping Dunhuang], Zou Jin Dun Huang 走近敦煌 [Walking Into Dunhuang], 2010 p.001-036

Fan, Zaixuan, Xue Zhikun, Tang Wei, Aili Abudula, Yin Xuan. “Xinjiang hetian damagou yizhi chutu bihua xiufu shiyan baogao” 新疆和田达玛沟遗址出土壁画修复试验报告 [Restoration Experiments on the Wall Painting Excavated from the Dharma Valley in Khotan, Xinjiang], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2013 No.1


Gao, Haiyan. “Gansu sheng Dunhuang Mogaoku baohu tiaoli” 甘肃敦煌莫高窟保护条例 [Dunhuang Mogao Caves’ Protection Ordinance], Dunhuang Research, 2004. No.1

Gao, Haiyan. “Shixi sheshen weihu bensheng yu shanzi bensheng tuxiang de duiying zuhe guanxi — jian lu maijishan di 127 ku gongdezhu” 试析舍身饲虎本生与睒子本生图像的对应组合关系 ——兼论麦积山第127窟功德主 [An Analysis of Corresponding Relationship in Image Combination of the Illustrations of the Mahasattva Jātaka and the yāmaka Jātaka —With a Discussion of the Donors of Cave 127 at the Maijishan Grottoes], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2017 No.5


Ji, Aihong et al. 吉爱红 等, “Fangaiye’e zai Dunhuang Mogaoku moni bihuà biaomian de fuzhuoli yanjiu,” 仿爱夜蛾在敦煌莫高窟模拟壁画表面的附着力研究 [Adhesive Force of Apopestes Spectrum (Esper) on a Simulated Mural in Dunhuang Mogao Grottoes], *Dunhuang Research* 敦煌研究, No.1 2015


Li, Ping 李萍, Luo Yao 罗瑶, “Mogaoku youku guanli de tansuo yu shijian (yi) — yuyuezhi de shishi yu wanshan” 莫高窟游客管理的探索与实践 (一)——预约制的实施与完善 [Exploration of and Practice with Visitor Management at the Mogao Grottoes (I) — Implementation and Improvement of the Reservation System], *Dunhuang Research* 敦煌研究, No.5 2013


Li, Zuixiong, Zhao Linyi, and Li Li 李最雄 赵林毅 李黎, “Shaliyan shiku yanti liexi guanjiang xin cailiao yanjiu” 砂砾岩窟岩体裂缝灌浆新材料研究 [On New Fracture Grouting Material for Conglomerate Grottoes Rock], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2011 No.6


Liu, Yanyan, Wu Jun 刘艳燕 吴军, “Mogaoku lifo yishi de zuoxuan yu youxuan” 莫高窟礼佛仪式的左旋与右旋 [Clockwise or Counter-Clockwise Circumambulation in the Buddha Worshipping Ceremony at the Mogao Grottoes], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2015 No.6


Lu, Xiwen 卢秀文, “Dunhuang funnv shoushi buyao kao” 敦煌妇女首饰步摇考 [A Study on the Dangling Ornaments (Buyao) Worn by Dunhuang Ladies], *Dun Huang Yan Jiu* 敦煌研究 [Dunhuang Research], 2015 No.2

195
Ma, De, 马德, “Caoshi sandaku yingjian de shehui beijing” 曹氏三窟营建的社会背景 [The Social Setting of Building the Three Great Caves by Caoshi], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 1991 No. 6

Ma, Xu et. al. 马旭等, “Dunhuang Mogaoku di16ku moni bihua biaomian de fuzhuoli yanjiu,” Dunhuang Mogaoku di16ku 空气微⽣物动态变化研究 [The dynamic changes of airborne microorganisms in Mogao Grottoes Cave 16], Dunhuang Research 敦煌研究, No.5 2010

Ma, Zhaomin 马兆民, “Dunhuang Mogaoku di285ku 'tianfu zhimian' (kritimukha) kao” Dunhuang Mogaoku di285ku 天福之面 (kritimukha)考 [A Study on Kirtimukha in Mogao Cave 285 at Dunhuang], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2017 No.1

Maitreyanātha, “Preface,” Mile wulun 弥勒五论 [The Five Sutras of Maitreya], Northwestern University Press, 2004


Periodic Reporting Cycle 1, Section II (Ajanta Caves), UNESCO World Heritage Convention, http://whc.unesco.org/document/162845


Qiu, Chunxia 仇春霞, “Dunhuang beiliang sanku bihua de xiyu fengge ji bentuhua yanjiu” 敦煌北凉三窟壁画的西域风格及本土化研究 [Murals in Three Northern Liang Caves at Dunhuang: Influence of the Western Regions and Local Style], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2013 No.2


Shi, Zhongping 史忠平, “Dunhuang shuiyue guanyintu de yishu” 敦煌水月观音图的艺术 [The Art of Dunhuang’s “Water-Moon Avalokitesvara” Paintings], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.5


Shi, Zhongping 史忠平, “Dunhuang shuiyue guanyintu de yishu” 敦煌水月观音图的艺术 [The Art of Dunhuang’s “Water-Moon Avalokitesvara” Paintings], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.5


Su, Bai 宿白, “Wuzhou shengli Li Jun Mogaoku fokan bei’ hejiao,” 《武周圣历李君莫高窟佛龛碑》合校 [Editing and Correction of the Lin Jun shrine stele at Mogao Caves from Zhou dynasty under Empress Wu


The Nara Document on Authenticity, ICOMOS, 1994


Wang, Huimin 王惠民, “Mogaoku di 280ku pusa chengxiang tu he biqiu songjing tu de zaijiedu [Reinterpreting the Images of a Bodhisattva Riding an Elephant and a Bhiksu Chanting Scriptures in Mogao Cave 280], Dun Huang Yan Jiu 敦煌研究 [Dunhuang Research], 2015 No.1


Wu, Fasi et al. 武发思 等, “Taiyuan beoti Xu Xianxiu mu bihua zhenjun qunluo zucheng yu junhai chengying” 太原北齐显秀墓壁画真菌群落组成与菌害成因 [Fungal community composition on normal and moldy mural in Xu Xianxiu’s tomb of Northern Qi Dynasty, Taiyuan], Microbiology China 微生物学通报, Mar. 20, 2016, 43(3):479-487 DOI: 10.13344/j.microbiol.china.150486


News articles and other online resources


Category:Replica of Altamira Cave in Anthropos Pavilion of the Moravian Museum - Wikimedia Commons, commons.wikimedia.org/wiki/Category:Replica_of_Altamira_cave_in_Anthropos_Pavilion_of_the_Moravian_museum.


Visit the Cave | Lascaux, archeologie.culture.fr/lascaux/en/visit-cave/diverticule-axial.


Xu, Yanqian, “Dunhuang mogao kū jiedai chaofuhe yibeizhi, 3 yi yuan dazao de shuzhi zhongxing zao youke lengluo” 敦煌莫高窟接待超负荷一倍，3亿元打造的数字中心遭游客冷落 [Dunhuang Mogao Caves have doubled its capacity, the digital center built with 3 hundred million Yuan is disfavored by the visitors], The Paper 澎湃新闻, http://www.thepaper.cn/newsDetail_forward_1269811.


“AJANTA ELLORA,” Maharashtra Tourism Development Corporation (MTDC), https://www.maharashtratourism.gov.in/ajantaelloraconservation


“Asuka bijin, iro azayaka ni takamadzukakofun no hekiga, shūri gazō kōkai” 飛鳥美人、色鮮やかに 高松塚古墳の壁画、修理画像公開 [Asuka beautiful, colorfully painting mural paintings of Takamatsuzuka tomb, repaired image release], Asahi Shimbun 朝⽇新聞 May 12th 2017, https://www.asahi.com/articles/ASK5D36R1K5DP0MB008.html

“Asuka bijin no shiroi sugao kirei ni saishin jōtai” 飛鳥美人の⽩い素顔きれいに 最新状態 [Asuka women beautiful white face clean up to date], The Manichi 毎⽇新聞 May 12th 2017, https://mainichi.jp/articles/20170512/k00/00m/040/113000c


“Buddhist Art of Dunhuang: from 22nd February at Ca’ Foscari,” Caffoscarinews, June 2nd, 2018 https://www.unive.it/pag/16584/?tx_news_pi1%5Bnews%5D=4556&tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baaction%5D=detail&cHash=1dd161d59f61a9fbd1de94e475e0393f

“Cave Temples of Dunhuang — Buddhist Art on China’s Silk Road” The Getty Research Institute, https://www.getty.edu/research/exhibitions_events/exhibitions/cave_temple_dunhuang/index.html


“Exhibition: Sacred Art of the Silk Road, Dunhuang’s Buddhist Cave Temples” The Prince’s Foundation: School of Traditional Arts, https://www.psta.org.uk/news-and-events/dunhuang-exhibition


“Gansu shiku guanli ‘Dunhuang moshi’ xiaoguo chuxian” 甘肃石窟管理‘敦煌模式’ 效果初显 [Caves management at Gansu, the ‘Dunhuang Mode,’ has shown its effect], sent by the Gansu Province Department Cultural Relics via its WeChat official account on January 22nd, 2018. https://mp.weixin.qq.com/s/?QpZ9oUIRuRiPzZo_qEu5Q


“Kai 10-nen, hozon-saku saguru hekiga hobo shufuku,” 解体10年、保存策探る 壁画ほぼ修復 [Disassembled for 10 years, exploration in preservation, the murals are almost restored], The Manichi 毎日新聞 June 28th, 2017, https://mainichi.jp/articles/20170628/k00/00e/040/318000c


“Kokuhō takamadzukakofun hekiga kinkō yō hozon taisaku ni tsuite” 国宝高松塚古墳壁画緊急保存対策について [Conference on the emergency preservation measures of the imperial national treasures Takamatsuoka
“Kokuhō takamadzuka kofun hekiga kōkyū hozon taisaku kentōkai” 国宝高松塚古墳壁画恒久保存対策検討会
机关为: 文化厅
网页: http://www.bunka.go.jp/seisaku/bunkashingikai/kondankaito/takamatsu_kitora/takamatsukento/01/sanko.html


“Silu, Dunhuang bihua jingpin zhan liangxiang lianheguo” 丝路·敦煌壁画精品展亮相联合国


“Burmese burmese shirou no kōkai ni tsuite” 国宝総平塚古墳壁画保存対策検討会


“Silo, Dunhuang hibia jingpin zhan liangxiang lianheguo” 丝路·敦煌壁画精品展亮相联合国 [Silk Road: Dunhuang Art Masterpieces Exhibition at the United Nations (Vienna)], Dunhuang Research Academy 敦煌研究院, May 19th, 2017 http://public.dha.ac.cn/content.aspx?id=505428814842

“Takamadzukakofun no hekiga, shūri shūrō e shikkui sekizai no rekka mo kadaidai” 高松塚古墳の壁画、修理終了へ 漆喰・石材の劣化も課題 [Mural painting of Takamatsuzuka tomb, completion of repair. Degradation
of plaster and stone is also an issue], Asahi Shimbun 朝日新聞 June 30th, 2017, https://www.asahi.com/articles/ASK6X72M5K6XPM8B00F.html


“The Exhibition,” The Tutankhamun Exhibition, https://www.tutankhamun-exhibition.co.uk/the-exhibition

“Tokubetsu shiseki takamadzuka kofun no hozen hogo o motomeru seimei” 特別史跡高松塚古墳の保全・保護を求める声明 [Statement requiring conservation and protection of special historical site Takamatsuzuka tumulus], The Japanese Archaeological Association 日本考古学協会, http://archaeology.jp/maibun/seimei051025.htm


Image Credits

Figure 3.2  Digital Dunhuang, https://www.e-dunhuang.com/index.htm
Figure 3.3  Duan, Wenjie, and Chung Tan, “A Chronological Chart,” Dunhuang Art: through the Eyes of Duan Wenjie. Indira Gandhi National Centre for Arts, 1994.
Figure 3.4  “Network of the Silk Road Cities,” Silk Road Dialogue, Diversity & Development, https://en.unesco.org/silkroad/network-silk-road-cities-map-app/en
Figure 4.1  “Figure 13.4” from Wong, Lori, et al. The Conservation of Cave 85 at the Mogao Grottoes, Dunhuang: Development and Implementation of a Systematic Methodology to Conserve the Cave Wall Paintings and Sculpture. Getty Conservation Institute, 2011. p.155
Figure 4.2  Digital Dunhuang. “Mogao Grottoes Cave 254,” Digital Dunhuang, https://www.e-dunhuang.com/ cave/10.0001/0001.0001.0254
Figure 4.3  From Martha Demas, Neville Agnew, Fan Jinshì. “The Mogao Visitor Study.” Strategies for Sustainable Tourism at the Mogao Grottoes of Dunhuang, China, pp. 41–87.
Figure 4.10  “Mogaoku de siyue ba” 莫高窟的四月八 [The April 8th of the Mogao Caves] Dunhuang Academy 敦煌研究院 http://chuansong.me/n/783677552721
Figure 4.11  Ibid.
Figure 4.12  Ibid.
Figure 4.13  Ibid.
Figure 4.14  Artnet, http://www.artnet.com/artists/chang-shuhong/dunhuangmogaokumiaohui-prW-anJiPpxw76tKeis-MBA2
Figure 4.15  Visitors and local residents circling the grand Buddha
Figure 4.16  He, Jin 贺晶, Zhang Yuanlin 张元林, “Mogaoku de siyueba miaohui” 莫高窟的四月八庙会 [The Miaohui at Mogao Caves on Lunar April 8th], The Grottoes of Dunhuang Information Network, http://public.dha.ac.cn/content.aspx?id=688056008615
Figure 4.17  Ibid.
Figure 4.18  Ibid.
Figure 4.19  “Mogaoku de siyue ba” 莫高窟的四月八 [The April 8th of the Mogao Caves] Dunhuang Academy 敦煌研究院 http://chuansong.me/n/783677552721
Figure 4.20  Ibid.
Figure 4.21  Dunhuang International Cultural Tourism City, http://www.sldhly.com/mgktopic/hall
Figure 4.22  Ibid.
Figure 5.6  “Mogao Caves - Map of the inspired property” UNESCO World Heritage Convention, http://whc.unesco.org/document/127711
Figure 5.7  KKNEWS, https://kknews.cc/zh-cn/science/bk6y2oj.html
Figure 5.8  Mogao Caves, http://gallery.dha.ac.cn/mobile/
Figure 5.10  Dunhuang Academy, http://public.dha.ac.cn/content.aspx?id=525124140728
Figure 5.11  Ibid.
Figure 5.13  Dunhuang Academy, http://tour.dha.ac.cn/content.aspx?id=574582425049
Figure 5.14  Dunhuang Academy, http://public.dha.ac.cn/content.aspx?id=103598791956
Figure 5.15  Dunhuang Academy, http://tour.dha.ac.cn/content.aspx?id=178377696853
Figure 5.16  Ibid.
Figure 5.17  The Grottoes of Dunhuang Information Network, http://public.dha.ac.cn/content.aspx?id=779609064242
Figure 5.18  Ctrip, https://youimg1.c-ctrip.com/target/100f0a00000004pe0gE76F.jpg
Figure 5.19  Ctrip, http://m.ctrip.com/html5/you/travels/china110000/2620438.html
Figure 7.1  Chen Tiger, “Dunhuang Mogaoku beiqu dongku” 敦煌莫高窟北区洞窟 [The Northern Cave Zone of Dunhuang Mogao Caves], http://mapio.net/pic/p-60726070/