

龙门石窟考古与艺术

ARCHAEOLOGY AND ART OF THE LONGMEN GROTTOES

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龙门石窟考古与艺术

洛阳职业技术学院校本教材



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Introduction

I. Geographic Location and Natural Environment of the Longmen Grottoes

The Longmen Grottoes are located on both banks of the Yi River, 13 kilometers south of Luoyang City, at geographic coordinates 34°33' north latitude and 112°28' east longitude. Longmen Mountain is a branch of the Xiong'er Mountains, which are themselves an offshoot of the Qinling Mountains. The northward-flowing Yi River cuts through the mountain range, dividing it into eastern and western peaks and forming a deep gorge 150 to 300 meters wide between them. With the two peaks facing each other and the Yi River flowing through the middle, the landscape resembles a pair of gate towers, and was historically known as “Yi Que.” The western mountain rises to an elevation of 263.9 meters, while the eastern mountain reaches 303.5 meters. The cliffs overlooking the river are steep, and the grottoes were carved into this one-kilometer-long stretch of cliff face. The rock at Longmen consists of limestone formed during the Cambrian and Lower Ordovician periods of the Paleozoic Era. Its hard and uniform texture makes it ideal for carving, providing the natural material conditions necessary for the construction of the grottoes over a period of more than 400 years.

Construction of the Longmen Grottoes began in 493 AD, when Emperor Xiaowen of the Northern Wei Dynasty moved the capital to Luoyang. Subsequently, construction continued intermittently for over 400 years through the Eastern Wei, Western Wei, Northern Qi, Sui, Tang, and Five Dynasties periods, with the Northern Wei and Tang dynasties marking the peak periods of activity. To day, the eastern and western mountains contain more than 2,300 surviving caves and niches, nearly 110,000 statues, more than 2,800 inscriptions, and over 70 pagodas. With the largest number of inscriptions among China's major grottoes, Longmen is thus hailed as a “historical record carved in stone.” In November 2000, UNESCO inscribed the Longmen Grottoes on the World Heritage List,



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praising them for “displaying the most extensive and outstanding sculptural art from the late Northern Wei to the Tang Dynasty in China” and “representing the pinnacle of Chinese stone carving art.”

The construction of the Longmen Grottoes was far from a purely religious undertaking. From Emperor Xiaowen of the Northern Wei Dynasty’s promotion of Sinicization reforms and the political need to establish Han Chinese orthodoxy, to Empress Wu Zetian’s use of the Maitreya faith to shape theological discourse during the Wu Zhou period, the Longmen Grottoes have always been deeply intertwined with the politics of medieval dynasties. At the same time, the Buddhist sculptures at Longmen draw upon the legacy of Indian cave art and follow the style of the Yungang Grottoes, while integrating the cultural traditions of Luoyang during the Wei and Jin dynasties and the Southern Dynasties.

They represent the culmination of cave art from Gandhara, the Western Regions, the Hexi Corridor, Pingcheng, and other regions. During the Northern Wei period, the “graceful bone structure and refined features” and “loose robes with wide sashes” exemplified by the Central Cave at Binyang marked the phased completion of the Sinicization of Buddhist sculptural art; the “plump and full-figured” grandeur of the Great Luósenā Buddha at Fengxian Temple in the Tang Dynasty was even compared by the Swedish art historian Xilongren to Michelangelo’s “Moses.” One in the West, one in the East; one carved, one sculpted—these two artistic traditions reveal their distinct characteristics through comparison. Consequently, the Longmen Grottoes have given rise to the “Longmen Culture” system, encompassing religion, politics, transportation, literature, calligraphy, architecture, and folk customs.

II. The Historical Significance and Research Value of the Longmen Grottoes

The Longmen Grottoes occupy an irreplaceable position within the system of Chinese grotto temples. In 2000, UNESCO inscribed them on the World Heritage List, stating: “The grottoes and Buddhist niches in the Longmen area re

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present the most extensive and outstanding examples of sculptural art in China from the late Northern Wei Dynasty to the Tang Dynasty. These artistic works, which vividly depict Buddhist religious themes, represent the pinnacle of Chinese stone carving art.” This assessment can be understood on three levels.

First, “a matter of national significance.” The Longmen Grottoes were a dynastic political and ceremonial project spearheaded by the Northern Wei regime during the period of division and confrontation between the Northern and Southern Dynasties to declare its resolve for integration, showcase the achievements of reform, and establish the Han Chinese orthodoxy. After Emperor Xiaowen relocated the capital to Luoyang, he vigorously promoted Sinicization reforms, transforming the achievements of political transformation into cultural symbols through the grotto sculptures—the relief “Emperor and Empress Paying Homage to the Buddha” in the Central Cave of Binyang, in which Emperor Xiaowen and Empress Wenzhao lead court officials dressed in Han attire and performing Han rituals to pay homage to the Buddha, is precisely a visual expression of this political declaration. From the Northern Wei dynasty onward—from Emperor Xuanwu’s construction of the Three Caves of Binyang to pray for his parents’ well-being, to Empress Wu Zetian’s donation of 20,000 coins from her cosmetics allowance to fund the Fengxian Temple and her presiding over its “consecration” ceremony—the Longmen Grottoes have always been deeply intertwined with the politics of the dynasties of the medieval period.

Second, “the culmination of diverse traditions.” The Buddhist sculptural art of Longmen traces its roots back to Indian grottoes and builds upon the Yungang Grottoes, integrating the cultural traditions of Luoyang during the Wei and Jin dynasties and the Southern Dynasties, and synthesizing the artistic achievements of grottoes in Gandhara, the Western Regions, the Hexi Corridor, Pingcheng, and other regions. During the Northern Wei period, the “graceful and refined figures” and “loose robes with wide sashes” exemplified by the Central Cave at Binyang marked the phased completion of the Sinicization of Buddhist sculptural art that had traveled westward along the Silk Road; the “plump and f

ull-figured” grandeur of the Great Luosena Buddha at Fengxian Temple during the Tang Dynasty, embodying the Tang style, propelled religious ideals and secular aesthetics to the pinnacle of perfect fusion. The “Central Plains style” and “Tang Dynasty elegance” established at Longmen immediately became the “standard for all regions,” exerting a profound influence on cave sculptures across the country and even reaching as far as Korea and Japan.

Third, a testament to the convergence of diverse civilizations. The Longmen Grottoes exhibit a high degree of international character: The Greek “Ionic” capital beneath the arch of the Central Cave in Binyang, the bowl-shaped Buddhist stupas inside and outside the Lotus Cave, the Western Regions musical instruments and floral and animal motifs in the cave niche decorations, as well as the niches carved by Indian, Tocharian, and Silla monks, collectively paint a picture of the convergence of Eastern and Western civilizations here during the medieval period. Cave temples are inherently the crystallization of cultural exchange and mutual learning between China and the outside world, and the Longmen Grottoes represent a pivotal juncture in this chain of transmission where Buddhist art ultimately completed its transformation into a distinctly Chinese form.

The research value of the Longmen Grottoes extends beyond the field of art history. With over 2,800 extant stele inscriptions totaling more than 300,000 characters—the largest number among grottoes worldwide—their content spans numerous fields including politics, economics, military affairs, religion, geography, ethnicity, surnames, folklore, architecture, medicine, and international trade. They hold significant historical value as sources that “fill gaps in history and correct errors in official histories.” Among these, the “Twenty Pieces of Longmen,” as a classic paradigm of Wei-dynasty stele calligraphy, are regarded as a pivotal juncture in the evolution of Chinese characters from clerical script to regular script and hold a lofty status in the history of calligraphy. The Longmen Grottoes are therefore not merely a museum of stone carving art but also a medieval history book carved in stone.

During his inspection of the Longmen Grottoes, General Secretary Xi Jinping pointed out that China's four major grottoes are treasures of Chinese civilization, each possessing significant historical and cultural value. The Longmen Grottoes, with their millennia-old epic carved with the resounding blows of chisels, serve not only as historical testimony to the formation of the Chinese nation's "unity in diversity" but also as a vivid archive of ancient governance wisdom and an eternal landmark for the exchange and mutual learning among civilizations.

III. A Retrospective on the Academic History of Archaeological and Artistic Research on the Longmen Grottoes

Scholarly research on the Longmen Grottoes can be traced back to the study of epigraphy during the Song and Jin dynasties. Ouyang Xiu's **Collected Records of Antiquities**, Zhao Mingcheng's **Records of Epigraphy and Inscriptions**, and Chen Si's **Compilation of Precious Inscriptions** already documented these sites, while Wang Chang's **Compilation of Epigraphy and Inscriptions**, Sun Xingyan's **Records of Stele Surveys Across the World**, and Lu Zengxiang's **Corrections to the Epigraphy and Inscriptions of the Eight Jade Chambers** from the late Qing dynasty continued the tradition of examining Longmen's cultural relics using epigraphic methods.

Academic research on the Longmen Grottoes in the modern sense began with the 1899 survey of Yique conducted by the French scholar Rubens. In the first half of the 20th century, scholars from Western Europe and Japan were the first to conduct relatively systematic field surveys and compile relevant materials: in 1907, Sha Wan spent more than ten days surveying Longmen, photographing and making rubbings of a large number of sculptures and inscriptions; his findings were published in **Illustrated Atlas of North China Archaeology** and **Buddhist Sculpture**, bringing the Longmen Grottoes to the attention of the European Sinological community; Swedish scholar Xi Longren, as well as Japanese scholars Sekino Sada, Tokiwa Taisei, Mizuno Seiichi, and Nagahiro

Toshio, each published works on the subject. Among these, *A Study of the Longmen Grottoes*, co-authored by Mizuno Seiichi and Nagahiro Toshio, stands as an important early achievement in the systematic study of Longmen.

Chinese scholars began to study Longmen from a modern academic perspective in the 1930s. In 1935, Guan Baiyi published *Illustrated Catalog of the Yique Stone Carvings*, compiling a chronological sequence of the inscriptions on the sculptures and steles based primarily on these materials. Of particular note is Teng Gu, China's first art history Ph.D. graduate from Germany. In December 1934 and November 1936, he conducted two field surveys of the Longmen Grottoes, writing *Records of an Inspection of Ancient Sites in Henan and Shaanxi* as well as a series of official reports. Unlike previous Chinese literati who, when visiting Longmen, mostly focused on the calligraphic value of the inscriptions, Teng Gu approached the site from the perspective of sculpture as an artistic language in its own right. He examined the stylistic characteristics and aesthetic sensibilities of the Longmen sculptures, viewing them as the key to understanding the art history from the Northern Wei to the Tang dynasties.

Describing the Great Buddha of Lushan, he wrote: “ ‘The main figure is majestic and solemn, with wavy hair, a towering physique, and shallowly carved, vividly swirling robe folds that are exceptionally vigorous,’ ‘It embodies the divine nature of “universal illumination” while fearlessly expressing the great characteristics of the early Tang era.’ Such detailed descriptions of sculptural styles were rare in the travelogues of Chinese scholars prior to this, marking a significant shift toward studying the Longmen Grottoes from an art-historical perspective.

Since the 1950s, research on the Longmen Grottoes has entered a phase of systematization. In 1953, a specialized cultural heritage preservation agency was established for the Longmen Grottoes. In the 1960s, the Department of History at Peking University and the Department of Art History at the Central Academy of Fine Arts, in collaboration with the Longmen Cultural Relics Preservation Institute, conducted archaeological surveys and mapping of the main caves

and piloted a zonal numbering system for the niches on both mountains. This marked the first time that Chinese institutions of higher learning had undertaken such practical, data-collection work at the Longmen Grottoes. In the 1970s, the Longmen Cultural Relics Preservation Institute conducted a comprehensive survey and rubbing of the inscriptions on the East and West Hills, collecting a total of 2,780 rubbing specimens. Among these, more than 700 contained inscriptions with absolute dates, providing a benchmark for chronological research on the styles of the sculptures. In the 1980s, the Longmen Grottoes initiated a cave and niche numbering project; to date, more than 2,000 cave and niche numbers have been assigned. Additionally, the People's Liberation Army Surveying and Mapping Academy was commissioned to conduct close-range photogrammetric surveys of the Bingyang Central Cave and Fengxian Temple, yielding precise elevation drawings.

In terms of specialized research, academic achievements over the past century have spanned multiple fields. In archaeology, Ding Mingyi's *Chronology and Typology of Tang Dynasty Sculptures at the Longmen Grottoes* and Wen Yucheng's *The Twin Caves of Longmen in Luoyang* employed typological and stratigraphic methods to establish a chronological sequence for the Longmen Grottoes. In the field of art history, works such as *The Art of the Longmen Grottoes* by Chen Mingda, Wang Ziyun, Jin Weinuo, and Gong Dazhong have explored the formation process of the distinctive ethnic style in Longmen sculpture; More recently, Xia Linyu's *Northern Wei Sculptures at the Longmen Grottoes: The Formation of the "Longmen Model"* systematically examined the origins and influence of the Northern Dynasties grottoes at Longmen from five dimensions: the proposal, inheritance and development, acceptance and absorption, integration and innovation, and continuation and dissemination of the "Longmen Model." In the field of Sino-foreign relations and ethnic history, Wen Yucheng's *A Preliminary Study of Historical Materials on Sino-Foreign Exchanges Found at Longmen* has unearthed historical information related to cultural exchanges between China and foreign countries, as well as ethnic integration during the m

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edieval period, from the stele inscriptions and sculptures at the Longmen Grottoes. In the field of Buddhist history, Li Yukun's "Tang Dynasty Buddhism as Reflected in the Inscriptions of Longmen Sculptures" and Zhang Naizhu's related works, drawing on cave materials, have explored topics such as the dissemination of Buddhist scriptures, the evolution of Buddhist schools, and the relationship between religion and the state.

In the 21st century, the Longmen Grottoes Research Institute, in collaboration with institutions such as the School of Archaeology and Museology at Peking University, conducted systematic archaeological excavations in areas including the site in front of the Leigu Tai Cave (2008) and the Xiangshan Temple ruins (2016–2019), unearthing a large number of important cultural relics. The application of digital technologies—including 3D laser scanning, photogrammetry, and GIS analysis—has provided new tools for the documentation, preservation, and study of the grottoes. The concept of "Longmen Studies" has gradually taken shape, evolving into a comprehensive interdisciplinary field that integrates archaeology, art history, history, and religious studies.

IV. Explanation of the Research Perspective and Framework of This Book

This book takes "archaeology and art" as its dual main themes, striving to establish an organic connection between empirical archaeological methods and stylistic analysis in art history, thereby presenting a comprehensive picture of research on the Longmen Grottoes.

From an archaeological perspective, this book emphasizes the documentation of spatial relationships within the site, stratigraphic observations, and typological analysis; from an artistic perspective, it uses stylistic evolution as a guiding thread to interpret visual materials—such as sculptures, calligraphy, and decorative elements—within their specific historical contexts, thereby exploring the cultural drivers behind formal transformations.

In terms of content structure, this book adopts a progressive framework of

“Time—Method—Essence—Culture.” Chapter 1, “The Historical Development of the Longmen Grottoes,” follows a chronological timeline to establish a macro-level framework for the construction and evolution of the grottoes;

Chapter 2, “Archaeological Discoveries and Research on the Longmen Grottoes,” takes methodology as its guiding thread, tracing the progression from traditional archaeology to digital technologies, and then presenting key archaeological discoveries through case studies; Chapter 3, “Artistic Styles and Characteristics of the Longmen Grottoes,” returns to the essence of art, discussing sculpture, murals, and calligraphy separately; Chapter 4, “Buddhist Culture and Symbolic Meaning of the Longmen Grottoes,” moves from iconographic narratives to cultural interpretation, culminating in a comprehensive understanding of religion and society.

In terms of research methodology, this book emphasizes the following dimensions: First, the integration of field archaeology and documentary evidence, placing equal emphasis on the spatial documentation of cave sites and the cross-referencing of stele inscriptions with extant historical texts; Second, the mutual validation of stylistic analysis and chronological dating, using dated caves and niches as a benchmark to establish a relative chronological sequence for undated ones; third, the application of digital technology, which provides new tools for the documentation, preservation, and study of the grottoes; and fourth, comparative research from a global perspective, which situates the Longmen Grottoes within the broader context of the dissemination of Buddhist art along the Silk Road, examining their dual characteristics of “Sinicization” and “internationalization.”

With over a century of accumulated research, studies on the Longmen Grottoes have evolved from early epigraphic cataloging and field surveys into a comprehensive, multidisciplinary academic field. The purpose of this book is not to present definitive conclusions, but rather to showcase the rich historical layers and cultural significance of the Longmen Grottoes from both archaeological and artistic perspectives, offering readers a systematic and in-depth pathway to understanding this World Cultural Heritage site.

Chapter 1: The Historical Development of the Longmen Grottoes

"Among Luoyang's outskirts, hills and streams delight, Longmen stands first in scenic might." — Bai Juyi

The Longmen Grottoes were excavated during the reign of Emperor Xiaowen of the Northern Wei Dynasty. They have been successively excavated during the Eastern Wei, Western Wei, Northern Qi, Sui, Tang, Five Dynasties and Northern Song Dynasties. There are over 100,000 cliff carvings and nearly 3,000 inscriptions on steles. The statues in Longmen Grottoes were mostly built by the royal family and nobility, making it a unique royal grottoes in the world.

The main ones include the Lushana Buddha shaped in the image of Wu Zetian, the Ancient Yang Cave carved by Emperor Xiaowen for Empress Feng, the statue of Prince Lanling in the Ten Thousand Buddha Cave, the Binyang South

Cave built by Li Tai for Empress Changsun, the Jingshan Temple carved by Empress Wei, and the Buddha of Infinite Life carved by Gao Lishi for Emperor Xuanzong of Tang, etc. The Longmen Grottoes in Luoyang are built on the

hard Cambrian and Ordovician limestone. On its surface, very fine patterns and images can be carved. In the Qianxi Temple, there is the gentle Mahasthmaprapta Bodhisattva; in the Binyang Cave, there are the exquisite wall carvings of Buddha Ben Sheng; in the Wanfo Cave, there are 15,000 Buddha statues; in the Lianhua Cave, there are the relief lotus flowers; in the Fengxian Temple,

there is the smiling Vairocana Buddha; and in the Yafang Cave, there are ancient prescriptions engraved. The Thousand-handed and thousand-Eyed Guanyin in

the Dongshan Grottoes, the Five-Lotus Buddha with two sides in Junwang Cave

of Gaoping County, the 29 Arhat statues 180 cm tall in Kanjing Temple, Jiang Song's Villa in Xiangshan, and the cemetery of Bai Juyi, the "Xiangshan Layman"...

The stories behind them, such as Emperor Xiaowen's relocation of the capital to Luoyang, Emperor Xuanwu's minor rebellion, the palace intrigue between Empress Dowager Hu and Liu Teng, Wu Zetian's affection for Luoyang, and Chiang Kai-shek's villa becoming Yang Chengwu's prison, all added numer

ous tales to the Longmen Grottoes, making the Buddhist Kingdom more than just a Buddhist kingdom. Wandering through Longmen, while visiting the Buddhist land, it feels as if one has walked through a thousand years of time.

The origin of "Longmen"

The Longmen Grottoes are located at the foot of Longmen Mountain in the southern suburbs of present-day Luoyang City, with the Yi River in front of it. The area is 20 kilometers northeast of the ancient city of Luoyang from the Eastern Han Dynasty to the Northern Dynasties. Due to the two majestic mountains standing between the east and west, the eastern mountain is called Xiangshan and the western mountain is called Longmen Mountain. The Yi River flows eastward in the middle, and the mountains and water complement each other, resembling a gate. Therefore, it is also called Longmen. The "Commentary on the Waterways Classic" records: "In ancient times, Yu the Great opened Longmen to allow water to flow through. The two mountains faced each other and looked like a gate. The Yi River flowed through the middle, thus it was called Yi Gate." The legend of the fish leaping over the Dragon Gate also took place here.

It is also said that in 604, Emperor Yang Guang of the Sui Dynasty (reigned from 604 to 618) came to Luoyang and discussed with his ministers the construction of an eastern capital city here. When he reached the current location of the Dragon Gate, he was pleasantly surprised and said to his attendants on both sides, "Isn't this the gate specially made for the True Dragon Emperor?" "Why wasn't the capital established here since ancient times?"

Minister Su Wei (540-621) immediately flattered him, saying, "We have always been aware of this since ancient times. We are just waiting for Your Majesty!" When Emperor Yang of Sui heard this, he was overjoyed and immediately decided to establish the capital in Luoyang. A few years later, when the eastern capital of the Sui Dynasty, Luoyang City, was completed, the main entrance of the imperial palace faced the Yique Mountain Pass. After that, Yique w

as renamed Longmen.

The origin of the grotto excavation

In order to achieve the goal of moving the capital to Luoyang, in 493 A D, Emperor Xiaowen of the Northern Wei Dynasty personally led an army of 200,000 to launch a "southern campaign". After arriving in Luoyang, he pretended to continue his southward campaign, but the ministers were wronged and knelt before his horse, begging not to advance further south. Emperor Xiaowen took the opportunity to say, "If we do not continue the southern campaign, we should move the capital here." All the nobles and officials who accompanied the army expressed their approval and shouted "Long live!" Emperor Xiaowen of the Northern Wei Dynasty took advantage of the situation to establish the capital in Luoyang, playing a clever "open strategy". Unfortunately, his eldest son was not convinced. In order to cut off the escape route for the Xianbei nobility and scholars to return north, Emperor Xiaowen ordered that "all the people who moved to Luoyang should be buried in Henan and not be allowed to return north", so that they could settle down in Luoyang and reproduce their descendants.

As vivid physical evidence of this period of history, it is preserved in the Guyang Cave of Longmen Grottoes. The Guyang Cave was built for Empress Dowager Feng. Emperor Xiaowen was regarded as a monarch of great talent and vision. Unfortunately, when people mention him, more often they think of his domineering, unscrupulous and promiscuous Empress Feng. When Emperor Xiaowen passed away, he ordered Feng Run to be buried with him, but still bestowed upon her the honor of empress. This has become a mystery for many people. Emperor Xiaowen Tuoba Hong died at the age of 33. It is unknown whether he was ill due to overwork or heartbroken by betrayal. It is unknown whether it was the "hereditary" lustful empress of the Northern Wei Dynasty, Emperor Xuanwu Yuanke, the son of Emperor Xiaowen, not only continued to promote Sinicization and Buddhism but also abolished the most cruel system i

In the history of the Northern Wei Dynasty, the "death of the mother if the son is honored" system. As a result, another "Empress Feng" emerged. After his death (or 33 years old if I remember correctly), the 5-year-old Crown Prince Yuanxun ascended the throne and became the emperor, known as Emperor Xiaoming in history. After Emperor Xiaoming ascended the throne, he honored his biological mother, Hu Shi, as Empress Dowager. As the new emperor was still young, Empress Dowager Hu began to rule behind a curtain, raise male dotes, and fight for power with her own son until she poisoned him and enthroned Yuan Zhao, the three-year-old nephew of Emperor Xiaoming, as the emperor. She was historically known as the Young ruler of the Northern Wei Dynasty. Later, she was put in a bamboo cage by Zhu Errong and thrown into the Yellow River, losing her life. Emperor Xuanwu's promotion of Buddhism led to the rise of the Longmen Grottoes. The side effects were that Empress Dowager Hu, with her proficiency in Buddhism, pleased Emperor Xuanwu and enabled her to enter the palace. Additionally, Emperor Xuanwu himself was overly obsessed with Buddhism and neglected his governance.

Section 1 The Rise of Buddhism and the Excavation of Grottoes during the Northern and Southern Dynasties

I. The Northern Wei's Relocation of the Capital to Luoyang and the Shift in Buddhist Policy

In the 17th year of the Taihe era (493), Emperor Xiaowen of the Northern Wei, Tuoba Hong, overruled widespread opposition and relocated the capital from Pingcheng to Luoyang. The significance of this decision extended far beyond a mere shift of the geographical center to the south—it marked a fundamental shift for the Xianbei regime from the nomadic traditions of the northern frontier to the agrarian civilization of the Central Plains, representing a compreh

ensive transformation encompassing political systems, cultural identity, and social customs.

Following the relocation, Emperor Xiaowen swiftly implemented a series of Sinicization measures: changing the Xianbei compound surnames to Han surnames, banning Hu clothing and the Hu language, encouraging intermarriage between Hu and Han peoples, reforming the bureaucratic system, and implementing the Equal Field System—all in an attempt to reshape the dynasty's cultural foundations through institutional reform. The core objective of these policies was to transform the Northern Wei from a northern frontier regime founded on military might into a Central Plains dynasty possessing the legitimacy of the Huaxia tradition by actively integrating into the Huaxia cultural tradition.

Buddhism played a subtle yet crucial role in this transformation. Since Emperor Taiwu's suppression of Buddhism, followed by Emperor Wencheng's reinstatement of the faith, Buddhism had gradually become a spiritual bond that united the people. The carving of the Yungang Grottoes already demonstrated the deep integration of Buddhist art and imperial politics—the colossal Buddha statues in Tan Yao's Five Caves are widely recognized by scholars as also serving to embody the image of the emperor, a visual expression of the concept that “the emperor is the Tathāgata.” After the capital was moved to Luoyang, this political tradition was carried to the banks of the Yi River. However, unlike the Yungang Grottoes, the Longmen Grottoes were closely tied to Emperor Xiaowen's Sinicization agenda from the very beginning: Buddhism was no longer merely a source of spiritual solace for the Xianbei nobility, but had become a political and cultural tool for asserting Han Chinese orthodoxy and bridging the divide between the “barbarians” and the Han.

The fundamental driving force behind this transformation lay in the fact that, after relocating the capital, the Northern Wei rulers faced a highly mature Han Chinese gentry society. To gain the cultural recognition and political support of this society, military force alone was far from sufficient. The carving of the Longmen Grottoes—which reshaped Buddhist art through Sinicized sculptu

ral styles, Han-style attire, and Confucian ethical concepts—was a key strategy by which the Northern Wei rulers proactively utilized Buddhism as a “trans-ethnic” cultural vehicle to position themselves as the legitimate heirs of Huaxia orthodoxy. The style characterized by “wide-sleeved robes and broad sashes” and “graceful features and serene countenances,” as exemplified by the Central Cave at Binyang, profoundly reflects the study and assimilation of the Han cultural traditions of the Southern Dynasties, fully demonstrating the immense power of Chinese civilization to embrace and transform.

II. Research on the Date of the Longmen Grottoes’ Construction

The date when carving began at the Longmen Grottoes has long been a focal point of academic debate, with several main theories including the seventh year of the Taihe era (483), the twelfth year of the Taihe era (488), the seventeenth year of the Taihe era (493), and the nineteenth year of the Taihe era (495). Despite differing viewpoints, scholars unanimously agree that Guyang Cave was the earliest cave to be carved among the Longmen Grottoes.

Scholars who support the 17th year of the Taihe era (493) argue that this date directly coincides with the major event of Emperor Xiaowen’s relocation of the capital to Luoyang, implying that the Longmen Grottoes were, from the very beginning, an integral part of the Northern Wei dynasty’s Sinicization reforms. The fact that work on Guyang Cave began in the very year the capital was relocated—the phrase “relocating the capital and immediately beginning cave carving”—carries strong political symbolic significance in and of itself. Subsequently, inscriptions on statues from the 18th (494), 19th (495), and 20th (496) years of the Taihe era appeared in succession, while no statues from earlier periods have been discovered; this chronological sequence provides significant support for the theory that carving began in the 17th year of the Taihe era.

Although the **Book of Wei: Chapter on Buddhism and Taoism** does not explicitly record the exact year when carving began at Longmen, the account s

tating that “at the beginning of the Jingming era, Emperor Xuanwu ordered the construction of one cave each at Longmen for Emperor Xiaowen and Empress Dowager Wenzhao, modeled after the stone caves of Lingyan Temple in the capital of Dai” indicates, at the very least, that by the Jingming era (500–503), Longmen had already possessed sufficient conditions for construction and extensive experience in carving caves, and the Bingyang Middle Cave—as the “No. 1 National Project” following the Northern Wei’s relocation to Luoyang—had already been launched.

The earliest extant dated inscription on a statue in the Guyang Cave is the “Inscription on the Maitreya Statue Commissioned by Lady Weichi, Consort Liang of Prince Qiumu of Changle, for Her Deceased Son Niu Jue,” dating from the 19th year of the Taihe era (495), also known as the famous “Niu Jue Statue.” The inscription records that Lady Weichi, wife of Prince Qiu Muling Liang of Changle, commissioned a section of Maitreya statues for her deceased son Niu Jue. The calligraphy on the stele is dignified and solemn, making it one of the earliest dated inscriptions among the Longmen sculptures. Subsequently, inscriptions dated to the 20th year of the Taihe era (496) and the 2nd year of the Jingming era (501), among others, appeared successively in the Guyang Cave, forming a chronological sequence of the early construction of the Longmen Grottoes.

III. Guyang Cave: The Earliest Cave Remains at Longmen

Located at the southern end of Longmen’s West Mountain, Guyang Cave is a vaulted-ceiling cave formed by the artificial expansion of a natural limestone cave. It is also the earliest and most representative Northern Wei cave among the extant Longmen Grottoes.

The central wall of the cave features one Buddha flanked by two bodhisattvas, while the left and right walls each have two tiers of large niches—a total of sixteen niches—arranged symmetrically. Among the eight niches in the up

per tier, all but the innermost niche on the north wall—which houses a Buddha statue in the “broad-sleeved robe with wide sash” style—retain the “bare-right-shoulder” style of Buddhist attire similar to that of the early Yungang period; the eight niches in the lower tier all feature the “broad-sleeved robe with wide sash” style. This stylistic contrast between the upper and lower tiers precisely documents the transitional trajectory of Chinese Buddhist art from the “Yungang style” to the “Longmen style.” Professor Wei Zheng pointed out that the symmetrical arrangement and stylistic differences of the Buddha niches on the side walls of Guyang Cave hold immense research value in the field of Buddhist archaeology and serve as a key specimen for understanding the stylistic evolution of the Longmen Grottoes.

Another significant aspect of Guyang Cave lies in its inscribed steles. Among the more than 2,800 extant steles at Longmen, Guyang Cave alone accounts for over 800, of which 110 bear explicit dates. Of the famous “Twenty Inscriptions of Longmen,” nineteen originate from Guyang Cave, including such classic Wei-dynasty steles as the “Inscription on the Statue Commissioned by the Marquis of Shiping,” “Inscription on the Statue Commissioned by Sun Qiusheng,” “Inscription on the Statue Commissioned by Yang Dayan,” “Inscription on the Statue Commissioned by Niu Jue,” and “Inscription on the Statue Commissioned by Zheng Changyou.” These inscriptions are not only treasures in the history of calligraphy, but their content—which includes information on the identities of the donors, the reasons for the statues’ creation, and their prayers for blessings—provides firsthand documentation for the study of social structure and folk beliefs in the late Northern Wei period.

The statue niches in Guyang Cave exhibit rich characteristics of cultural fusion. Taking the Yang Dayan statue niche as an example, the center of the niche’s lintel is carved with a hall featuring a hip-and-gable roof; a Garuda adorns the center of the ridge; two dragons coil around both sides of the Buddhist hall; and two immortals ride an elephant and a tiger, respectively. Inside the niche, Shakyamuni sits in the lotus position, flanked by two standing bodhisatt

vas. This group of niche sculptures incorporates Buddhist stylistic elements from Gandhara while also extensively drawing upon traditional Chinese palace architectural styles, dragon motifs, and the imagery of Daoist immortals mounted on animals, serving as a prime example of the convergence and integration of diverse cultures during the Northern Wei period.

The Guyang Cave also provides a vivid account of the multi-ethnic collaboration involved in the creation of these sculptures. The surnames of the sculptors listed in the inscriptions include those of Xianbei nobles such as “Tuoba” and “Weichi” (a variant of the Qiumuling clan), as well as the Di clan’s “Yang” and the Daxia clan’s “Helian,” alongside a large number of Han Chinese officials and commoners. Furthermore, the inscriptions frequently contain Confucian ethical concepts such as “loyalty, filial piety, chastity, and righteousness” as well as “praying for blessings and repaying kindness,” reflecting the participants’ identification with and integration into mainstream Chinese culture. This ethnic diversity serves as a microcosm of the interethnic integration that took place after the Northern Wei dynasty relocated to Luoyang.

IV. The Three Caves of Binyang: Planning and Implementation of a Northern Wei Imperial Project

If the Guyang Cave is considered a product of Longmen’s early development, then the Three Caves of Binyang represent the “Number One National Project” following the Northern Wei imperial court’s formal involvement.

The Book of Wei: Chapter on Buddhism and Taoism provides a detailed account of the origins of this project: “In the early years of the Jingming era, Emperor Shizong issued an edict to Bai Zheng, the Grand Chamberlain, instructing him to model the project after the stone grottoes at Jinglingyan Temple in the capital and to construct two sets of stone grottoes on Mount Yique south of the Luo River for Emperor Gaozu and Empress Dowager Wenzhao.” Emperor Shizong was Emperor Xuanwu (Yuan Ke); Emperor Gaozu was his father,

Emperor Xiaowen; and Empress Dowager Wenzhao was his mother, Lady Gao.

During the Yongping era, the project director, Liu Teng, submitted a memorial requesting that an additional cave be carved for Emperor Xuanwu himself, thus establishing the layout of the Three Caves of Binyang.

The Central Cave of Binyang was the first of the three to be excavated and the only one that was essentially completed during the Northern Wei period.

The cave has a horseshoe-shaped floor plan and a domed ceiling. The main wall features one Buddha flanked by two disciples and two bodhisattvas, while the left and right walls each depict one Buddha and two bodhisattvas, forming a “three walls, three Buddhas” layout that clearly follows the tradition of the Yungang Grottoes. However, while the Yungang sculptures still bear the vigorous style characteristic of the Xianbei people’s artistic sensibilities, the Buddha figures in the Central Cave of Longmen’s Binyang feature gaunt faces and loose, flowing robes, exemplifying the typical “delicate bone structure and refined features” and “loose robes with wide sashes” styles.

Another iconic work in the Central Cave of Binyang is the relief carving on the front wall titled Emperor and Empress Paying Homage to the Buddha, which depicts Emperor Xiaowen and Empress Wenzhao leading court officials in paying homage to the Buddha. All figures are dressed in Han attire and observe Han rituals, making this a paradigmatic work through which the Northern

Wei rulers proclaimed their cultural orientation using visual symbols. It is worth noting that these two sets of reliefs were stolen and smuggled out of the country in the 1930s; they are now housed separately at the Metropolitan Museum of Art and the Nelson-Atkins Museum of Art in the United States.

The South and North Caves of Binyang, however, have had a turbulent history. According to historical records, the original design for the three Binyang

Caves was extremely ambitious. However, due to the high strength and hardness of the rock at the Longmen Grottoes, which made excavation extremely difficult, and because the Northern Wei dynasty plunged into political turmoil during the project, only the Central Cave of Binyang was completed. The project

began in the early Jingming era (500 AD) and was suspended in the fourth year of the Zhengguang era (523 AD), spanning more than twenty years and employing over 800,000 workers—yet only the Central Cave was completed.

The abandonment of the project was directly linked to the political turmoil of the late Northern Wei dynasty. In A.D. 515, Emperor Xuanwu died, and the five-year-old Emperor Xiaoming ascended the throne, with his mother, Empress Dowager Hu, ruling behind the scenes. In A.D. 520, Liu Teng, the project's director, staged a palace coup and imprisoned Empress Dowager Hu; thereafter, Liu Teng wielded absolute power over the court and the realm. It was not until Liu Teng's death in A.D. 523 that Empress Dowager Hu was able to resume her rule, after which she carried out a series of retaliatory measures against Liu Teng's tomb. This series of palace coups, coupled with the subsequent Huiyin Incident (528 AD), ultimately led to the division of the Northern Wei Dynasty into the Eastern Wei and Western Wei, which had a profound impact on the carving of the Longmen Grottoes as a whole. The statues in the South and North Caves of Binyang were not completed by later generations until the Sui and Tang dynasties.

Although the project was not fully realized as planned, the design philosophy of the three Binyang Caves had a profound influence on the subsequent development of the Longmen Grottoes. The Central Binyang Cave established the “three walls, three Buddhas” cave paradigm, while the South Binyang Cave—though unfinished, its basic layout had already been carved—represented a new style featuring “a single recumbent Buddha figure on the main wall with an open altar,” which became the prevailing paradigm at the Longmen Grottoes from the late Northern Wei period through the Tang Dynasty. The Binyang South Cave, commissioned by Empress Wenzhao of Emperor Xiaowen, dates from a later period than the Binyang Central Cave. Its layout had shifted from the “three walls, three Buddhas” configuration to a layout featuring a single set of statues on the main wall, with the principal Buddha and his attendants standing together on a central platform. This transition from “three walls, three

Buddhas” to “a single set of statues on the main wall with a central platform” also entailed a profound shift in the symbolic significance of the cave’s layout.

V. The Prosperity of Folk Sculpture in the Late Northern Wei Dynasty

Although the construction of the Three Binyang Caves was suspended, it did not bring an end to the creation of the Longmen Grottoes. In the late Northern Wei Dynasty, sculptural activities by princes, nobles, and lay devotees actually became increasingly active, forming a pattern centered on the Guyang Cave and the Middle Binyang Cave and radiating outward across the surrounding cliff faces.

These late Northern Wei caves and niches are primarily distributed across three areas: near Guyang Cave, north of the Binyang Cave area, and in the central part of the Western Mountains—from north of the Lushan Great Buddha to Tangzi Cave. Representative caves include Lianhua Cave, Huoshao Cave, Shiku Temple, Wei Character Cave, Yaofang Cave, and Putai Cave.

Lianhua Cave was carved during the Xiaochang era of Emperor Xiaoming of the Northern Wei Dynasty (approximately 525–527) and, together with Guyang Cave and BinYang Middle Cave, is known as one of the “Three Great Northern Wei Caves of Longmen.” The main image within the cave consists of one Buddha flanked by two disciples, forming a triad. The ceiling features a high-relief lotus-patterned coffered ceiling—the lotus has a diameter of over three meters and is filled with lotus pods and overlapping petals, creating a strong sense of three-dimensionality and remarkable realism. The walls are densely covered with niches of various sizes, adorned with intricate and varied decorations, making it a typical example of the sculptural style of the late Northern Wei period. The “Statue Commissioned by the Monk Huiqian” on the north wall of the Lotus Cave was carved on the 15th day of the seventh month of the first year of the Jianyi era (528). The monk Huiqian and his younger brother Li Xing commissioned this statue of Maitreya Buddha in memory of their deces

ed parents. The inscription is flanked symmetrically by figures, with celestial beings above, creating a composition that is square and austere, yet conveys grandeur within its modest scale. This statue reflects the social ethos of the time, in which Buddhists were expected to be loyal to the ruler and filial to their parents—even the monk Huiqian could not escape “conventional norms,” and together with his younger brother, he commissioned the statue to pray for the blessings of his deceased parents, expressing the wish that “blessings may reach the departed souls, and they may dwell eternally in a pure realm.” The inscription on this statue was classified by Kang Youwei as “Upper Grade of the Neng Category” and holds extremely high calligraphic value.

The vitality of folk statue commissions is evident in the content of these inscriptions. The “Record of the Statue Commission by County Lord Gao Shuhue, Venerable Jie Bodu, and Thirty-Two Others” (502 CE) from Guyang Cave documents how a group of thirty-two members of the county community raised funds to carve a niche and pray for the well-being of their deceased parents and living relatives. The “Inscription on the Statue Commissioned by Zheng Changyou” (501 CE), located on the south side above the entrance to Guyang Cave, records the story of Zheng Changyou, the Baron of Yunyang, and his concubine Chen Yunu, who each commissioned a Maitreya statue for their deceased father, mother, and son. Similar inscription records are abundant at Longmen, with the patrons ranging from princes and nobles to ordinary officials, merchants, monks, nuns, and commoners, reflecting that by the late Northern Wei period, Buddhist faith had deeply penetrated civil society, and the practice of commissioning statues to pray for blessings had become a widespread custom across all social strata.

The style of statue carving in the late Northern Wei period also underwent significant changes. The upper row of large niches in the early Guyang Cave still retained the Yungang-style Buddha attire with the right shoulder bare, while the lower row of large niches and the Central Cave of Binyang had fully shifted to the “broad-sleeved, wide-sash” style. Even later caves, such as the

“Wei” Character Cave and the Putai Cave, further developed into a new style known as “a single set of statues in a single altar.” Sculptural techniques also transitioned from the straight-edged chisel work of Yungang to a rounded chisel style, and the artistic style shifted from robust and rugged to elegant and dignified. Women during the Northern Wei period typically wore their hair in twin buns, dressed in cross-collared robes cinched at the waist with belts, featuring layers of gathered folds and wide sleeves that nearly reached the ground, evoking a sacred, ethereal aura reminiscent of immortals. The evolution of the sculptural style was both a direct result of Emperor Xiaowen’s Sinicization policies and a reflection of the overall shift in social aesthetic tastes during the late Northern Wei period.

In summary, the construction of the Longmen Grottoes during the Northern Wei dynasty marked a pivotal transition in the Sinicization of Buddhist sculptural art. The Sinicization of Buddhist worship spaces and the attire depicted in the sculptures profoundly exemplifies the immense capacity for inclusivity and transformation inherent in Chinese civilization. The flourishing of folk sculpture in the late Northern Wei period laid a solid social foundation and artistic tradition for the impending artistic peak of the Tang dynasty.

Section 2: The Prosperity of the Sui and Tang Dynasties and the Peak of Grotto Art

There are 2,345 grottoes and niches, nearly 110,000 Buddha statues, over 2,800 inscriptions and steles, and nearly 80 pagodas, which are inlaid like honeycomb nests on the east and west sides of Xiangshan Mountain and Longmen Mountain, presenting a magnificent and awe-making scene. The Longmen Grottoes, which were excavated during the period when Emperor Xiaowen of the Northern Wei Dynasty moved the capital to Luoyang, have undergone intermittent construction over more than 400 years from the Eastern Wei, Western Wei, Northern Qi, Sui, Tang to the Northern Song Dynasties. 1,500 years later, the Longmen Grottoes, having endured countless storms and vicissitudes, still stand on both banks of the Yi River, silently observing the changes of the world.

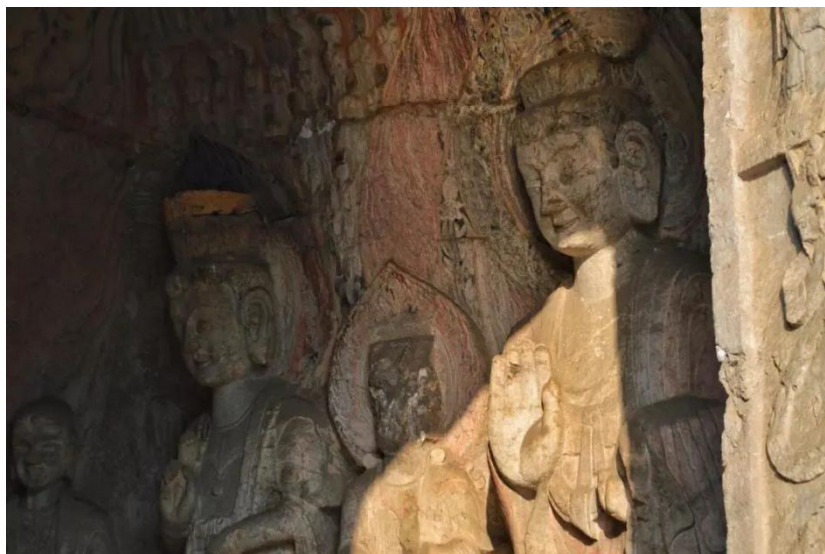


Figure 1-2-1 - Interior of Guyang Cave

In 1953, the Longmen Cultural Relics Preservation Office was approved to be established, and the Longmen Grottoes were opened to domestic tourists. The grottoes have remained silent for decades, watching the bustling tourists. Visitors are admiring the pinnacle of Chinese stone carving art and the brilliant civilization from thousands of years ago, as if engaging in a dialogue between the past and the present that transcends time and space. In November 2000, the

Longmen Grottoes were inscribed on the World Heritage List. The World Heritage Committee of UNESCO highly praised its historical and cultural value with "three mosts" : "The grottoes and niches in the Longmen area showcase the largest and most outstanding plastic arts from the late Northern Wei Dynasty to the Tang Dynasty (493-907 AD) in China." These artworks that describe Buddhist religious themes in detail represent the peak of Chinese stone carving art.



Figure 1-2-2 - Close-up view of the Vairocana Buddha in Fengxian Temple

During the Sui and Tang Dynasties, the art of statue making in Longmen Grottoes was influenced by the social trend of elegance, grandeur and beauty. The statues had a fresh style, plump bodies, round faces, and slender waists, reaching the artistic peak of perfect form and spirit, and were known as the "style of the Tang Dynasty".

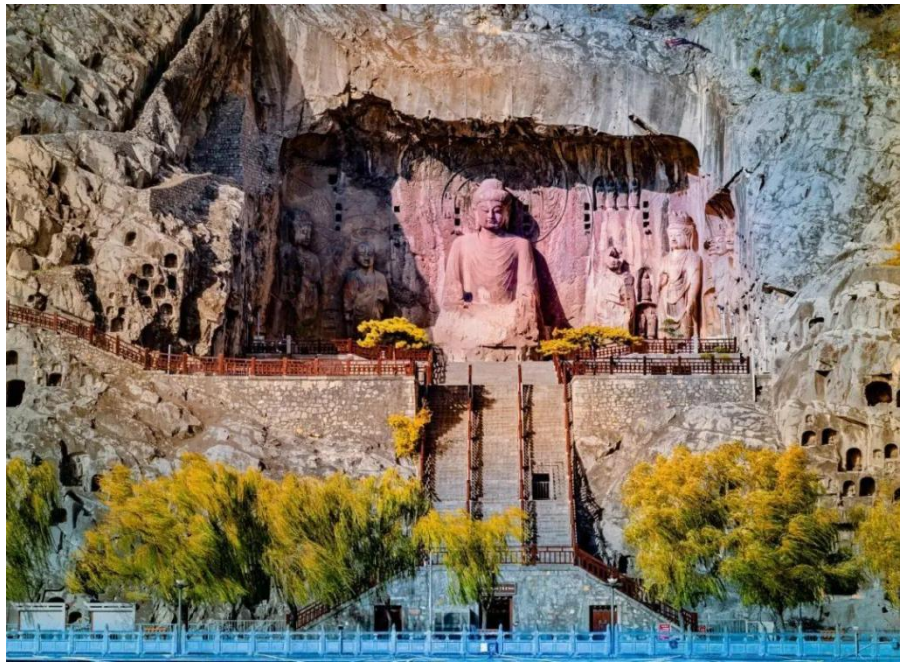


Figure 1-2-3 - Panoramic view of Fengxian Temple

The scenery of Longmen Mountain ranks first among the eight scenic spots in Luoyang. Bai Juyi, a poet of the Tang Dynasty, once praised it: "Among the four suburbs of Luoyang, the beauty of mountains and waters is unparalleled by Longmen Mountain." Imagine that on a sunny day in the Tang Dynasty, the Yi River was rippling with green willows providing shade on both banks. When tourists come to Longmen, they look up at the two mountains on the east and west sides. A thousand rocks compete in beauty, ten thousand trees vie for prosperity, and the caves all over the mountains are like beehives and bird's nests. It is truly a beautiful landscape of mountains and waters. Thanks to the direct participation and dedicated efforts of the royal family, the Longmen Grottoes had a unified plan and layout from the very beginning of their excavation, which is why the Buddha statues are so delicate and exquisite. Shi Jiazhen, the director of the Longmen Grottoes Research Institute, said that the Longmen Grottoes embody the ancient people's romantic imagination, outstanding creativity and tenacious willpower, and are a model of royal grotto temple art. Its two artistic styles of plastic arts, "Central Plains Style" and "Tang Dynasty Style", spread throughout the country and far beyond the regions.

Before the Sui Dynasty, the art of the Dunhuang Grottoes was still in its

early stage of development and was greatly influenced by the artistic styles from India and Buddhist thoughts. In terms of expression, the picture is rich in color, the composition is unstable and turbulent, the lines are rough and simple, the figures are exposed and the shapes are exaggerated, they are tall and strong, and the faces are masculine, clearly showing the characteristics of the Indian and Central Asian races. In terms of creative content, there are more murals featuring hideous, painful, terrifying and bloody stories of the Buddha's original life. There are also some relatively mild paintings of Buddhist life stories and Buddhist historical sites.



Figure 1-2-4 - Northern Wei: Jataka of King Shipi (Cutting Flesh to Save the Pigeon), Cave 254, Mogao Grottoes (Replica)



Figure 1-2-5 - Northern Zhou: Jataka of Prince Sattva (Sacrificing Himself to Feed Tigers), Cave 428, Mogao Grottoes (Replica)

For the aesthetics and ideas that we cannot accept and identify with, during the process of Sinicization and integration of the North and the south in the Northern Dynasties, the artists in Dunhuang continuously incorporated the local culture and artistic style of the Central Plains, completing the initial localization transformation.

I. Dunhuang Grottoes Art of the Sui Dynasty

By the Sui Dynasty, as the localization transformation was gradually completed, the original bloody, inhuman and immoral elements were gradually abandoned, and more and more Jingbian paintings began to emerge. The "Sutra Transformation Painting" is to present the content of Buddhist scriptures in the form of paintings, and the Mogao Caves began to usher in a more glorious era of development. In 581 AD, Emperor Wen of Sui, Yang Jian, established the Sui Dynasty. The unified Sui Dynasty accelerated the excavation of grottoes and the creation of statues. As one of the few powerful figures in Chinese history, Yang Jian was also an extremely capable person. He first unified the country that had been divided for hundreds of years, and then began to carry out bold reforms, such as simplifying administrative institutions, changing the three levels of states, prefectures and counties since the Han Dynasty to two levels of states and counties, and later to two levels of prefectures and counties. He also worked out a new way of talent selection, and the imperial examination system began to sprout.



Figure 1-2-6 - Tang Dynasty, Yan Liben: Emperor Wen of Sui from the Illustrations of Emperors of All Dynasties

Yang Jian also has a special fondness for Buddhism. The story has to go back to the night of GUI Chao in the sixth month of the seventh year of the Great Tong era of the Western Wei Dynasty (541). Yang Jian was born at the Banruo Temple in Fengyi. According to the consistent principle in Chinese history that the birth of an emperor is bound to cause trouble (with strange phenomena), Yang Jian's birth was naturally not the same as that of ordinary people.

It is said that at that time, "purple qi filled the courtyard". The History of the Sui Dynasty records that at that time, there was a nun who said that this child could not be raised like an ordinary person, so the nun took Yang Jian to a separate house and raised him herself. If there is any true information in this passage, it should be that Yang Jian has had a deep connection with Buddhism since childhood. So when Yang Jian ascended the throne, he changed the "ban on Buddhism" policy implemented during the reign of Emperor Wu of the

Northern Zhou Dynasty, restored the legal status of Buddhism, ordered the vigorous construction of new temples, and restored the previously abandoned temples. His son, Emperor Yang Guang of Sui, also followed his father's religious policies and strongly supported the development of Buddhism. As both emperors of the two generations were devout believers and highly regarded of Buddhism, the construction of temples was unprecedentedly enhanced. This can also be seen in Dunhuang. Dunhuang has developed for a thousand years, and there are still 492 grottoes with murals. On average, one grotto is excavated every two years. However, during the Sui Dynasty, 90 grottoes were excavated in just 38 years, with an average of more than two grottoes being excavated each year. This is in line with the efficiency of Emperor Yang Guang in his work.



Figure 1-2-7 - Tang Dynasty, Yan Liben: Emperor Yang of Sui from the Illustrations of Emperors of All Dynasties

The art style of grottoes is accelerating its localization. Compared with before, the murals and sculptures of the Sui Dynasty have undergone relatively obvious changes in both artistic style and themes. In terms of artistic style, the murals of the Sui Dynasty were more exquisite and delicate. The line drawing of characters was more mature, and the color expression was also richer. A large number of bright colors, combined with in-depth and detailed depictions, made the pictures full of dynamic beauty. The overall treatment was distinct yet harmonious. The painting styles of the top artists of the Northern Dynasties, such as Yang Zihua, Cao Zhongda, Yuchi Ba Zhina and others, as well as the works of Zhang Sengyao and Lu Tanwei of the Southern Dynasties, all began to influence the Mogao Caves. For instance, in some caves, we have discovered works in the style of Lu Tanwei of the Southern Dynasties, which feature delicate bones and clear images. The nude Bodhisattvas and nude dancers with large breasts, slender waists and big buttocks, which were popular in the Western Regions and India, began to gradually disappear because they were not accepted by the Central Plains culture. The depiction of secular characters is more realistic and has a strong sense of life. However, some foreign elements can still be found in some details. For instance, some Bodhisattvas have the faces of Han people but wear Persian-style sun and moon crowns, large Persian scarves, and retain Indian dance postures. Under the pioneering efforts of top Chinese figure painters such as Gu Kaizhi, Zhang Sengyao and Yang Zihua, we have developed our own relatively mature forms of expression for figures. In many technical issues, Dunhuang artists have continued our own traditions. For instance, the figures in Dunhuang murals are different from the side profiles of those in Egyptian and Greek murals. Instead, semi-side profiles are mainly chosen. It has three angles: front and side. The image of the Buddha is mostly frontal to show his sacred dignity, and profile images are extremely rare. The vast majority of Bodhisattvas, deities and secular figures are semi-profile figures. The semi-profile image makes the facial features of a character rich in variation and can profoundly express the character's expression and demeanor. The body

proportions and postures of the characters have also developed. The proportions of figures in early murals underwent three stages of change: short and thick (from the Northern Wei Dynasty of the Sixteen Kingdoms), slender and long (from the late Northern Wei Dynasty to the Western Wei Dynasty), and moderate (from the Northern Zhou Dynasty to the Sui Dynasty).



Figure 1-2-8 - Sui Dynasty: Painted Sculptures and Murals on the West Wall of the Main Chamber, Cave 420, Mogao Grottoes

The new type of sutra transformation paintings began to gain popularity. There were also changes in the themes of murals. According to the statistics of Dunhuang research expert Duan Wenjie, the stories of the original life of endurance and sacrifice and accumulation of merit in the murals of the Sui Dynasty gradually decreased, while a large number of sutra transformation paintings promoting the Mahayana Pure Land thought emerged. There are only 11 types and 16 pieces of the existing Jataka tales, while there are 7 types and 37 pieces of the newly published Mahayana Sutra transformations. Those ideas that advocate "everything is empty" and sacrifice countless generations in pursuit of Buddhahood have gradually been replaced by Confucianism, which values reality. We prefer to see a picture that is relatively present and has a bright future. In the murals of the Sui Dynasty, the combination of figures and architecture, as well as the integration of figures and nature, are all absent in the paintings of

f the Western Regions. During the Sui Dynasty, a large number of sutra transformation paintings were created in such scenes, such as "The Transformation of Vimo", "The Transformation of Maitreya", "The Transformation of the Medicine Buddha", "The Transformation of the Lotus Sutra", "The Transformation of Amitabha", "The Transformation of Nirvana", and so on. Among them, there were as many as 11 "The Transformation of Vimo" in the Sui Dynasty, and their layouts and forms were different. Take the "Lotus Sutra Transformation" on the east side of the main chamber of Cave 420 in the Mogao Caves as an example. The painting features numerous figures, numerous pagodas and temples, flourishing plants, lively birds and beasts, and rippling lotus ponds. The layout is well-arranged with a proper balance of density and sparseness, and the brushstrokes are smooth and natural, elegant and freehand. In some parts, there are even boneless paintings that resemble quick sketches.

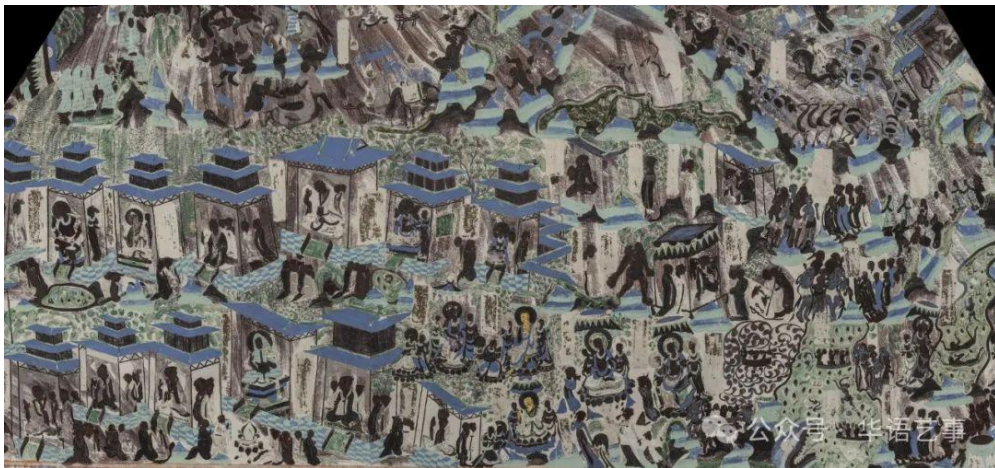


Figure 1-2-9 - Sui Dynasty: Illustration of the Lotus Sutra (Detail), East Slope of the Main Chamber, Cave 420, Mogao Grottoes

With the popularity of the new type of Jingbian paintings, the Sui Dynasty also became the final era of long scroll story paintings. After the Sui Dynasty completed the integration and upgrading of techniques and story themes, the Tang Dynasty was about to embark on more grand cave construction and more splendid mural painting.

II. The Establishment of the Early Tang Style and the Launch of Imperial

Construction Projects

Dunhuang flourished particularly during the Tang Dynasty. To date, the Mogao Caves preserve 492 caves containing murals and sculptures, of which nearly half—228—date from the Tang Dynasty. Several of the Mogao Caves' major statues were constructed during the Tang Dynasty: a 35.5-meter-tall Maitreya Buddha was created during the reign of Empress Wu Zetian, and a 26-meter-tall Great Buddha was built during the Kaiyuan era. and a 16-meter-long reclining Buddha in the Nirvana posture was created during the Dali period of the mid-Tang Dynasty.

In A.D. 617, Emperor Yang Guang—who had thrown a fledgling empire into utter chaos—was “promoted” to the position of Taishang Huang (Emperor Emeritus). However, Yang Guang was likely dissatisfied with his new title, as he had not sought this “promotion” of his own accord; rather, it was his cousin Li Yuan, who had stormed into Chang’an, who installed a new ruler and forced Yang Guang into this role. However, he did not hold this position for long, as he was assassinated the following year by his general, Yu Huanjie. Li Yuan, now seated in Chang’an, breathed a sigh of relief and ascended the throne with a clear conscience. Yet Li Yuan could not celebrate too soon, for the newly established Tang Dynasty faced the threat of external conflict: the Turks and their puppet regimes were staring at Li Yuan’s back with wolf-like eyes; and internally, there was the threat of disintegration and chaos, as Wang Shichong, Dou Jiande, and Li Mi all had their eyes fixed on Chang’an—the city at his feet—and the imperial throne beneath him. All these troubles had to be resolved one by one by the shrewd and calculating Li Yuan within the walls of Chang’an and Li Shimin, who was making his mark on the battlefields outside the city.

Consequently, the Dunhuang region during the early Tang period was unstable: threatened by the Turks to the north and facing the risk of attacks from the Tibetans and the Tuyuhun to the south. Therefore, during the late Wude er

a and the early Zhenguan era, the Tang Dynasty closed its northwestern fortresses and prohibited civilians from leaving the region. When a nation is in a position of weakness, isolation is a necessary protective measure. Openness and integration require sufficient strength to underpin them. Thus, in the first year of the Zhenguan era (627 AD), Xuanzang secretly slipped out of the Dunhuang region on his “journey west to retrieve Buddhist scriptures.” Because the Li Tang dynasty claimed an ancestral connection to Laozi (Li Er), the Tang imperial family generally revered Daoism. Although Li Shimin had treated Master Xuanzang with warmth, he himself stated: “ ‘As for Buddhism, it is not what I hold in high regard.’ ‘What I favor is solely the Way of Yao, Shun, Zhou, and Confucius.’ However, he did not actively suppress the development of Buddhism; thus, with the political and economic recovery, Buddhism flourished rapidly in the early Tang period. During Empress Wu Zetian’s reign, in order to elevate Buddhism and undermine the Daoism championed by the Li Tang dynasty—effectively using Buddhism as a tool in political struggles—the religion experienced a period of tremendous growth. According to some estimates, during the first 50 years of the early Tang dynasty, the government constructed as many as 4,000 monasteries. Consequently, the Mogao Caves reached their zenith during the Tang dynasty, a period that continued even after the An Lushan Rebellion. Although Dunhuang was successively occupied by the Tibetans and the Goryeo Army, the activities of carving caves and creating statues were not significantly affected.

III. The Splendor of the High Tang Dynasty: The Fengxian Temple and the Highest Achievements of Grotto Art

In the early Tang Dynasty, the Pure Land school of thought from the Central Plains began to influence Dunhuang. The Pure Land school holds that the place where we live is the “Impure Land” of the East, while the Buddha resides in the “Pure Land” of the West—a perfect, blissful realm. Attaining rebirth in the Western Pure Land of Ultimate Bliss is the ultimate aspiration of this school. Consequently, this Western Pure Land is described in terms that are utterly enchanting. In that Pure Land of Ultimate Bliss, where the Buddha and Bodhisattvas dwell, the paths are paved with gold and radiate brilliant light; railings of the Seven Treasures encircle jeweled pools; pavilions, terraces, and gazebos are scattered throughout, their splendor mutually enhancing one another in a scene of magnificent splendor. Moreover, the sky is often filled with a shower of flowers, celestial music resounds in unison, and birds sing in harmony—their melodies melodious and lingering—all proclaiming the supreme and subtle Dharma. The people there are highly wise and dignified in appearance; they experience only joy and no suffering, and all are able to follow the Buddha’s true path. This is a perfect world that defies even the wildest imagination—yet we see it depicted in the Dunhuang murals. In the sutra-illustration paintings of Dunhuang, the Western Pure Land—where the Buddha and the assembly of bodhisattvas dwell—is depicted on a grand scale. With pavilions, terraces, pavilions, and gazebos; jeweled trees; jeweled pools; orchestras; dancers; colorful clouds; and celestial beings, the scene is one of pure joy. Not a speck of dust can be found on the ground, and the air is filled only with bliss and serenity. The artists of Dunhuang used exquisitely delicate lines and brilliant colors to interpret this perfect world.



Figure 1-2-10 - Early Tang: Illustration of the Amitabha Sutra on the South Wall, Cave 220, Mogao Grottoes



Figure 1-2-11 - High Tang: Illustration of the Lotus Sutra (Detail), South Wall, Cave 023, Mogao Grottoes



Figure 1-2-12 - Mid-Tang: Illustration of the Sutra on Contemplating the Amitabha on the South Wall, Cave 025, Yulin Grottoes



Figure 1-2-13 - Mid-Tang: Music and Dance Scene from the Illustration of the Sutra on Contemplating the Amitabha, South Wall, Cave 112, Mogao Grottoes



Figure 1-2-14 - High Tang: Flying Apsaras Amid Colorful Clouds from the Illustration of the Sutra on Contemplating the Amitabha, North Wall, Cave 217, Mogao Grottoes



Figure 1-2-15 - High Tang: Flying Apsaras with Flowing Ribbons from the Illustration of the Sutra on Contemplating the Amitabha, North Wall, Cave 217, Mogao Grottoes

IV. Continuity and Diversification of Themes in the Middle and Late Tang Dynasties

As part of the sutra-transformation paintings, we have also discovered murals in the Dunhuang murals featuring a rich variety of themes and superb craftsmanship, including figures, landscapes, flowers and birds, animals, and decorative patterns. For example, the Dunhuang murals feature figure paintings in the style of Yan Liben from the early Tang Dynasty—depicting figures in wide-sleeved robes, resplendent with crowns and diadems, and exuding a dignified and majestic bearing. These were primarily used to portray emperors and officials coming to listen to the Dharma in the sutra-transformation paintings, though foreign envoys occasionally appeared as well. Among these, the “Emperors Listening to the Dharma” in Cave 220 of the Mogao Caves bears a striking resemblance to Yan Liben’s “Portraits of Emperors Through the Ages.” In the painting, the emperor stands with his arms outstretched, wearing a crown with hanging tassels, a blue robe, and a crimson skirt; his expression is solemn, and his bearing is dignified and commanding. Behind the emperor, court officials follow—each with a distinct appearance and vivid personality, none identical to the others—yet all display a respectful and cautious demeanor as they surround the imperious monarch. With superb artistry, the painter vividly captures the distinct social status and spiritual demeanor of each figure, making this a rare masterpiece of Tang Dynasty figure painting. In fact, this mural predates Yan Liben’s Portraits of Emperors Through the Ages by several years.



Figure 1-2-16 - Early Tang: Emperor Listening to the Dharma on the East Wall, Cave 220, Mogao Grottoes

The image pursued by the scholar-officials in the Central Plains also appeared in the Dunhuang murals during the Tang Dynasty. A representative example is "The Transformation of Weimo", which typically absorbed the imagery created by Gu Kaizhi of the Eastern Jin Dynasty. Gu Kaizhi once painted the image of Weimo Jie with "a frail and sickly appearance, and a posture almost oblivious to speech", meaning that he was bedridden and ill, with a thin figure but full of wisdom, like an eloquent scholar. Therefore, the "Weimo Transformation" in Dunhuang might have been passed down from the south through various channels. I saw the "Portrait of Wei Mojie" in Cave 103 of the Mogao Caves, which was excavated during the prosperous Tang Dynasty. Wei Mojie was sitting on a high-legged bed, leaning forward, holding a feather fan in his hand, full of vigor and vitality, looking extremely wise and speaking fluently. The painter vividly depicted the erudite and eloquent spirit of this great layman with vigorous and powerful lines.



Figure 1-2-17 - High Tang: Portrait of Vimalakirti on the East Wall, Cave 103, Mogao Grottoes (Replica)

In the Dunhuang murals of the Tang Dynasty, historical and secular themes would occasionally appear, usually in parts of large-scale religious transformation paintings or Buddhist historical site paintings. For instance, the "Map of Zhang Qian's Mission to the Western Regions" is used to describe the reasons for the introduction of Buddhism to China. Of course, this is a completely wrong description and a far-fetched interpretation by Buddhists. The "Picture of a Merchant's Encounter with Theft" is used to showcase the boundless power of Bodhisattva Guanyin. As long as you pray sincerely, the Bodhisattva will protect you. The painting style is realistic, the characters are depicted with great detail, and the plot is complete. The green and blue landscape as the background of the picture is already quite common in the Tang Dynasty murals of the Mogao Caves. Another representative one is the "Huacheng Yuepin" in Cave 217 of the Mogao Caves. The "Plowing and Harvesting Picture" is used to depict the future world of Maitreya Buddha, where there is "one kind of seven harvests", with abundant food and clothing. The images of people and animals are vivid and lifelike, full of a strong sense of life.



Figure 1-2-18 - Early Tang: Buddhist Historical Painting: Zhang Qian Mission to the Western Regions on the North Wall, Cave 323, Mogao Grottoes



Figure 1-2-19 - High Tang: Merchant Robbery Scene from the Illustration of the Guanyin Sutra on the South Wall, Cave 045, Mogao Grottoes



Figure 1-2-20 - High Tang: Parable of the City of Illusion from the Illustration of the Lotus Sutra on the South Wall, Cave 217, Mogao Grottoes



Figure 1-2-21 - Mid-Tang: Harvest Scene from the Illustration of the Maitreya Sutra on the North Wall, Cave 025, Yulin Grottoes

Overall, in the Dunhuang murals of the Tang Dynasty, the artistic nourishment brought by the Western Regions painting School to Dunhuang has been fully absorbed and has completed a localized upgrade. Apart from the fact that the characters' clothing and accessories still retain some foreign forms, the expression of human beauty such as the characters' images and postures clearly aligns with the artistic achievements made in the Central Plains. A variety of styles coexist and converge, with some exquisitely carved and resplendent. Some brushstrokes are hasty and the coloring is simple.

Dunhuang has preserved many artistic styles of the Tang Dynasty. In a situation where works from the Central Plains have been almost completely lost, Dunhuang has become a reliable specimen for us to study the paintings of the Sui and Tang Dynasties.

Section 3: The Protection and Research Process from the Song, Yuan, Ming, and Qing Dynasties to Modern Times

The Longmen Grottoes are one of the three major Buddhist grotto art treasure houses in China. They were listed as a key national cultural relic protection unit in the first batch in 1961 and were inscribed on the World Heritage List in 2000. Under the attention and support of governments at all levels and all sectors of society, the Longmen Grottoes, with a sense of responsibility towards history and the future, have strictly followed the working policy of "protection as the priority, rescue first, rational utilization and strengthened management", taken cultural heritage protection as the core, strengthened infrastructure construction, focused on protection projects, enhanced scientific research and innovation, cultivated scientific research capabilities, and improved the level of cultural relic protection and scientific research. Cultural heritage has been effectively protected and rationally utilized, and remarkable achievements have been made in economic and social benefits.

Since its excavation, the carvers of the Longmen Grottoes have not only been adept at taking advantage of the natural terrain to shield the stone carvings from wind and rain, but also have implemented numerous protective measures. For instance, the large-scale V-shaped drainage channel artificially excavated on the top of Fengxian Temple during the Tang Dynasty still serves the purpose of draining water and preventing rockfalls. The construction of eaves and the installation of rain-shielding stone slabs above the niches to protect the carvings and relics are also widespread. Since the establishment of the management institution for the Longmen Grottoes, geological and preservation condition surveys were conducted in the 1950s and 1960s, initially identifying three major diseases of the grottoes: rockfall, weathering, and water seepage. In the 1970s, starting with Fengxian Temple, rock and soil protection projects mainly involv

ing bonding and reinforcement were carried out using anchor rods and chemical grouting techniques, with a focus on the emergency protection of the endangered and collapsing niches. The five-year comprehensive protection project from 1987 to 1992 was a planned project for both the east and west mountains, which included the construction of protective walls and sightseeing walkways, as well as the reinforcement of most of the rock caves, effectively addressing the stability issue of the Longmen Grottoes and improving the water seepage problem for a certain period. In the mid-to-late 1990s, emphasis was placed on fundamental research, including material research and grotto meteorological monitoring. The "UNESCO Longmen Grottoes Conservation and Restoration Project" initiated in 2000 brought a complete set of protection plans to the Longmen Grottoes. The practical work carried out, such as topographic mapping, geological surveys, and advanced environmental monitoring, significantly enhanced the protection efforts of the Longmen Grottoes. In the past decade or so, the Longmen Grottoes have carried out all major protection work, including the restoration of the Shuangyaodong Cave, comprehensive management of water seepage, the construction of a world heritage monitoring system, the revision of protection management plans and regulations, and more.

I. Sporadic Construction and Natural Erosion During the Song, Yuan, Ming, and Qing Dynasties

After the Northern Wei Dynasty, large-scale imperial efforts to carve caves and create statues at the Longmen Grottoes essentially came to an end. From the Eastern Wei and Western Wei dynasties through the Northern Qi dynasty, although cave construction did not cease entirely, it had shifted from the large-scale state-sponsored projects of the Northern Wei period to the carving of small niches and sporadic repairs. Most of the sculptures from the Eastern and Western Wei periods were carved as small niches added to the walls of Northern Wei caves; the shapes of these niches remained largely unchanged, while their

ornamentation tended to become simpler. During the Northern Qi period, the five Buddha statues in the Yaofang Cave already exhibited the typical characteristics of Northern Qi sculpture. Overall, from the late Northern Dynasties through the Sui Dynasty, the Longmen Grottoes underwent a period of transition and continuity, with no new large caves carved that could rival those of the Northern Wei.

The Tang Dynasty was undoubtedly the golden age of the Longmen Grottoes. Among the surviving caves and niches at the Longmen Grottoes, those from the Tang Dynasty account for more than 60 percent, and the caves carved during Empress Wu Zetian's reign constitute the majority of Tang-era grottoes. The completion of the Luosena Buddha niche in Fengxian Temple propelled the Buddhist art of the Longmen Grottoes to its pinnacle. However, after the High Tang period, as the political center shifted eastward, the scale of construction at the Longmen Grottoes gradually diminished, and by the end of the Tang Dynasty, large-scale cave carving had essentially ceased.

During the Song, Yuan, Ming, and Qing dynasties, the Longmen Grottoes entered a long period of dormancy. Yet this did not mean they were completely neglected. During the Song Dynasty, a small number of new caves and niches were still added to the Longmen Grottoes, and the cliff face bears the “Cross-Scroll Stele” by Chen Tuan and the “Longmen Inscription Stele” by Emperor Zhenzong of Song. According to records, the Song Dynasty also erected a nine-bay wooden eave-style structure to protect the Luosena statue, commonly known as the “Nine-Bay Hall”; remnants of its crossbeams can still be seen on the stone wall today. This indicates that the Song Dynasty had already recognized the value of the Longmen Grottoes to some extent and had taken limited protective measures.

During the Ming Dynasty, five square and semicircular inscriptions carved in incised lines appeared on the surface of the outer lintel of the Huijian Cave. All were erected on an auspicious day in the third month of the 31st year of the Wanli reign (1593) and recorded donations for road repairs. This reflects

that the Ming Dynasty's focus on the Longmen Grottoes had shifted from religious sculptures to the maintenance of transportation infrastructure. In the 15th year of the Qianlong reign of the Qing Dynasty (1750), Emperor Qianlong visited Longmen and left behind the Imperial Stele Pavilion at Xiangshan Temple. Interestingly, the Qing Dynasty also left behind a unique anecdote related to the Longmen Grottoes. In 1900, during the Boxer Rebellion, Empress Dowager Cixi fled westward; the following year, on her return to Beijing, she passed through Longmen. After visiting the Guyang Cave, she ordered that the main Buddha statue of Shakyamuni inside be altered to depict Laozi, and the cave was consequently renamed "Laozi Cave." On the surface, Empress Dowager Cixi's action stemmed from her Taoist beliefs; in reality, however, it reflected the grim reality of the late Qing Dynasty—a time of national decline—when cultural relics and historic sites had become political symbols, subject to arbitrary alteration.

However, compared to the limited human intervention across historical dynasties, the damage caused by natural erosion to the Longmen Grottoes has been far more profound and persistent. Located in the Yi River Gorge, the Longmen Grottoes experience a warm-temperate continental monsoon climate, characterized by hot, rainy summers and cold, dry winters. The drastic fluctuations in temperature and humidity are extremely detrimental to the preservation of exposed stone cultural relics. Over the centuries, structural features such as unloading joints, thin-layer delamination planes, and weathering microcracks in the cliff walls of the grottoes have continued to develop. Coupled with the long-term effects of karst processes, geological deterioration has steadily worsened, leading to localized spalling or complete detachment of the surface rock mass and compromising the overall stability of the site. Water seepage is another major problem. Rainwater seeps into the caves through fissures, not only causing the rock to crack but also fostering the growth of microorganisms and moss, which erode the painted surfaces and carved details of the statues. Although the rain-shielding stone slabs, carved cave eaves, and drainage channels left by artisans

a thousand years ago still serve a certain purpose today, these rudimentary ancient conservation measures are ultimately unable to withstand the erosion of a millennium of wind and frost.

Throughout the long periods of the Song, Yuan, Ming, and Qing dynasties, the Longmen Grottoes remained in this state: large-scale carving of new grottoes and statues had long since ceased; sporadic inscriptions, repairs, and renovations occurred from time to time; but what was more commonplace was the scouring of wind and rain, the spalling of the rock, and the gradual blurring of the statues' features. This "silence" was both the inevitable result of waning religious fervor and the inescapable fate of open-air stone cultural relics in the face of natural forces.

II. The History of Academic Surveys and Research in the 20th Century

(I) Early Surveys (1900–1949)

The 20th century marked the transition of the Longmen Grottoes from "obscurity" to "discovery." Academic research on the Longmen Grottoes in the modern sense began almost simultaneously with field surveys conducted by Western scholars.

In 1899, the French scholar Rubens conducted a survey of Yique; the publication of his findings marked the entry of the Longmen Grottoes into the modern academic spotlight. Subsequently, scholars from Western Europe and Japan took the lead in conducting relatively systematic field surveys and compiling documentation on the Longmen Grottoes. The most representative figures included: Sha Wan from France; Xi Longren from Sweden; and Sadao Sekino, Daijō Tokiwa, Seiichi Mizuno, and Toshio Nagahiro from Japan.

Sha Wan's expedition is particularly noteworthy. In 1907, Sha Wan stayed at Longmen for more than ten consecutive days, conducting detailed surveys and photography, and making rubbings or transcriptions of a large number of sculptures and inscriptions. This marked the first time the Longmen Grottoes were

re documented by a Western sinologist using systematic archaeological methods.

After returning to France, Chavannes published *Archaeological Atlas of Northern China* in 1909 and *Buddhist Sculpture* in 1915. These works featured a vast collection of rubbing prints and photographs of the Longmen stone carvings' inscriptions and dedications, accompanied by interpretations and critical analyses.

This brought the Longmen Grottoes into the research spotlight of early 20th-century European Sinology and left behind invaluable firsthand visual materials for future generations to appreciate the artistic heritage of Longmen's sculptures.

A Study of the Longmen Grottoes, co-authored by Japanese scholars Seiichi Mizuno and Toshio Nagahiro, was an important early work offering a systematic study of the Longmen Grottoes and exerted a wide-ranging influence in the field of Oriental studies.

However, for a long time, academic efforts to trace the history of modern research on the Longmen Grottoes have largely focused on overseas scholars from Japan, France, and the United States, while the conservation and research efforts undertaken from the perspective of Chinese scholars during the Republic of China period have long remained “silenced” and obscured. In fact, during the first half of the 20th century, a group of Chinese scholars with a modern perspective on historiography and art history had already recognized the unique value of the Longmen Grottoes.

The efforts of Chinese scholars were first evident in the collection of materials. In 1935, Guan Baiyi, formerly of the Henan Museum, published *Illustrated Catalog of the Yique Stone Carvings*, which primarily featured stone sculptures and inscriptions from the Longmen Grottoes. The work compiled a vast collection of valuable images and rubbings of the grottoes taken before they suffered widespread social damage, and presented readers with a chronological sequence of the inscriptions on the sculptures.

Of particular note is Teng Gu, China's first art historian to earn a doctorate in Germany. In December 1934 and November 1936, serving as a standing committee member of the Central Committee for the Preservation of Antiquities,

Teng Gu conducted two field surveys of the Longmen Grottoes, subsequently writing the diary-style travelogue *Records of an Inspection of Ancient Sites in Henan and Shaanxi* and the official report *Report on the Inspection of the Preservation Status of Antiquities in Bian and Luo*. During the 1934 survey, Teng Gu examined and documented a total of twenty-two caves on the West Hill and the Kanjing Temple on the East Hill. He numbered the caves sequentially and provided detailed descriptions of the condition of each cave's dimensions, exterior walls, entrances, interior walls, left and right walls, and ceilings. Based on his firsthand observations and the topography of the cliffs, he conducted a preliminary chronological classification of the cave niches on a cave-by-cave basis. His description of the Great Buddha of Lushan—"The principal image is magnificent and solemn, with wavy hair; the body is imposing, and the robe folds are shallowly carved yet vividly swirling, exuding extraordinary vigor"—no longer focused solely on the calligraphic value of the inscriptions, as was typical in traditional literati travelogues, but instead examined the stylistic characteristics and aesthetic sensibilities of the era from the perspective of sculpture as an artistic language in its own right. Teng Gu's assessment—"It embodies the divine nature of 'Universal Illumination' while fearlessly expressing the great characteristics of the early Tang era"—marked the beginning of Chinese scholars examining the Longmen Grottoes through the lens of art history.

In 1936, Liang Sicheng, Lin Huiyin, Liu Dunzhen, and others from the Chinese Society of Architectural History also conducted a survey of the Longmen Grottoes. Liu Dunzhen documented architectural features, Lin Huiyin recorded the ornamentation of the Buddhist statues, Liang Sicheng and Chen Mingda were responsible for photography, and Zhao Zhengzhi transcribed the dates of the inscriptions; sketching and detailed measurements of specific sections were carried out collectively by the entire team. This professional survey method, characterized by division of labor and collaboration, demonstrated the significant progress Chinese scholars had made in the study of ancient architecture and cave temples.

In addition, a heartbreaking incident of cultural relic theft and damage occurred during this period. In the 1930s, the relief sculpture Emperor and Empress Paying Homage to the Buddha in the Central Cave of Binyang was chiseled into fragments and stolen for sale overseas; it is now housed in separate collections at the Metropolitan Museum of Art and the Nelson-Atkins Museum of Art in the United States. This incident not only left a permanent scar on the Longmen Grottoes but also became an important reminder for China's subsequent efforts in cultural heritage protection and repatriation.

(II) Preservation and Research After the Founding of the People's Republic of China (1949–2000)

After 1949, the preservation and research of the Longmen Grottoes entered a new phase characterized by organization and planning.

In 1953, the People's Government established a specialized cultural heritage protection agency at the Longmen Grottoes, marking a shift from individual, sporadic efforts to a systematic, state-level arrangement for their preservation. In 1961, the Longmen Grottoes were designated as part of the first batch of National Key Cultural Heritage Sites, formally confirming their status as a national cultural heritage site.

In the 1960s, the Department of History at Peking University and the Department of Art History at the Central Academy of Fine Arts, in collaboration with the Longmen Cultural Relics Preservation Institute, conducted archaeological surveys and mapping of several major caves at the Longmen Grottoes and piloted a zoned numbering system for the niches on both mountains. This marked the first time that Chinese institutions of higher education had undertaken such data-collection work at the Longmen Grottoes, laying the foundation for subsequent scientific research.

In the 1970s, the Longmen Cultural Relics Preservation Institute conducted a comprehensive survey and rubbing of the inscriptions on the East and West Hills. Given the conditions at the time, a total of 2,780 inscriptions were collected and rubbed, including 702 with absolute dates, which provided a chronol

ological benchmark for the stylistic characteristics of the corresponding sculptures.

This marked a milestone in the organization of data on the Longmen Grottoes' stele inscriptions. At the same time, the Luoyang City Architectural Design Department surveyed and produced a 1:200 scale elevation drawing of the West Hill of the Longmen Grottoes.

In the 1980s, efforts to build a comprehensive database for the Longmen Grottoes continued to advance. In collaboration with the Central Academy of Fine Arts and China Cultural Relics Publishing House, cultural heritage authorities numbered the caves and niches at the Longmen Grottoes, assigning numbers to more than 2,000 of them. The Longmen Cultural Relics Preservation Institute commissioned the People's Liberation Army Surveying and Mapping Academy to conduct close-range photogrammetric surveys of the Central Cave at Binyang and the niche housing the Great Luósenā Buddha at Fengxian Temple, producing elevation drawings at scales of 1:10 and 1:25, respectively. In 1986, 1:2,000-scale color aerial photographs were purchased from the national surveying and mapping authorities. During this period, a comprehensive survey also confirmed that there are 3,126 extant stele inscriptions of various types at the Longmen Grottoes, providing valuable textual information for future research.

In terms of specialized research, the achievements of this period were equally fruitful. The *Acta Archaeologica* successively published important archaeological reports such as Ding Mingyi's "Chronology and Typology of Tang Dynasty Sculptures in the Longmen Grottoes" and Wen Yucheng's "The Twin Grottoes of Longmen in Luoyang," which established a chronological sequence for the

Longmen Grottoes using typological and stratigraphic methods. Monographs such as Gong Dazhong's *The Art of the Longmen Grottoes* presented systematic perspectives on the artistic origins and development of the Longmen Grottoes.

Wen Yucheng's "A Preliminary Exploration of Historical Materials on Sino-Foreign Cultural Exchange Found at Longmen," published in *Northwest History and*

Geography, unearthed historical information regarding cultural exchange between China and foreign countries through the grotto's stele inscriptions and sculptu

res. Zhang Naizhu's series of papers, published in journals such as *Zhongzhou Academic Journal*, examined the history of Chinese Buddhism through the study of stele inscriptions and cave sculptures, covering topics such as the dissemination of Buddhist scriptures, the evolution of Buddhist sects, the structure of local communities, and the relationship between government and religion.

In terms of cultural heritage preservation, the Longmen Grottoes underwent their first large-scale restoration project. In 1971, restoration work began at the Longmen Grottoes to address the significant spalling and severe cracking of the Great Buddha of Lushan. Areas requiring reinforcement were strengthened using steel anchor bolts and rivets, while cracks were filled with resin slurry. This project, which lasted fifteen years, marked a significant milestone in the modern conservation history of the Longmen Grottoes.

(III) In-Depth Research in the Era of World Cultural Heritage (2000–Present)

On November 30, 2000, the UNESCO World Heritage Committee announced the inscription of the Longmen Grottoes on the World Heritage List. This marked the most authoritative recognition by the international community of the historical and cultural value of the Longmen Grottoes. This event was not only an honor but also signified that the protection, research, and management of the Longmen Grottoes must meet internationally recognized standards.

The World Heritage nomination process itself served as a tremendous driving force. In 1999, the Luoyang Municipal Government invested 150 million yuan to improve the environment surrounding the Longmen Grottoes, marking the beginning of the nomination process. These environmental improvements and upgrades to the management system created better conditions for subsequent conservation and research efforts.

In the 21st century, archaeological work at the Longmen Grottoes has continued to deepen. The Longmen Grottoes Research Institute, in collaboration with institutions such as the School of Archaeology and Museology at Peking University, conducted systematic archaeological excavations in areas including the s

ite in front of the Leigu Tai Caves (2008) and the Xiangshan Temple ruins (2016–2019), unearthing a large number of important cultural relics. Significant progress was also made in the compilation and publication of archaeological reports, with the release of works such as Archaeological Report on the Longmen Grottoes: Leigu Tai Area on the East Hill and Archaeological Report on the Longmen Grottoes: East Mountain Wanfogou Area have been published in succession.

From 2002 to 2021, the Longmen Grottoes also underwent a second large-scale conservation project for the Lushan Great Buddha. Compared to fifty years ago, the conservation methods used this time represented a qualitative leap forward. Monitoring methods, surveying techniques, grouting materials, and construction processes were comprehensively upgraded, shifting conservation efforts from “treating acute problems” to “preventing potential issues.” More importantly, during this project, traces of gold and silver were detected on the face of the Great Lushan Buddha for the first time, and residues of polychrome pigments were discovered on the surface of the statue’s body. These new discoveries have revolutionized our understanding of the original appearance of Tang Dynasty sculptures.

Digital technology has emerged as a new highlight in the conservation and research of the Longmen Grottoes during this period. Since 2005, the Longmen Grottoes Research Institute has established a “digital archive,” using technologies such as laser scanning and high-definition photography to collect information on cultural relics and protect these precious historical sites through digital means. Three-dimensional digital scanning allows for restoration with an error margin of less than 0.03 millimeters without physical contact with the artifacts, and the color reproduction is virtually indistinguishable from the originals. The Longmen Grottoes have also used digital technology to perform a “digital repositioning” of the *Portrait of Empress Wenzhao Paying Homage to the Buddha*, allowing visitors to intuitively experience its original spirit through augmented reality. For the returned Buddha head, high-precision scanning and digital

stitching have achieved a “reunification of body and head” in virtual space.

In terms of comprehensive research, the concept of “Longmen Studies” has gradually taken shape. The Longmen Grottoes Research Institute adheres to a systematic conservation philosophy encompassing “value interpretation—monitoring and early warning—environmental control—disaster management—conservation and restoration.” In 2021, Wen Yucheng’s Volume on the Longmen Grottoes was published by Science Press, systematically compiling the findings of archaeological surveys and Buddhist art research at the Longmen Grottoes. Zhengzhou University’s series The Origins and Development of Sculptural Art at the Longmen Grottoes has also been published in succession. The scope of research has expanded from traditional disciplines such as archaeology and art history to include the history of Sino-foreign relations, ethnic history, Buddhist history, and digital conservation, among others. In recent years, the Longmen Grottoes Research Institute has also undertaken the survey of deterioration at grotto temples in Henan Province, conducting surveys at more than 50 grotto temples in northern and western Henan, and promoting the coordinated development of the conservation and utilization of small and medium-sized grotto temples in the Central Plains region.

From the scattered records of epigraphy and inscriptions during the Song and Jin dynasties, to the field surveys conducted by modern Western scholars, to the organized conservation and research efforts of the People’s Republic of China, and finally to the digitalization and comprehensive development of the World Heritage era, the academic history of the Longmen Grottoes perfectly encapsulates the evolution of China’s cultural heritage endeavors over the past century. This journey continues, and the value of the Longmen Grottoes is being revitalized through this ongoing process of discovery and interpretation.

III. The construction of a monitoring and early warning system for world cultural heritage has taken initial shape.

During the "12th Five-Year Plan" period, the state attached great importance to the monitoring work of World Heritage Sites, elevating the construction of the monitoring system for heritage sites to an unprecedented level as a fundamental and important task in the protection and management of heritage sites.

As a pilot unit for the monitoring of World Heritage Sites by the National Cultural Heritage Administration, Longmen Grottoes, based on years of monitoring of the grottoes, designed and completed the "Dynamic Information and Monitoring and Early Warning System Plan for Longmen Grottoes", which was submitted to the National Cultural Heritage Administration and approved. In June 2013, the construction of the monitoring and early warning system for Longmen Grottoes began, continuously and automatically monitoring the regional environment, micro-environment of the caves, diseases of the cultural relics themselves, and air quality, and transmitting the data wirelessly to the monitoring platform. This system not only realizes the monitoring of diseases of the cultural relics themselves and environmental factors of the grottoes, but also designs research-oriented monitoring contents such as weathering and seepage based on the characteristics and needs of Longmen Grottoes. For example, advanced methods such as infrared imaging technology are used to monitor seepage in the caves, breaking through the limitations of traditional methods like photography. It can not only monitor and record continuously and uninterruptedly, but also approximately simulate the seepage volume, meeting the requirements of quantitative monitoring. Currently, the first and second phases of the construction have been completed, and the system is operating well, basically establishing a framework for monitoring the cultural relics and environment of the grottoes. In the future, it is planned to gradually carry out all-round monitoring of the river water, spring water, tourist conditions, and protected areas in the Longmen Grottoes region, and ultimately achieve connection with the provincial and national

monitoring platforms.

In terms of security technology prevention, after completing the first and second phases of the security technology prevention system, Longmen Grottoes focused on implementing and completing the third phase of the security technology prevention system in 2013. It mainly consists of the large perimeter anti-crossing alarm system for the west and east mountains and the anti-intrusion alarm system for key caves. After the completion of the third phase, the security prevention problem of the core scenic area of Longmen Grottoes was fundamentally solved, and the functions of the security system were greatly enhanced, reaching the security prevention standards of a first-level risk unit. It has achieved a comprehensive defense system combining human defense, technical defense, and physical defense.



Figure 1-3-1 - Infrared Cameras and Water Seepage Monitoring Instruments in the Cave

IV. Cave Restoration and Water Seepage Control

In recent years, the urgency of treating and protecting cave seepage and leakage has become increasingly prominent, and it has become a core task that Longmen Grottoes focuses on carrying out. Cave seepage, as one of the three major diseases of Longmen Grottoes, is widespread in all sizes of grottoes and

causes serious harm. Since 2007 up to now, geological exploration for five out of the seven areas in the east and west mountains of Longmen has been completed, construction for three areas has been carried out, and the scheme design for two areas is currently underway. Since the 12th Five-Year Plan, the "Leigutai Area Cave Leakage Control Project", the "Wanfo Cave Area Comprehensive Control Project" and the "Qianxi Temple Leakage Control Project" have been carried out successively, achieving the expected goal of solving cave leakage problems. Valuable results have been made in the research of leakage control materials, construction techniques and processes. Qianxi Temple is one of the caves in Longmen Grottoes that suffer from severe water seepage. To effectively control the seepage disease, a series of preliminary studies were carried out, including geological exploration, disease investigation and research, monitoring of the internal and external environment of the cave, disease monitoring, and grouting material tests. Combined with daily observations, simulated precipitation tests, and construction investigation to explore the seepage path, the principle of conducting research while carrying out construction was adhered to in the project. The design plan was promptly revised and supplemented. For the first time, anti-seepage curtain grouting was implemented in the Longmen Grottoes protection project, effectively cutting off the seepage path of atmospheric precipitation. The grouting material selected was a newly developed inorganic material, which was closer to the performance of the grotto rock mass and had the characteristics of aging resistance, acid and alkali resistance, low shrinkage rate, good fluidity, economic and environmental protection. On the basis of retaining the original hydrogeological features and not damaging the original seepage system, the implementation of engineering anti-seepage curtain grouting has achieved good water control results.

Although the treatment of seepage and leakage in the grottoes is difficult, complex and highly recurrent, as the main disease threatening the safety of the grottoes, it must be basically treated. In the next three to five years, the treatment of seepage and leakage in all areas of the east and west mountains of t

he Longmen Grottoes will be basically completed, ensuring that the seepage of the main grottoes is greatly improved and in a basically stable state.

Grotto cultural relics are exposed to natural conditions and are often subject to various forms of pollution and erosion on their surfaces due to natural or human factors. Some of these may only affect the appearance of the relics, but in considerable cases, they can cause damage to the relics. Therefore, when technical conditions permit, the restoration of grotto cultural relics is not only a requirement for public display of artworks, but also a need for the protection of grotto cultural relics. The restoration project of the Double Kilns was the first overall restoration project of the Longmen Grottoes. Through the restoration project, surface contaminants such as smoke and slurry from the double kilns were removed, restoring the original appearance of the grottoes. The weathering carvings have undergone bonding and reinforcement treatment, preventing the further development of warping and peeling lesions. The cracks should be reprocessed and replaced with silicone-like materials that can be repeatedly processed and have lower strength. Moreover, during the construction process, it was discovered that there were many remnants of gilding and painted decorations on different walls of the cave, which proves that the cave had very elaborate decorative treatments in history. Another example of restoration is the removal of the slurry from the small niches on the northern wall of the Lotus Cave. Not only were fresh red pigment decorations hidden beneath the slurry discovered, but it also provided strong evidence for researchers' study of the inverted bowl pagoda.

Daily maintenance is the fundamental work of heritage protection. Timely inspection, discovery of minor lesions in grottoes, and prompt adoption of necessary measures to handle and maintain them in the simplest and most practical way are indispensable tasks in the daily protection of grottoes. For instance, the repositioning and bonding of small detached rock blocks discovered during routine inspections, the repair of small collapsed grottoes and niches, and the supplementation of waterproofing facilities have eliminated the safety hazards ex

isting in the grottoes and are indispensable supplements for large-scale protection projects.

V.Cooperation and exchanges have become increasingly extensive, and research and innovation achievements have emerged

In order to solve various technical problems in the protection of grottoes, Longmen Grottoes, relying on its rich and unique resource advantages as a World cultural heritage, has successively carried out cooperative research in many aspects such as cultural relic protection and archaeology with institutions like the Chinese Academy of Social Sciences, Peking University, the Chinese Academy of Cultural Heritage, and China University of Geosciences. In collaboration with the Institute of Archaeology of the Chinese Academy of Social Sciences, the Longmen Base for Cultural Heritage Protection was established, and in partnership with the Chinese Academy of Cultural Heritage, the Stone Cultural Relics Protection Research Base was set up, among other research and protection platforms, to expand the breadth and depth of exchanges. From the perspective of recent technical protection practices, protective materials have become a prominent constraint on the protection work of the Longmen Grottoes. Therefore, research and breakthroughs have been actively carried out in areas such as grouting, anti-weathering, and restoration materials, exploring innovative protection technologies. The Longmen Grottoes, in collaboration with China University of Geosciences, have developed a new type of inorganic grouting and leak-stopping material, which has made substantial progress and passed the expert review. Traditional grouting materials such as inorganic cement and organic epoxy resin may cause problems like alkali efflorescence and aging during use. Based on the summary of historical experience in seepage control, the use of inorganic materials such as kaolin, ultrafine cement, and water glass as composite excitation materials has effectively overcome the shortcomings of traditional materials. And it has achieved good results in the recent anti-seepage construction project.

t of Longmen Grottoes. The national-level cooperative research projects carried out concurrently include: the National Natural Science Foundation of China projects "Research on the Formation Mechanism of Condensate Water on the Surface of Limestone" and "Experimental Study on the Damage Mechanism of Mesoscopic Structure and Corrosion Resistance of Limestone in Longmen Grottoes", the National Cultural Heritage Administration projects "Research on Quantitative Analysis and Evaluation System of Carbonate Stone Cultural Relics" and "Investigation and Research on the Painted Pigments of Longmen Grottoes", etc.

VI. The application prospects of three-dimensional digital technology in engineering are broad.

Three-dimensional digital technology is a brand-new and advanced information science and technology. It stores and preserves the information of Longmen Grottoes in three-dimensional data, which is of great significance in aspects such as archival construction, archaeological mapping, cultural relic protection, and publicity and display. It can better solve the contradiction between cultural relic protection and display, and promote the development of culture, tourism, education and entertainment industries. The Longmen Grottoes Research Institute, in collaboration with the School of Information Engineering of Peking University, conducted a 3D digital scanning experiment on the grottoes in the Leigutai area. The lighting map obtained based on 3D digital technology has addressed the drawbacks of inaccurate and slow mapping caused by perspective deformation, visual errors, and measurement errors in manual mapping. The resulting mapping is accurate and objective. Meanwhile, three-dimensional digital models, as digital replicas of real cultural relics, have established complete, accurate and permanent digital archives for cultural relic protection and research. The scanning work of all the caves in the Longmen Grottoes has been basically completed. The implementation of this project provides a good platform for better protection, research and display, and establishes the three-dimensional digital t

technology standards of the grottoes through the implementation of this project.

VII. The basic research on grottoes has been strengthened, and academic achievements have been abundant

Compiling an archaeological report on a cave is an important means to comprehensively record the current state of the cave and a fundamental task in grotto research. Especially under the current conditions where protection technologies are still unable to effectively prevent diseases such as weathering and leakage in grottoes, it is even more urgent to comprehensively and objectively record the current state of the cave to provide research materials for researchers now and in the future. Under the active advocacy and personal participation of the renowned Chinese archaeologist Mr. Su Bai, the Longmen Grottoes have collaborated with authoritative institutions such as Peking University and the Institute of Religious Studies of the Chinese Academy of Social Sciences. Starting from the cave archaeology in the Dongshan Leigutai area of the Longmen Grottoes, the compilation of the "Longmen Grottoes Cave Archaeology Report" has been officially launched. With the guidance of experts, this not only ensures the production of high-quality academic achievements but also cultivates talents.

The working approach that ultimately enables young people to independently carry out this work. This is a major measure to promote the research on the Longmen Grottoes to a higher level and a new stage. The final draft of the archaeological report on the caves in the Leigutai area has been completed and delivered for publication.

To fully complete the compilation of the archaeological report on Leigutai, under the guidance of experts from the School of Archaeology and Museology of Peking University and the Institute of Religious Studies of the Chinese Academy of Social Sciences, an archaeological excavation was carried out in the three caves area of Leigutai. Important architectural sites from the Tang Dynasty were discovered. With the approval of the National Cultural Heritage Admini

nistration, the Leigutai Architectural Site Exhibition Center was built to provide protective display of the site.

While strengthening basic research, we have also paid attention to the collection and organization of academic achievements. In recent years, He has published "Selected Carvings of Longmen Grottoes - Pagodas", "50 Years of Longmen Grottoes", "Buddhist Art of Longmen", "Selected Papers of Longmen Grottoes Research Institute", "Proceedings of the 2004 International Academic Symposium on Longmen Grottoes", "Four Chapters of Longmen", "Longmen Grottoes and Buddhist Culture of Luoyang", "The Great Encyclopedia of Central Plains Culture - Longmen Grottoes", "Small Grottoes around Luoyang", and "Research on Grotto Temples" Works such as "Research" (Volumes 1-4).

Although the protection of the Longmen Grottoes has achieved encouraging results, it is deeply felt that compared with advanced cultural relics protection units, there is huge potential and space for development. It is believed that with the care and support of governments at all levels and all sectors of society, and in combination with the short-term plans and long-term goals of the protection and research of the Longmen Grottoes, it will be steadily advanced. The cause of cultural relic protection and research in the Longmen Grottoes is sure to achieve sustainable development and greater success.

Chapter 2: Archaeological Discoveries and Research of Longmen Grottoes

As one of the four major grottoes in China, the Longmen Grottoes possesses extremely high historical, artistic and scientific value. In recent years, with the continuous advancement of archaeological techniques, remarkable achievements have been made in the research of the Longmen Grottoes. This chapter aims to systematically sort out the application of traditional archaeological methods and digital technologies in the research of Longmen Grottoes, and through the analysis of typical cases, explore the role of these methods in revealing the historical and artistic value of the grottoes. The research adopted a method combining literature analysis and case study to comprehensively examine the current situation and development trend of the archaeological work at the Longmen Grottoes, providing new ideas and references for future archaeological research on grotto temples.

Section 1 Traditional Archaeological Methods and Techniques Application

I. Field investigation: The cornerstone of grotto archaeology

Field investigation is the primary step in the archaeological research of the Longmen Grottoes. Archaeologists, through on-site investigations, systematically record the geographical distribution, cave forms, layout of statues and the current preservation status of the grotto clusters. In the first comprehensive survey of the Longmen Grottoes in the 1950s, researchers used traditional methods such as footwork, compass positioning and tape measure measurement to number, register and preliminarily date over 2,000 grottoes and niches on the east and west mountains, establishing the earliest archival system of the Longmen Grottoes. Since the 1980s, the Longmen Grottoes have conducted a relatively comprehensive field investigation and literature review of the surrounding ancient te

multiple sites. Among them, the archaeological excavation of the Fengxian Temple site was carried out in cooperation with Italy, covering an area of over 2,000 square meters, and significant achievements were made. In 2008, the archaeological excavation of the site in front of the three caves of Leigutai on Dongshan Mountain in Longmen was carried out, and the "Dongshan Leigutai Architectural Site Protection and Exhibition Center" was built and opened to the public. Since 2016, we have formed the Xiangshan Temple Archaeological Team with the School of Archaeology and Museology of Peking University to excavate the Tang Dynasty Longmen Xiangshan Temple site. Up to now, the 3D digital scanning (data collection and modeling) of the archaeological excavation remains at the ancient Xiangshan Temple site, as well as the planar mapping and mapping of the remains with total stations (+RTK) have been successively carried out and completed. In recent years, the combination of traditional field investigations with modern surveying and mapping tools (such as total stations, RTK, etc.) has further enhanced the accuracy of data. Through the analysis of the correlation between the location and orientation of the cave excavation and the mountain structure, researchers found that the site selection of the Longmen Grottoes not only followed Buddhist rituals but also fully considered geological stability and lighting requirements.

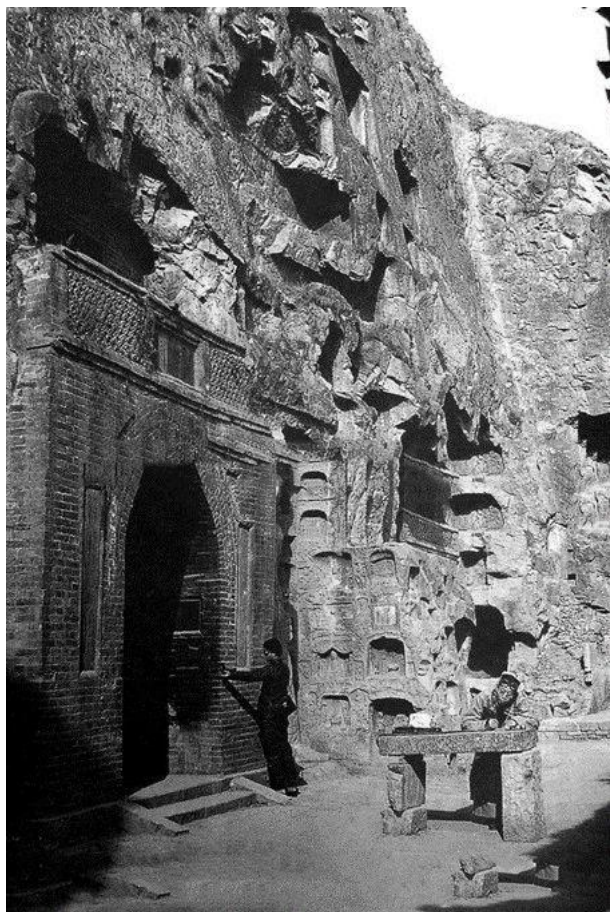


Figure 2-1-1 - Fu Lei and Jing Meicheng Conducting Cataloguing and Photographic Documentation at Longmen Grottoes



Figure 2-1-2 - Archaeological Survey and Mapping at Longmen

II.Stratigraphy: Revealing the Sequence of Grotto construction

Although the Longmen Grottoes are mainly carved into cliff walls, stratigraphy methods still play an important role in their research. For instance, during the archaeological excavations in the surrounding areas of the grottoes (such as ancient riverbeds and Tang Dynasty temple ruins), by analyzing the eaves, ceramic fragments and tool marks unearthed from different cultural layers, the chronological relationship between the construction of the grottoes and the surrounding ancillary buildings can be inferred. In addition, the stratum deposits inside the caves (such as silt and collapsed rock masses) are also used to determine the natural damage and restoration activities in the history of the grottoes. Taking Fengxian Temple as an example, archaeologists discovered fragments of lime mortar used during the Tang Dynasty's restoration by clearing the silt layer at the bottom of the cave. Combined with carbon-14 dating, they confirmed the official restoration records of the Vairocana Buddha during the reign of Wu Zetian.



Figure 2-1-3 - Historical Photographs of Early Longmen Grottoes Conservation

The front wall (west wall) of the south cave of the Dongshan Leigu Terra ce in the Longmen Grottoes is built with stones and blue bricks, and is about 1.3 meters wide. In the interior fill soil of the wall, relics were found filled i n. After layer-by-layer cleaning, more than 100 brick and pottery relics were u neared, including over 80 numbered stone statue fragments, one pair of door anvil stones, and several fragments of pottery ridge beasts. Taking the cave do or as the boundary, 56 artifacts were unearthed from the south side partition w all and 28 from the north side partition wall. Preliminary observations show th at most of the remaining statues can be pieced together and restored. After cle aning, these relics were placed layer by layer and piled up inside the wall. Ba sed on the early collapse of the cave, the blue bricks piled up on the front w all and the front part of the cave roof, the unearthed objects inside the front wall, the archaeological excavation of the cave front site in Leigutai District in 2008, and in combination with the ancient earthquake history recorded in hist orical documents, it can be inferred that the statues filled in the front wall sho uld have been buried in the middle and late Ming Dynasty. The main purpose was to fill them into the wall during the restoration and reinforcement of the cave front wall to save materials such as bricks and stones. The source of th e statues might be the collapsed fragments from the grottoes. In addition, this area was a branch of Xiangshan Temple during the Tang and Song Dynasties. It is possible that some of the round carvings remain and are scattered there. The complete Buddha head unearthed was buried relatively deep, with mountai n stone materials such as 礧 piled up on the upper part. It was not unearthed within a wall. It is inferred that it had collapsed and been buried here during the late Tang to Song dynasties. This archaeological cleanup in coordination wi th the conservation project marks a concentrated excavation of stone carvings a nd statues in the Longmen Grottoes archaeological work, and it is also the firs t time that statues have been discovered within the walls of an ancient mainte nance project. These statues are numerous, large in size and exquisitely crafted.



Figure 2-1-4 - Excavation Site at Leigutai

III. Typology: Research on the Style and Periodization of Statues

Typology is the core method for the study of the statues in the Longmen Grottoes. By comparing the statue styles, costume details, rosette forms and other features of different grottoes, archaeologists have established the evolution sequence of the artistic styles of the Longmen Grottoes. For example:

During the Northern Wei Dynasty, with the Binyang Zhongdong as a representative, the main Buddha had a slender face and smooth clothing lines, and the flying aprons had a tall and slender figure, embodying the Sinicized style of "elegant bones and clear images".



Figure 2-1-5 - Binyang Middle Cave

During the heyday of the Tang Dynasty, taking the Ten Thousand Buddha Cave as an example, the statues were plump and the costumes were elaborate. The Bodhisattvas were adorned with splendid jewels, reflecting the aesthetic trends of the prosperous Tang Dynasty and the secularization of Buddhism.



Figure 2-1-6 - Wanfo Cave

Through the parallel analysis of the types of statues, scholars have found that the

"broad robe and wide belt" style of Buddha robes in the Longmen Grottoes gradually transitioning to the "double collar drooping" style in the late Northern Wei Dynasty. This change is closely related to the cultural integration after the Northern Wei Dynasty moved its capital to Luoyang.

IV.Literature verification: Mutual verification between History and Archaeology

Traditional literature verification provides a crucial historical framework for the study of the Longmen Grottoes. For instance, the "Shi Lao Zhi" in the "Book of Wei" records the historical fact that the Northern Wei royal family funded the excavation of grottoes, which is corroborated with the royal inscriptions on the three Caves in Binyang, revealing the political background of the construction of the grottoes.

The Tang Dynasty stele "The Stele of the Buddha Niche at Yique" details the process of Chu Suiliang making a statue of Empress Changsun to pray for blessings, providing direct evidence for the study of the relationship between Buddhism and the imperial family in the early Tang Dynasty.



Figure 2-1-7 - Tang Dynasty: Chu Suiliang Inscription at Yique Buddhist Shrine

In addition, the records about the restoration of grottoes in the Qing Dynasty's "Longmen Annals" have assisted archaeologists in locating some of the lost Tang Dynasty wooden grotto eaves.

V. Photography and drawing: Visual tools for documentation and research

Traditional photography and hand-drawing were the main means of archaeological documentation for the early Longmen Grottoes. At the beginning of the 20th century, the Japanese scholar Masayoshi Sekino used glass dry plate photography to capture precious images of the Longmen Grottoes, providing a reference for studying their original appearance before modern weathering and damage. Meanwhile, archaeological line drawings (such as cross-sections and floor

plans) are irreplaceable in revealing the structure of caves. For instance, the line drawings of the Ancient Yang Cave clearly demonstrate the three-dimensional spatial layout of the "Central Tower Pillar Cave" of the Northern Wei Dynasty, while the detailed hand-painted statues (such as the posture of the flying celestial being holding an instrument) provide intuitive materials for the study of music history. Although digital technology has been widely applied, the standardized processes of traditional photography and drawing (such as proportion control and light and shadow processing) remain the foundation of modern grotto documentation.

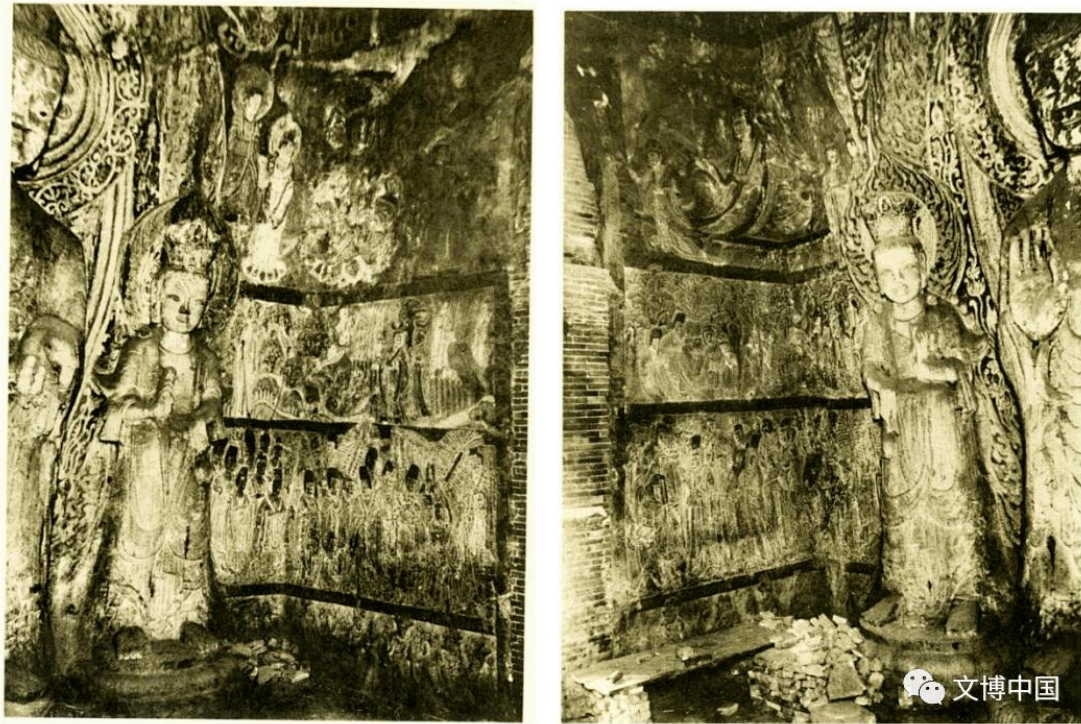


Figure 2-1-8 - Historical Photograph of the Emperor and Empress Worshipping Buddha
Reliefs in Binyang Middle Cave

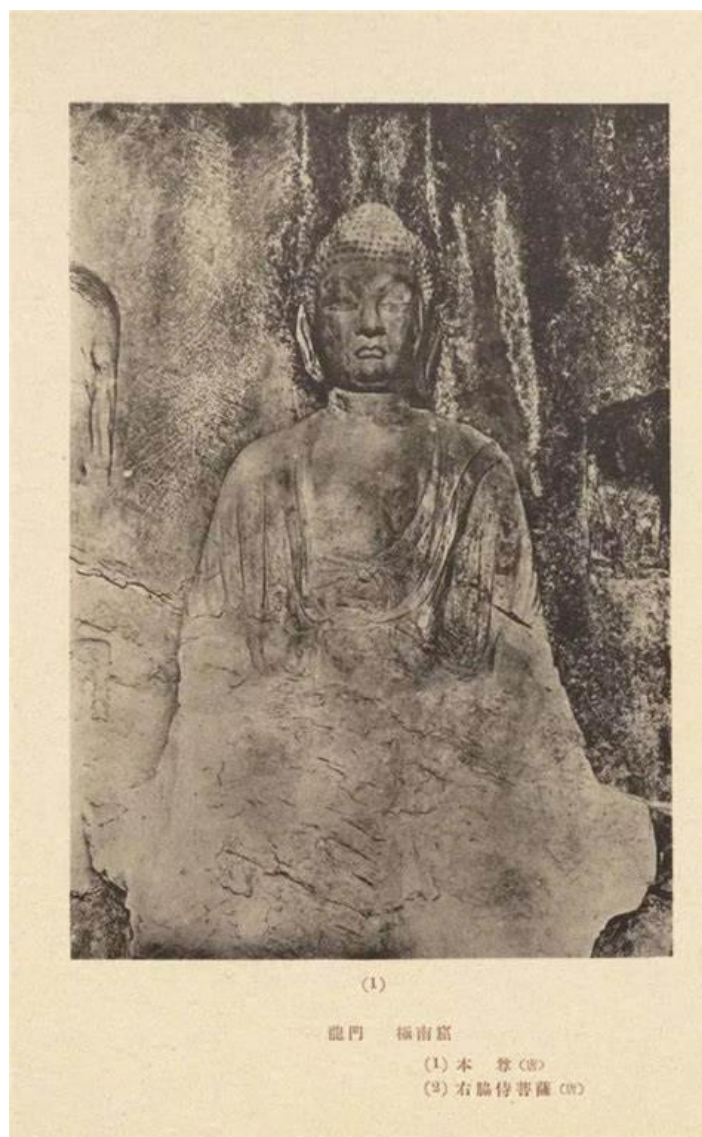


Figure 2-1-9 - Historical Photograph of the Main Buddha in Binyang South Cave

Section 2 Application of Digital Archaeology Technology

With the development of technology, digital archaeological techniques have been widely applied in the research of Longmen Grottoes. Three-dimensional laser scanning technology can accurately record the spatial information and surface details of grottoes, providing basic data for the digital preservation and virtual restoration of grottoes. Remote sensing technology is used to monitor the geological environment and disease conditions of grotto clusters on a large scale, providing a scientific basis for protection decisions. The application of virtual reality technology enables researchers to conduct all-round observation and analysis of grottoes in a digital environment, providing a new perspective for archaeological research. The digital archiving and information management system has realized the standardized storage and efficient management of grotto archaeological data, promoting the sharing and utilization of research resources. The introduction of these digital technologies not only enhances the efficiency and accuracy of archaeological work, but also opens up new avenues for the long-term protection and display of grottoes.

It is not only human activities that constantly erode cultural relics; the hand of nature also has a silent power. The daily "caress" of wind, rain and air pollution has left irreversible marks on the grottoes. Shi Jiazhen, the director of the Longmen Grottoes Research Institute, once said in an interview with a reporter, "The Longmen Grottoes are a clear testament to the prosperous Tang Dynasty. Now, through digital means, we can excavate and preserve the precious historical information." Modern technology is playing an increasingly significant supporting role in the protection and utilization of grotto temples, promoting a shift from emergency protection to preventive protection.

1.3D laser scanning and modeling technology: High-precision digital archiving

Three-dimensional laser scanning technology has provided a revolutionary means for the permanent documentation of the Longmen Grottoes. In 2016, the Longmen Grottoes Research Institute, in collaboration with Peking University, conducted a millimeter-level precision scan of the Vaishena Buddha group at Fengxian Temple, obtaining for the first time complete microscopic data on the surface weathering and fissures of the Buddha statues. Through point cloud modeling and texture mapping, a 1:1 digital twin model was constructed, precisely restoring the clothing folds and the details of the pendants in Tang Dynasty statues. This model is not only used for virtual restoration simulations (such as speculating on the missing shape of the Buddha's hand), but also provides a spatial reference for the scaffolding setup plan in the 2021 Fengxian Temple conservation Project, avoiding the potential risks of physical contact to cultural relics.

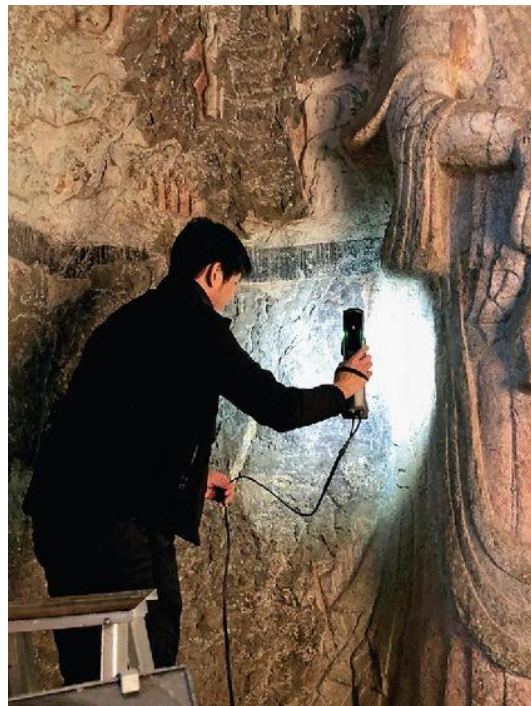


Figure 2-2-1 - Line Drawing of the Left Flanking Bodhisattva on the Main Wall of Guyang Cave

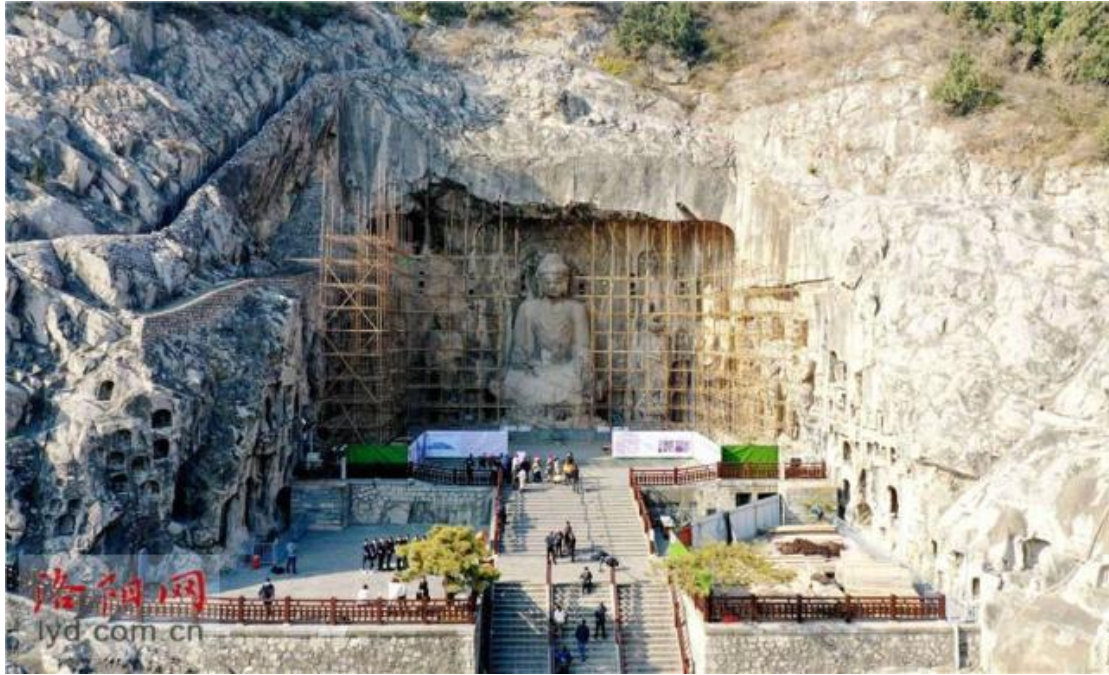


Figure 2-2-2 - 3D Laser Scanning Work Inside the Cave

Case: During the scanning process of the Lotus Cave, it was discovered that there were hard-to-distinguish line engravings of flying apsaras in the backlit area of a Bodhisattva statue from the Northern Wei Dynasty on the south wall. Through model rendering and lighting analysis, it was confirmed that this was the popular "child of transformation and birth" theme from the late Northern Wei Dynasty, filling the gap in early Buddhist iconology research.



Figure 2-2-3 - Scaffolding for the 2021 Fengxian Temple Conservation Project

II. Photogrammetry and drone aerial photography: Large-scale spatial data acquisition

Oblique photogrammetry technology combined with unmanned aerial vehicle (UAV) aerial photography has achieved the coordinated recording of the macroscopic layout and microscopic details of the grotto cluster. In the "Digital Mapping Project of Longmen Grottoes" in 2020, DJI M300 RTK drones were used to conduct full coverage aerial photography of the cliff faces of Xishan Mountain, generating an orthogonal image with a resolution of 2 centimeters. For the first time, the spatial distribution of 2,345 grottoes and niches was accurately calculated. Through multi-perspective image 3D reconstruction, the 15,000 small Buddha statues in the Ten Thousand Buddha Cave were numbered and located one by one. Combined with GIS analysis, it was found that their arrangement pattern is highly consistent with the "Ten Thousand Buddhas appearing together" cosmology described in the Avatamsaka Sutra.

Case: During aerial photography of the top of the Guyang Cave, unfinished cave niches excavated during the Northern Wei Dynasty were discovered. Their orientation is consistent with the direction of the mountain fissures. It is speculated that the project was forced to be halted due to geological risks, confirming the record in the "Book of Wei" that "the stone of Yique is brittle and the niches often collapse."

III. Geographic Information System (GIS) : Spatial Analysis and Risk Management

The GIS database of Longmen Grottoes integrates multi-source data such as geology, hydrology and disease monitoring. Taking the Dongshan Kanjing Temple as an example, by superimposing the rock mass stability analysis layer and the distribution map of Tang Dynasty grotto eaves ruins, it was found that the severely weathered areas of the existing reliefs highly overlap with the historical landslide zone. In 2022, the system successfully warned of the displacement

ent trend of the dangerous rock mass on the northern cliff of Xiangshan Temple, guiding the implementation of emergency support projects and preventing a potential collapse accident.

Case: The GIS heat map shows that the Tang Dynasty grottoes and niches are mainly concentrated in the area at an altitude of 120-150 meters in the southern section of the Western Mountains. Combined with the analysis of the Tang Dynasty Luoyang City axis, it is proved that this area is the focus of the "visual corridor", reflecting the planning awareness of the imperial project for the urban landscape.

IV.3D printing technology: Cultural Relic Restoration and public display

3D printing technology has achieved "precise restoration" in the restoration of the Longmen Grottoes. In 2019, the broken finger of a Northern Wei Dynasty warrior statue in Zhongdong, Binyang, was modeled through reverse engineering. The replacement parts were printed using nylon fiberglass composite materials, with an error of less than 0.1 millimeters. In addition, a 1:3 scale printed replica of the Vairocana Buddha was on display at the "Belt and Road" Cultural Relics tour exhibition, allowing overseas audiences to touch the texture details of Tang Dynasty carvings.

Case 1: For the relief of "Emperor and Empress Paying Homage to Buddha" that was stolen overseas, the old photos and the remaining wall data were used for virtual splicing. The 3D printed restoration model is now on display in the exhibition hall of Longmen Grottoes Research Institute, achieving the "digital return" of cultural relics.



Figure 2-2-4 - Line-engraved Flying Apsaras Pattern in Lianhua Cave



Figure 2-2-5 - 3D Printing Replica Production of the Emperor and Empress
Worshiping Buddha Reliefs

Case 3: In a niche on the south wall of the front chamber of the Wanfo Cave in the Longmen Grottoes, there is a statue of Guanyin. Due to its slender and graceful figure and delicate and smooth carvings, it is praised by visitors as "the most beautiful audio-visual statue". Unfortunately, the part from the chin to above the nose, which best represents the expression of the statue, was damaged, making it impossible for people to perceive the compassion and dignity of Guanyin Bodhisattva from her face. Although the statue was damaged, fortunately, at the beginning of the last century, some foreign scholars and photographers took photos of the statue of Guanyin before it was destroyed when they were inspecting Longmen. This provided an important basis for the virtu

al restoration work. The most aesthetically pleasing audio-visual virtual restoration work mainly consists of two aspects: modeling and painting. When visitors visit the Longmen Grottoes, they can aim their mobile phones at the incomplete Buddha statues. Through AR technology, they can not only view the complete statues but also experience the early splendor of the Tang Dynasty. Gao Junping introduced that the Longmen Grottoes Research Institute, based on historical old photos and academic research, integrated 3D digital technology, color detection and analysis technology, traditional sculpture art and other means, and combined the characteristics of the same type of statues from the same period, to achieve the virtual restoration and color restoration of this Guanyin statue.



Figure 2-2-6 - Gaoshu Niche Cave After Virtual Restoration and 3D Printing

V.Multispectral imaging technology: Extraction of hidden information

Multispectral imaging technology has revealed the historical information of grottoes that is invisible to the naked eye. In 2023, visible light, infrared and ultraviolet band imaging was carried out on the northern wall of the Medicine

Cave, and 23 inscriptions on Tang Dynasty prescriptions covered with lime were discovered, including ancient prescriptions for treating "golden sores" (battle wounds), confirming the function of the Longmen Grottoes as a node for the dissemination of ancient medical knowledge. In addition, hyperspectral imaging has identified pigment components such as lead white and cinnabar in the remnants of the murals in the three caves of Leigutai, providing a scientific basis for the restoration of Tang Dynasty paintings.

Case: On the surface of the Bodhisattva statue in Qianxi Temple, infrared imaging detected the traces of the underlying gold foil covered during the heavy makeup of the Northern Song Dynasty, overturning the traditional belief that "Tang Dynasty statues were not gilded".



Figure 2-2-7 - Digital Reconstruction of the Most Beautiful Guanyin

VI.VR/AR and Digital Twins: Immersive Research and Public Education

Virtual reality technology has created a "time travel" experience for the Longmen Grottoes. The "Digital Dragon Gate" VR system, which was launched in 2021, enables users to wear headsets to enter the virtual scene of the Tang Dynasty Fengxian Temple and observe the painted effects and eave wooden structures of the Vairocana Buddha when it was first built (Figure 4). The AR to

ur guide App enables users to scan the grottoes and niches with their mobile phones, superimposing historical restoration information and animated interpretations of the statues, which has increased the number of visitors by 300% compared to traditional information boards.

Case: In the AR restoration of the Beidong Cave in Binyang, scholars reconstructed the destroyed lotus caisson based on scanning data and simulated the natural lighting effect of the Northern Wei Dynasty through ray tracing, verifying the historical record that "when the morning sun enters the shrine, the Buddha's light will naturally arise."



Figure 2-2-8 - Digital Longmen VR System

VII.Digital Archives and Resource Management System: Data Integration and Sharing

The digital resource management system of Longmen Grottoes adopts blockchain technology to ensure data security. Currently, it has archived 2.4PB of scanned data and 150,000 pages of literature archives. The "Longmen Grottoes Digital Twin Platform" launched in 2022 enables multi-disciplinary data linkage.

For instance, by clicking on any small Buddha number in the Wanfo Cave, one can access its high-definition images, disease records, historical restoration a

archives, and related research papers. This system has been recognized by UNESCO as a "Best Practice for Digitalization of Cultural Heritage in the Asia-Pacific Region".



Figure 2-2-9 - Restored Painted Decoration of the Lotus Caisson Ceiling in Binyang Middle Cave



Figure 2-2-10- Digital Twin Platform: Night Scene Model of Fengxian Temple at Longmen Grottoes

Digital technology has permeated the entire chain of the Longmen Grottoes archaeology: from data collection (laser scanning, drones), information analysis (multispectral, GIS) to restoration application (3D printing), display and dissemination (VR/AR) and permanent preservation (digital archives). These technologies not only enhance the precision of research but also restructure the

paradigm of cultural relic protection - shifting from "rescue restoration" to "preventive intervention", and upgrading from "physical display" to "digital symbiosis". The practice of the Longmen Grottoes shows that digital archaeology is not a replacement for tradition but rather an injection of new vitality into it.

Section 3 Analysis of Important Archaeological Discoveries Cases

I.Binyang Middle Cave: The Sinicization Transformation of a royal Project of the Northern Wei Dynasty

The Binyang Middle Cave is a typical representative of the Northern Wei imperial grottoes in the Longmen Grottoes. Its archaeological research has revealed the process of cultural integration after the Northern Wei Dynasty moved its capital to Luoyang. Binyang Cave, originally named Lingyan Temple, is composed of three caves: Binyang Middle Cave, Binyang North Cave and Binyang South Cave. The Binyang Cave was first excavated in the first year of Jingming of the Northern Wei Dynasty (500 AD), and it has a history of over 1,500 years. It was the first imperial grotto excavated under the direction of Emperor Xuanwu of the Northern Wei Dynasty for Emperor Xiaowen and Empress Wenzhao, to commemorate Emperor Xiaowen's historical achievements in moving the capital to Luoyang and carrying out the Sinicization reform. It is also the only grotto with a definite record in the official history of China. In his "Inscription on the Longmen Stone Statue", Peng Gang of the Ming Dynasty wrote: "At that time, the people's fat was hammered and chiseled, and even ten thousand pieces of gold were not spared from the strange and extraordinary."

This refers to the excavation of this cave. The construction of the three caves in Binyang took as long as 24 years and involved over 800,000 workers. However, during the Northern Wei Dynasty, only the middle cave of Binyang was completed. It was not until the Sui and Tang Dynasties that the South and N

orth Caves of Binyang were successively finished. The statues in the Middle Cave of Binyang are complete, with exquisite compositions and diverse patterns.

It is hailed as the most representative Sinicized cave before and after Emperor Xiaowen of the Northern Wei Dynasty moved the capital to Luoyang. It holds a very important position in the history of the development of Buddhism and art in China. A variety of vivid and lifelike characters with different expressions; Rich in composition, elegant and exquisite decorative patterns; Flying and playing music, lifelike flying sky..... The Binyang Middle Cave, a colossal project jointly constructed and carved by countless skilled artisans, has left behind an unparalleled artistic treasure for future generations.

Analysis of the statue style: Through typological comparison, the statue of the main Buddha "Sakyamuni" inside the cave presents the feature of "slender bones and clear figures", and the clothing pattern adopts the "loose clothes and wide belts" style, which forms a sharp contrast with the Gandhara style of the Yungang Grottoes. This transformation confirms the historical fact recorded in the "Book of Wei" that Emperor Xiaowen implemented the Sinicization policy.

The inscription and the literature corroborate each other: The "Yique Kan Stele" (an existing rubbing) inside the cave records the process of Emperor Xuanwu of the Northern Wei Dynasty opening the grottoes to pray for his parents' blessings, which is completely consistent with the record in the "History of the Wei Dynasty: Shizong Ji" that "at the beginning of the Ming Dynasty, an imperial edict was issued to build two grottoes for Empress Dowager Wenzhao." In 2018, multispectral imaging discovered the signature "Craftsman's Office" outlined in cinnabar on the edge of the inscriptions, confirming for the first time the direct participation of the state-run grotto institutions of the Northern Wei Dynasty.

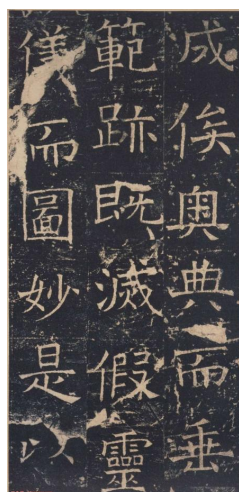


Figure 2-3-1 - Digital Twin Platform: Panoramic View of the Longmen Grottoes
Scenic Area

Unfinished ruins: 3D scanning revealed multiple intaglio lines that were not fully carved in the lotus caisson on the cave roof. Combined with the iron chisel tools unearthed from the strata accumulation of the Northern Wei Dynasty, it is speculated that the project was interrupted due to the early death of Emperor Xuanwu, which indirectly reflects the sensitivity of the construction of the royal grottoes to political changes.



Figure 2-3-2 - Panoramic View of the Main Wall of Guyang Cave

II.Fengxian Temple: The Establishment of the Wu Zhou Regime and the Authority of Buddhism

Fengxian Temple is located in the southern section of the west Mountain of Longmen Grottoes. Its original name was "Great Lushena Statue Niche". It is grand in scale and imposing in momentum, and is a large open-air cliff statue niche in Longmen Grottoes. The niche is oriented from west to east. The highest platform in front of the Buddha is 32.5 meters wide from north to south and 35 meters deep from east to west. It was excavated during the reign of Emperor Gaozong of Tang and completed in 675 AD. The layout of the statues consists of one Buddha, two disciples, two Bodhisattvas, two Heavenly Kings, two warriors and two donors. The eleven group sculptures are meticulously arranged, with a clear distinction between the main and secondary elements, and a grand momentum. The statues are exquisite, the craftsmanship is superb, and the images are vivid, achieving an artistic effect that combines form and spirit. They are a clear testament to the prosperity of the Tang Dynasty, reflecting the powerful material and spiritual strength of the Tang Empire, and have become a model of Eastern Buddhist art. It represents the peak of Chinese Buddhist stone carving art and possesses eternal artistic charm and aesthetic value.

The group statues of the Vairocana Buddha at Fengxian Temple represent the peak of the politicization of Buddhism in the Tang Dynasty. Their archaeological discoveries have reconstructed the interactive picture of religion and power during the Wu Zhou period.

Stratigraphic evidence: During the excavation at the bottom of the Buddha's pedestal, a three-layer overlapping relationship was discovered: the surface layer consists of Ming Dynasty reconstructed floor tiles, the middle layer is a Tang Dynasty lime mortar layer (including Kaiyuan Tongbao copper coins), and the bottom layer unearthed eave tiles with the inscription "Great Zhou". Combined with carbon-14 dating (690 ± 20 AD), it is confirmed that Wu Zetian led the expansion of Fengxian Temple in the early stage of her reign as emperor.

The political metaphor of the statue: Through the facial proportion analysis of the 3D model, the face of the Vairocana Buddha is highly consistent with the "square forehead and wide jaw" feature of Wu Zetian as described in the "Record of Famous Paintings of All Dynasties". In 2020, digital restoration revealed that the original Buddha statue had a "sun and moon" pattern on its crown, which coincided with Wu Zetian's honorific title "曌", confirming the ideological construction that "Buddha is emperor".



Figure 2-3-3 - Donor Portraits in Guyang Cave

The eave ruins: Aerial photography by a drone revealed regularly arranged mortise and tenon holes on the cliff above the Buddha niches. Virtual reconstruction confirmed them to be the eave ruins of a wooden structure from the Tang Dynasty. The nine-bay form is consistent with the specifications of the main halls in the Luoyang palace City, highlighting the hierarchical system of imperial engineering.

III. Guyang Cave: A Repository of Inscriptions and Historical Materials and the Early Grotto Forms

The Ancient Yang Cave is the earliest opened, longest-lasting and most content-rich cave in the Longmen Grottoes, and thus is also known as the "First Cave of the Longmen Grottoes". As the earliest large-scale cave excavated in Longmen, the archaeological achievements of the Guyang Cave have revealed the origin and development of Buddhist art in the Northern Wei Dynasty. It is the cave with the most concentrated vow statues of the royal family, nobility and prominent families of the Northern Wei Dynasty. It is also the cave among Chinese grottoes that preserves the most inscriptions on the statues. It is an artistic treasure house for studying the politics, economy, folk customs, architecture, carvings, paintings and calligraphy of the Northern Wei Dynasty. The main wall of the Ancient Yang Cave features three statues of Buddha and Bodhisattvas created by Emperor Xiaowen. The main statue is Sakyamuni, standing 7.82 meters tall. He is sitting in the lotus position on a square platform. The main statue has a polished high bun, a long and round face, smiling eyes, a flat chest and a straight neck, and is dressed in a loose robe and a monk's robe. The Bodhisattvas on both sides wore lotus crowns on their heads, with delicate faces, graceful postures and luxurious decorations. In addition to the main wall statues, the four walls and ceiling statues and niches of the Ancient Yang Cave are dazzling and exquisitely carved. According to the inscriptions on the statues, there are statues of Sun Qiusheng from the 17th year of the Taihe era (443) and Yuchi, the wife of King Chumulingliang of Changle from the 19th year of the Taihe era (495). There are over 1,000 niches of various types of statues in the Ancient Yang Cave. The statues in the large and small niches are all the elegant and refined ones that were popular in the later period of the Northern Wei Dynasty, with distinct characteristics of their times. Among them, the styles of "loose clothing and wide belts" and "slender bones and clear figures" are harmoniously unified and perfect, which is a perfect embodiment of the

"Central Plains style" of the Northern Wei imperial grotto temple's statue art in the Longmen Grottoes.

The Longmen Grottoes, known as the "Ancient Stele Forest", have over 2,800 inscriptions on steles. Among them, there are more than 800 inscriptions on statues in the Guyang Cave alone, making it the grotto with the largest number of preserved inscriptions on statues among all the grottoes in China. Among the renowned twenty grades of Longmen, nineteen grades are carved in the Ancient Yang Cave. The twenty-pin characters of Longmen are upright and elegant, with a vigorous and simple momentum. Their structure and brushstrokes lie between those of Han clerical script and Tang regular script. As a calligraphy treasure, the Twenty Masterpieces of Longmen are endowed with boundless artistic charm and attract countless overseas friends every year who travel across the ocean just to catch a glimpse of this calligraphy wonder with their own eyes. It is a true record of historical materials in the form of inscriptions by the Longmen Grottoes, reflecting the aesthetic trend of calligraphy in that era. As a model of Wei stele style, the Twenty Masterpieces of Longmen not only perfectly display the artistic realm of calligraphy beauty in Longmen Grottoes with their unique charm, but also create a magnificent page in the history of the development of Chinese calligraphy art.

Rediscovery of the "Twenty Masterpieces of Longmen" : In 2015, during the cave dust removal project, high-definition photogrammetry was used to discover the original inscriptions of "Sun Qiusheng's Inscription" covered with calcium scale on the north wall, correcting the interpretation errors caused by the displacement of the Qing Dynasty rubbings. Through micro-trace analysis, it was confirmed that this stele employed the "double-blade oblique engraving" technique, becoming the standard instrument for dating calligraphy in the Northern Wei Dynasty.

The structure of the central tower column: Laser scanning shows that the original design of the central tower column inside the cave was in the form of a "double-layer umbrella cover", similar to the form of the Kizil Grottoes, co

confirming the spread path of Buddhist art along the Silk Road. However, during the later renovations, the tower columns were simplified to square ones, reflecting the localization transformation of the Western Regions style by the artisans from the Central Plains.



Figure 2-3-4 - Inscription of the Yique Niche



Figure 2-3-5 - Restored Lotus Caisson Ceiling of Binyang Middle Cave

It is named for the 15,000 neatly arranged small Buddha statues carved on the north and south sides of the cave. It was excavated under the supervision of Yao Shenbiao, a second-rank female official in the palace, and Zhiyun Zen Master of the inner monastery, and was completed in the first year of Yonglong of Emperor Gaozong of Tang, that is, 680 AD. The main Buddha in the Buddha Cave is Amitabha Buddha, sitting upright on a double-layered lotus throne. His face is full and round, with broad shoulders. The simple and smooth lines of his clothing are carved using the round knife technique of the Tang Dynasty. The main Buddha bestows the "Fearless Seal", symbolizing fearlessness in the universe and self-supremacy. When the Ten Thousand Buddha Cave was built, Wu Zetian had already accumulated a broad and profound political foundation both within and outside the court. Her interactions with eminent monks and virtuous masters, as well as her support for Buddhism, have earned her extensive support from both monastic and lay believers. The Ten Thousand Buddha Cave was excavated by women in the upper class of the Tang Dynasty. Their actions also influenced a large number of women in society, so there are many niches excavated by female benefactors around the Ten Thousand Buddha Cave. The cave is structured in a front and back chamber. The front chamber features two strongmen and two lions, while the back chamber houses one Buddha, two disciples, two Bodhisattvas and two Heavenly Kings. It is the cave with the most complete combination of statues in the Longmen Grottoes. There is a beautiful lotus flower on the top of the cave. Archaeological research at the Ten Thousand Buddha Cave has revealed the mechanism of public participation in Buddhism during the Tang Dynasty.



Figure 2-3-6 - The Vairocana Great Buddha

The arrangement code of the small Buddha: Through GIS spatial analysis, it was found that the small Buddha is repeatedly arranged in units of "9 columns $\times$ 9 rows per bed", totaling 187 beds, which is in line with the philosophical view of "one is all, and all is one" in the Avatamsaka Sutra. Each small Buddha's base is engraved with the name of the donor. Database statistics show that the proportion of women is 47%, far exceeding that of other Tang Dynasty caves, reflecting the improvement of women's social status during the Wu Zhou period.



Figure 2-3-7 - Small Buddha Statues on the Inner Walls of Wanfo Cave

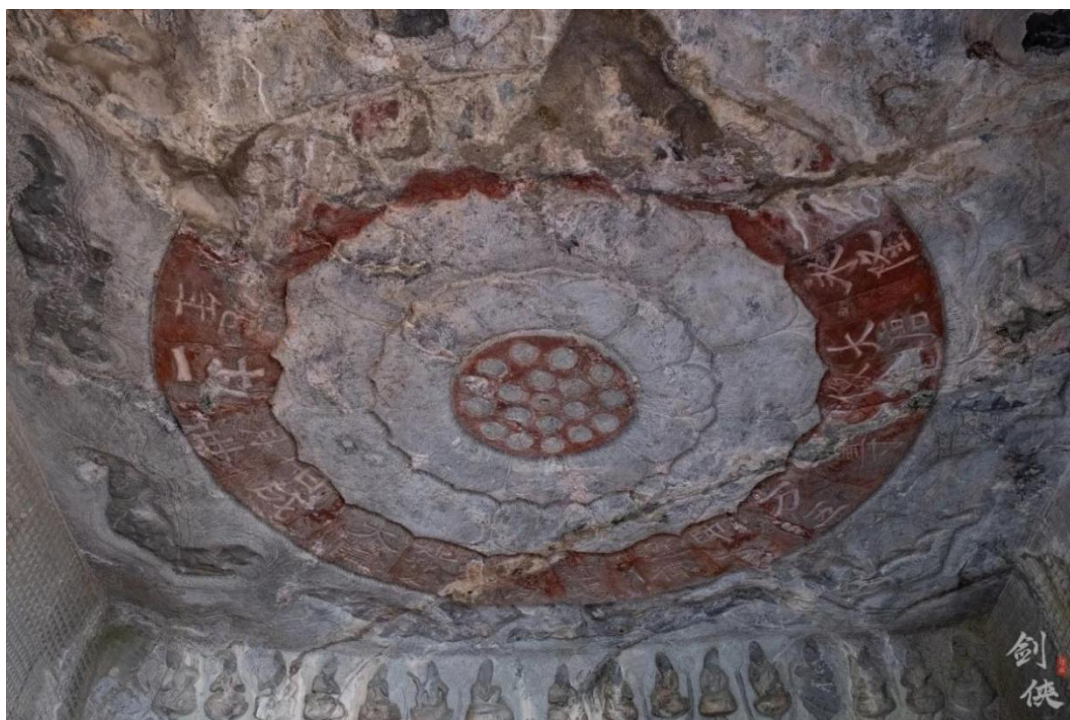


Figure 2-3-8 - Evidence of Mechanical Carving Marks in Wanfo Cave

V.The Three Holes of the Drumming Platform: A Reenactment of the Remains of Esoteric Buddhism in the Tang Dynasty

The three caves of Leigutai consist of the North, middle and south caves. They are one of the earlier and larger groups of caves to be excavated in the Dongshan Grottoes Area. This area is called "Drumming Platform" because Wu Zetian established a temple dedicated to drumming here. The archaeological excavations in Leigutai District have rewritten the traditional understanding of the history of Esoteric Buddhism in China. Since 2005, the Longmen Grottoes Research Institute has collaborated with the School of Archaeology and Museology of Peking University to carry out the archaeological report project on the grottoes in the Leigutai District of Dongshan, Longmen. From March to September 2008, the Longmen Grottoes Research Institute and the School of Archaeology and Museology of Peking University formed a joint archaeological team to conduct archaeological excavations on the architectural sites in front of the three caves on the Dongshan Leigutai of the Longmen Grottoes. The excavation area was over 600 square meters, and more than 1,900 cultural relics of various types were unearthed, as well as numerous relics from the Tang and Song Dynasties to the 1980s and 1990s. The discovered relics include two large-scale Tang Dynasty grotto walkways built with large stone slabs, stone-covered platforms for grotto halls, six large-scale Song Dynasty inscriptions on statues, one building foundation, and a road in front of the grotto from the Tang and Song Dynasties. In order to better protect the cultural relics of the Longmen Grottoes and ensure the continuous inheritance and promotion of Longmen culture, the Longmen Grottoes have built the Leigutai Site Exhibition Center, which provides on-site protective displays of the discovered architectural remains and unearthed cultural relics, allowing tourists to visit the archaeological site in person and experience the charm of the cultural relics.



Figure 2-3-9 - Painted Decoration of the Lotus Caisson Ceiling in Wanfo Cave



Figure 2-3-10 - Excavation Site of the Leigutai Architectural Remains



Figure 2-3-11 - Excavated Round Stone Lion Artifact

Evidence of the Vajra Mandala: On the Tang Dynasty pottery molds unearthed in Beidong, the Sanskrit seed characters "Great Sun Buddha" were found engraved, which exactly correspond to the positions of the eight Bodhisattvas in the relief on the cave ceiling. This is the first confirmation that the cave is a three-dimensional presentation of the Vajra Mandala, bringing forward the physical evidence of Chinese esoteric Buddhist temples to the Kaiyuan period.



Figure 2-3-12 - Interior Statues of Leigutai North Cave

The mystery of human bone remains: Bone fragments were discovered in the Xidong Underground Palace. The carbon-14 dating date is 742 ± 30 AD. DNA testing shows that they have the characteristics of the South Asian race. Combined with the legend in "Biographies of Eminent Monks of the Song Dynasty" that "the wisdom of Vajra burned his body at the Dragon Gate", they may be the remains of a patriarch of the Esoteric school, which has sparked academic controversy.

VI. The Ruins of Xiangshan Temple: Archaeological Evidence of a Royal Temple

Xiangshan Temple is a renowned temple among the "Ten Temples of Longmen" during the Tang and Song Dynasties. The ruins of the temple are located at the southern foot of the eastern mountain of the Longmen Grottoes in Luoyang, Henan Province. Facing south with its back to the north, it is separated from the Western Mountain Grottoes by the Yi River. The site now covers an area of over 40,000 square meters and is composed of multiple terraces. It is an ancient temple site with rich connotations and high cultural display value. According to the first volume of the "Biography of the Avatamsaka Sutra" in the Tang Dynasty's Dharma Canon, the Tripitaka master Dībharuō (known as Rizhao in Tang) of the Central India finally arrived at the Eastern Temple of the State of Wei on the 27th day of the twelfth lunar month in the third year of Chuigong. Because Dībharuō was highly respected and treated with courtesy by Emperor Gaozong of Tang and Empress Wu Zetian, after his death, Empress Wu Zetian ordered his burial on the south side of the eastern Mountain of Longmen. Later, at the request of King Liang (Wu Sansi), a temple was set up there, and the imperial edict noted that it was named Xiangshan Temple. During the Wu Zhou period, Wu Zetian once visited Xiangshan Temple, leaving behind a beautiful story in the poetry world: "Composing a poem on Xiangshan Mountain and winning a brocade robe." In his later years, Bai Juyi, a great

poet of the Tang Dynasty, often visited Longmen and stayed at Xiangshan, and called himself "Xiangshan Jushi". During the Dahe period, Bai Juyi funded the renovation and expansion of Xiangshan Temple. After his death, Bai Juyi was buried beside the pagoda of Master Ruman in Xiangshan Temple. During the Northern Song Dynasty, Xiangshan Temple was a scenic spot for sightseeing in the Western Capital.

The systematic excavation of the Xiangshan Temple site has revealed the religious pattern of "two temples standing side by side" in Longmen during the Tang Dynasty.



Figure 2-3-13 - Excavated Esoteric Buddhist Ritual Implements

The foundation site of the building: Three Tang Dynasty hall foundations were revealed. Among them, the central main hall has a width of seven bays. The inscription "鸛吻" from the 10th year of kaiyuan was unearthed, which is consistent with the description in "Bai Juyi Ji" that "the pavilions and towers of Xiangshan Temple are slender and graceful". The Mosaic pattern on the floor tiles is the same as that of the ruins of the Hanyuan Hall in Luoyang Palace City, which proves its royal background.

Fragments of a stone sutra pagoda: An 8-sided fragment of a sutra pagoda was unearthed, inscribed with the "Sutra of the Supreme Buddha's Crown". By comparing it with a rubbing of the pagoda in the Todaiji Temple in Nara, J

apan, it was confirmed that it originated from the same group of court stonemasons, confirming the intensity of Buddhist exchanges between China and Japan during the prosperous Tang Dynasty.

Tea set storage: A complete set of Yue kiln celadon tea sets was discovered in the monks' room area. The residues were detected to contain tea polyphenols and milk fat components, confirming the record in "Feng Shi Wen Jian Ji" that "Emperor Xuanzong of Tang ordered people to boil tea on Xiangshan Mountain to offer to Buddha", thus bringing forward the integration of tea culture into Buddhist rituals to the early 8th century.

VII.Dongshan Kanjing Temple and the area to its north: The Spatial Narrative of the Chan School Genealogy

The compilation of the archaeological report on the Kanjing Temple has revealed the material evidence for the construction of the Chan School's legal system in the Tang Dynasty.

The series of Arhat reliefs: There are 29 life-sized Arhat reliefs in the cave. Through digital image comparison, their image features are highly consistent with the genealogy of the 28 patriarchs of the Western Heaven as described in the "Record of the Treasures of All Dynasties". The 29th one is an "incomplete image", symbolizing the continuous transmission of Buddhism. In 2019, infrared scanning discovered inscriptions with serial numbers beside each statue, confirming that the original viewing sequence should be from right to left in a counterclockwise direction, reflecting the practice concept of "returning to the origin" in Tang Dynasty Chan Buddhism.

New discovery in the northern area: In 2023, archaeological exploration found a cliff inscription of "Passing the Robe Stone Chamber" in the unexplored northern area. Five square meditation caves are distributed around it, and a meditation cushion in the style of Tianzhu was unearthed. Based on the record in "Jingde Chuan Deng Lu" that "disciples of Huineng built a nunnery at Long

men", it is proved that this area was an important place for Chan Buddhism to practice in the 8th century.

Hydrological archaeology breakthrough: Through GIS simulation of the water level of the Yi River in the Tang Dynasty, it was found that the altitude of the Kanjing Temple was exactly the same as that of the canal transport wharf. The unearthed fragments of Persian glass bowls indicate that this place might have been the landing point for Hu monks to pay homage by water, reconstructing the spatial function of Longmen as an international Buddhist node.

The significant archaeological discoveries at the Longmen Grottoes not only involve the reinterpretation of explicit heritage such as statues and inscriptions, but also the extraction of deeper historical information including temple sites, craftsmanship techniques, and social organizations. From the Sinicization transformation of the Binyang Middle Cave to the esoteric evidence of the Leigutai, from the public participation of the Wanfo Cave to the international exchanges of Xiangshan Temple, these cases jointly prove that the Longmen Grottoes are not only a treasure house of Buddhist art, but also a three-dimensional projection of the political, economic and cultural network of ancient China. Digital technology has played a crucial role in this process - it enables immovable heritage to "speak" and allows lost historical layers to "see the light of day again".

Chapter 3: The Artistic Style and Characteristics of Longmen Grottoes

Section 1: The Sculpture Art of Longmen Grottoes

The Longmen Grottoes are the place where the most concentrated statues of vows made by the royal and noble families of the Northern Wei and Tang Dynasties are found. They embody the will and actions of the royal family and have a strong national religious flavor. The statues of the two dynasties reflect completely different styles of their times:

The statues of the Northern Wei Dynasty here have lost the rugged, majestic and vigorous features of those in the Yungang Grottoes, and the flavor of life has gradually intensified, tending towards liveliness, elegance and gentleness.

These statues from the Northern Wei Dynasty have long and thin faces, slender shoulders, straight chests, and the carvings of their clothing lines are done with straight knife techniques, which are firm and simple. Among the numerous caves carved during the Northern Wei Dynasty, the Ancient Yang Cave, the Binyang Middle Cave and the Lotus Cave are the most representative and valuable. Among them, the Ancient Yang Cave houses a group of statues of the royal family, nobles and court ministers from the early period when the Northern

Wei Dynasty moved its capital to Luoyang, which typically reflects the historical trend of the Northern Wei Dynasty where the whole country revered Buddhism. These stone carvings of various forms and dazzling array are precious records of the convergence and integration of traditional Chinese culture and foreign civilizations.



Figure 3-1-1 - Architectural Foundations of the Xiangshan Temple Site

Although the sculpture art of the Tang Dynasty had not yet completely broken free from the shackles of religion, it had already fully entered a mature stage in terms of art. Due to the continuation of the trend since the Northern and Southern Dynasties, large-scale construction of grottoes and temples with statues was carried out. As a result, a large number of Buddhist images emerged, which were more diverse in content, broader in scope of expression and more proficient in technique. Some of them had significant monumental significance and created a vigorous, vivid yet simple and natural realistic style, reaching the peak of Buddhist carving art. The sculpture artworks other than religious sculptures also far exceeded the level of the Northern and Southern Dynasties in terms of content and expression. After several hundred years of development during the Northern and Southern Dynasties, a complete and mature style of Chinese Buddhist art was fully formed.

The purpose of grotto statues is to enshrine Buddha statues. Grottoes are places where believers pay homage. The main statue can be said to be the theme of meditation and worship, while other statues serve as supplements and illustrative illustrations to the theme. During the Northern Dynasties, the most nu

merous statues in the Longmen Grottoes were of Sakyamuni, followed by Maitreya and Guanyin, and then Immeasurable Life. Maitreya is revered as an object of future faith, Sakyamuni is worshipped as the progenitor of Buddhism, and Guanyin is an object to which one can pray for peace and stability in the present life.

The walls of the Longmen Grottoes are mainly decorated with reliefs, and the stone carvings are vivid and delicate, making them a masterpiece in the field of stone carving art. To achieve such exquisite stone carving art, apart from the craftsmanship of the artisans, whether the stone is easy to carve is also a very crucial factor. The Longmen Grottoes are located two kilometers away from Luoyang in a place called "Yi Que". "Que" refers to the towers on both sides of the ancient palace gates. Here, Longmen Mountain and Xiangshan Mountain are separated by the Yi River, as if they were the gates guarding the territory. 200,000 years ago, geological movements transformed the limestone formed during the Cambrian period into Longmenshan. Limestone is easily eroded by water, and there are many karst caves in the mountain. Their crisscrossing development eventually led to a canyon that divided the mountain into two sides, ultimately creating the current scene. Limestone is different from the clastic sedimentary rocks formed by conglomerate and sandstone in terrestrial environments. It is a kind of biological or chemical sedimentary rock, which is formed by the deposition of Marine biological remains and then compactized and cemented. Its color is mainly grayish white and grayish black, with fine texture, tight structure, relatively soft and easy to preserve. It is very suitable for grotto statues, especially for carving details.

I. Northern Wei Dynasty sculptures in Longmen Grottoes

Buddhist sculptures and statues of the Northern Wei Dynasty are the model of Chinese carving art. One typical feature of the Buddha statues in the Northern Wei Dynasty is the smile. The smile of the Buddha gives people a sense of depth, revealing all kinds of kindness in tranquility and carrying various kinds of care and human beauty in calmness. It is precisely because the Buddha statues of the Northern Wei Dynasty, in addition to their religious sanctity, also possessed the humanized beauty of the society at that time, that they were closer to the real society, more likely to win the favor of the public, and thus had greater artistic appeal and vitality. It has been admired by Buddhists and researchers of Buddhist art throughout the ages.

Researchers have no consensus on the time when the Longmen Grottoes began to be carved, but there is no doubt that the grottoes were first carved during the Taihe period of the Northern Wei Dynasty. The late Northern Wei Dynasty was the most prosperous period for the construction of the Longmen Grottoes. During the Eastern Wei, Western Wei, and even the Northern Qi, Northern Zhou, and Sui Dynasties, most of the carvings continued in the unfinished caves of previous dynasties, with only a few newly excavated caves. After the Zhenguan period of the Tang Dynasty, Longmen gradually became the center for the activities of making statues by the nobility and the royal family, and the activities of opening caves and making statues flourished again. It was not until after the prosperous Tang Dynasty that they fell silent again. The earliest cave excavated in Longmen is the Guyang Cave. The initial construction date of the Guyang Cave is the same as that of the Longmen Grottoes, a fact that has been widely recognized by scholars studying the Longmen Grottoes. However, there are various opinions on the excavation time of the Ancient Yang Cave. Many scholars infer the excavation time of the Ancient Yang Cave based on the dating of the inscriptions on the statues inside.

The statues from the Northern Wei Dynasty account for more than one thi

rd of the total in the Longmen Grottoes. There are approximately 200 existing inscriptions on Northern Wei Dynasty statues with clear dating, and at least 17 inscriptions from the Eastern and Western Wei periods with clear dating. Based on the content of the inscriptions, the shape and style of the niches, and the relationship between the niches, it can be inferred that the number of inscriptions from the Wei Dynasty is even greater.

1. Guyang Cave

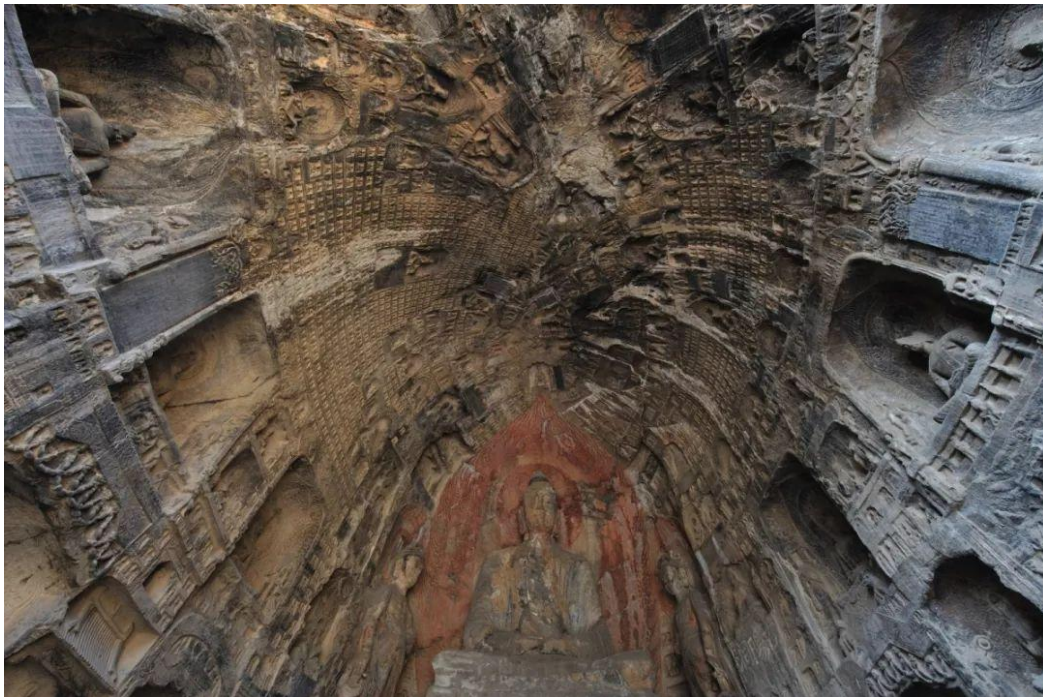


Figure 3-1-2 - Panoramic View of the Vairocana Buddha in Fengxian Temple

The excavation of the Longmen Grottoes began with the Ancient Yang Cave. The Ancient Yang Cave was a cave of merit built by Emperor Xiaowen for his grandmother, Empress Dowager Feng, who passed away three years ago. The inner walls and ceilings of the cave are carved with over 1,000 niches of various types and more than 800 inscriptions and steles. It is the earliest large-scale grotto carved among the Longmen Grottoes and the one with the richest Buddhist content.

The Guyang Cave was carved out by expanding a natural limestone cave. (In the Longmen Grottoes, many caves are made from natural limestone caves, which have relatively good stability and are relatively labor-saving and time-s

aving during excavation.)" However, the intensity of the renovation during the excavation was also relatively large.

In the cave, the Buddha Shakyamuni sat high on the main wall. His face was long and round, and his body was rather thin. He wore a loose and wide robe and made a gesture of meditation. On either side stood two Bodhisattvas with delicate faces, their expressions solemn and serene. The statues in the large and small niches of the Ancient Yang Cave are all slender, elegant and clear figures that were popular in the late Northern Wei Dynasty. They are statues with the characteristics of their times. From the overlapping and heavy pleats of the sculptures, it can be seen that although the Longmen Grottoes are no longer the slender and clear figures of the Yungang Grottoes period, the beauty of the slender figures seen from the ever-changing niche eyebrows and the delicate and detailed backlighting of the Buddha statues still represents the most popular style of the Northern Wei Dynasty.

In terms of artistic style, the Ancient Yang Cave features both Western-style and Sinicized Buddha statues, showcasing the development of Buddhist art from Pingcheng to Luoyang. The contents, costumes, patterns and styles of the early niches in the ancient Yang Cave of Longmen are extremely similar to those in Yungang. Its sculptures represent the best stone carving art of the Northern Wei Dynasty and are a microcosm of the achievements of the early Yungang model, integrating a strong Indian and Central Asian artistic style.

2. Binyang Middle Cave

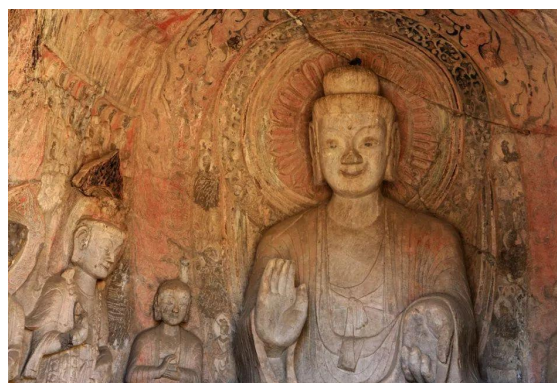


Figure 3-1-3 - Upward View of the Interior of Guyang Cave

The Three Caves of Binyang were excavated during the Northern Wei Dynasty and are representative caves of that period. "Binyang" means welcoming the rising sun. It was built by Emperor Xuanwu of the Northern Wei Dynasty to do good deeds for his father, Emperor Xiaowen. Construction began in 500 AD and lasted for 24 years. However, due to the occurrence of a palace coup and the death of the abbot Liu Teng, only one of the three planned caves (Binyang Middle Cave, South Cave and North Cave) was completed, namely Binyang Middle Cave. The main statues in the South Cave and North Cave were not completed until the early Tang Dynasty.

The form of the cave has been constantly evolving with the development of The Times. Compared with the previous Guyang Cave and Lianhua Cave, the two sides of the cave door in Binyang have added pillars. The capitals of the pillars are carved with a lotus flower looking up, and below the lotus, there is a downward curled decoration, which is a kind of Greek Ionic column head. On the south side of the column head, there is a traditional Chinese imitation wooden structure roof carved. Here, the exchange between Chinese and Western cultures can be directly reflected, and it can also be said to be a direct testament to the Silk Road.

There are three aspects to study in caves and niches. First, niches and caves are forms, that is, as a spatial form of architecture. The second aspect is to observe the combination of the statues and the ideological connotations conveyed thereby. The third is to look at statue art, including decorative art.

The Binyang Middle Cave was excavated with reference to the Yungang Grottoes. In terms of form, the ceiling of the cave is dome-shaped and the walls are flat in the shape of a horseshoe. The combination of the cave's shape is a set of statues carved on each of the three walls. The main wall features one Buddha, two disciples and two Bodhisattvas, while the north and south side walls each have one standing Buddha and two Bodhisattvas, representing the Buddhas of the three times (past, present and future) in Buddhism. The purpose of carving the Three Buddhas in grottoes is to demonstrate that Buddhism h

as evolved from the past to the present and continues into the future, with one Buddha after another never ceasing. This theme is in line with that of the five Caves of Tan Yao in the Yungang Grottoes. Moreover, the choice of such a combination and theme by the Northern Wei imperial family also expressed the hope that the Northern Wei would always thrive and prosper.



Figure 3-1-4 - Main Buddha Sakyamuni in Binyang Middle Cave

In the main wall, the main Buddha is Sakyamuni Buddha, sitting upright on a square pedestal, with his right foot protruding and the sole facing upwards. The figure is rather tall and slender, with a high, wavy bun on the top of the head. Compared to Yun Gang, her face is relatively delicate and refined. Her eyebrows and eyes are wide and open, and her mouth is slightly upturned. Her expression looks rather reserved and kind. Wearing a loose and broad robe like a monk's robe. The fabric lines are carved with a soft and flowing texture. Layer upon layer of fabric lines hang down from the pedestal, reflecting the exquisite knife skills of the artisans at that time. The young disciples on both sides of the main Buddha appear in the form of round sculptures. The eldest disciple, Kasyapa, was carved with protruding ribs on his neck, depicting the image of a weather-worn old man. The artisan fully utilized the language of carving, applying exaggerated and deformed techniques in the details of his face. The arch of his eyebrows on his forehead was carved high and prominent, th

the eye sockets were sunken, and his mouth was slightly protruding with teeth exposed. This not only retained the appearance of a high monk from the Western Regions but also depicted his expression vividly and lifelike. The young disciple Ananda was different. In terms of appearance, he had clear eyebrows and bright eyes, and was a smart, lively, young and handsome boy. The artisan's meticulous depiction of details reveals the distinct ages, experiences and personalities of the two disciples through the differences in their facial expressions. The Bodhisattvas on both sides show fullness and softness in the handling of the carving details. Such a visual effect can be carved on the hard rock, which shows the ingenious craftsmanship of the artisans at that time.

3. Lotus Cave



Figure 3-1-5 - Disciples and Bodhisattvas in Binyang Middle Cave

The Lotus Cave is a large cave excavated during the Northern Wei Dynasty. The cliff outside the Lotus Cave is densely covered with caves. Above the cave entrance, the lintel (door lintel) is carved with large flame-shaped pointed arch relief patterns, with a beast head engraved in the middle, looking imposing and guarding the gate of the Lotus Cave. Carving lintels above the cave entrances was also a popular practice during the Northern Wei Dynasty and can be regarded as a typical feature of cave carvings in that era.

The Lotus Cave is an open cave with four facades inside. On the top wall

1, there is a large and exquisite high-relief lotus carved. The diameter of this lotus reaches 3.6 meters, and the name of the Lotus Cave is derived from this lotus. Decorating the cave roofs with lotus flowers is a common practice in the Longmen Grottoes. However, the majority of the lotus flowers on the cave roofs are either line engravings or shallow reliefs. This large high-relief lotus is unique in the Longmen Grottoes and is rarely seen even across the country. This lotus flower has its heart carved in a realistic style, and lotus seeds are also engraved on the heart. Three layers of lotus petals are engraved around the lotus heart, and on the outside of the lotus petals, a circle of honeysuckle patterns is carved. On the north and south sides of the lotus, six-figure flying apsaras are carved. The apsaras face the main Buddha inside the cave. They are tall and slender, graceful and elegant, holding various offerings. Such flying apsaras are also called "Offering to the Heavens". The static lotus flowers on the entire cave ceiling contrast with the dynamic flying apsaras, presenting a unique artistic charm.

Many grottoes and niches are carved on the north and south walls. On the west wall, there are five statues of one Buddha, two disciples and two Bodhisattvas. The main Buddha in the middle is Sakyamuni Buddha. His head has been damaged. He is dressed in a double-collared, drooping, loose and sash monk's robe with a sash tied around his chest. The entire garment pattern is carved in a relaxed and well-proportioned manner. Three layers of clothing patterns were carved from the shoulders to the elbows, which was also a characteristic of clothing pattern carvings during this period. Behind the main Buddha, there are carvings of the head light and the body light. The head light is divided into two layers, the inner layer is carved with lotus petals, and the outer layer is concentric circles. The main Buddha's body light is in the shape of a pointed boat, divided into three layers from the inside out. The inner and outer layers are carved with flame patterns, and the middle layers are connected by parallel arc patterns. The disciple statue on the north side has a missing head, and behind it is a peach-shaped headlight pattern. The headpiece is divided into

inner and outer parts. The inner circle is engraved with honeysuckle patterns, while the outer circle is engraved with flame patterns. The disciple carved the shape of ribs on his chest, which should represent the image of a bony old man, dressed in a monk's robe, holding the corner of the robe with his left hand and a staff with his right hand. From the carving, it can be seen that it is a nine-ring staff, and the nine-ring staff is also considered to have a relatively high rank in Buddhism. The Bodhisattva statue on the south side is relatively well-preserved, but its face has also been damaged. Behind the head are three layers of peach-shaped headwear. The inner layer features lotus petal patterns, the middle layer has honeysuckle patterns, and the outer layer has flame patterns. The Bodhisattva has a necklace around his neck, a shawl on his upper body, a necklace on his chest that is crossed and strung, a skirt on his lower body, and his feet stand upright on a lotus platform.



Figure 3-1-6 - Exterior View of Lianhua Cave

What sets the Lotus Cave apart from other grottoes is that in all the grottoes of Longmen Grottoes, the carvings of Sakyamuni Buddha are all seated Buddha statues, but only here are standing Buddha statues. This situation is rather rare. The image that the carved Buddha intended to express is that of Sakyamuni Buddha traveling through the mortal world, preaching the Dharma and guiding rebirth. This also reflects the wish of the person who opened the Lotus Cave, hoping that he could achieve enlightenment and be led away by the Buddha.

II. Tang Dynasty Sculptures in Longmen Grottoes Temple

Although the sculpture art of the Tang Dynasty had not yet completely broken free from the shackles of religion, it had already fully entered a mature stage in terms of art. Due to the continuation of the trend since the Northern and Southern Dynasties, large-scale construction of statues, grottoes and temples was carried out. As a result, a large number of Buddhist images emerged, which were more diverse in content, broader in scope of expression and more proficient in technique, among which some had significant monumental significance. The sculpture artworks other than religious sculptures also far exceeded the level of the Northern and Southern Dynasties in terms of content and expression. After several hundred years of development during the Northern and Southern Dynasties, a complete and mature style of Chinese Buddhist art was fully formed.

The sculptures of the early Tang Dynasty reveal the emergence of a healthy and powerful artistic style of the Tang Dynasty. The prosperous Tang Dynasty was the most accomplished period for various arts in Tang society. Within the realm of sculpture art, immortal masterpieces such as the stone carvings on Fengxian Temple, Tianlong Mountain and Qianling Mausoleum emerged, marking the peak in the history of the development of Chinese sculpture art.

1.Fengxian Temple

The statues in Fengxian Temple of Longmen Grottoes are the most significant ones built during the Tang Dynasty. They are located in the southern part of the west mountain of Longmen Grottoes in Luoyang City. They were completed in the second year of the Shangyuan era of the Tang Dynasty (675 AD), taking three years and nine months. They are the largest and most artistically exquisite group of cliff carvings in Longmen Grottoes.

The main statue of Fengxian Temple is the sitting statue of the Vairocana Buddha. On both sides of it are distributed eleven large statues including the two disciples, the two attendants, the two Heavenly Kings and the Warriors. Fengxian Temple is the largest and most representative open-air Buddhist niche in the Longmen Grottoes. The variately shaped and vividly depicted statues demonstrate the high achievements of sculpture art in the prosperous Tang Dynasty and have become a wonder in the history of stone carving art. It also reflects the powerful material and spiritual forces of this period.

Generally speaking, in the doctrines of Buddhism, Buddhas and Bodhisattvas are all male. However, the main Buddha of Longmen Fengxian Temple is feminized. This was a result of the political needs of Wu Zetian of the Tang Dynasty, who, for the first time, ingeniously shaped the Vajrayana Buddha into the unique image of a middle-aged woman. It is said that Wu Zetian's accumulation of the above-mentioned virtues almost perfectly matched the image of the Vairocana Buddha. It can be seen that to a certain extent, the image of Lushen is a true portrayal of Wu Zetian's image.



Figure 3-1-7 - Standing Buddha in Lianhua Cave

"Lushena" originates from Sanskrit, symbolizing universal light and perfect wisdom.

The Great Buddha of Vajrapani has a solemn and elegant face, with a gentle and kind expression. He is an ideal character full of compassion, wisdom and clarity. His right palm is held forward in front of his chest, and his five fingers are naturally slightly bent, which can also show his inner peace and firmness (neither cold nor anxious). In his gaze looking forward, it seems as if he can see the fate and destination of mankind. The path of progress in human history. In this image, the great and broad mind of the Tang Dynasty artist when facing the vast scene of life full of struggle and change is expressed. The artist has made his own interpretation of this image and infused his emotions into it. The Vairocana Buddha has a completely Chinese face and style. Whether in terms of content or form, the creation of the face shape of the Vairocana Buddha is one of the great examples in the history of Chinese sculpture art.

2. Ten Thousand Buddha Cave



Figure 3-1-8 - Side View of the Vairocana Buddha in Fengxian Temple

The Ten Thousand Buddha Cave is located on the cliff in the middle of Longmen West Mountain. It was completed in November of the first year of Yonglong of Emperor Gaozong of Tang (680 AD). It was a merit cave specially carved for Emperor Gaozong and Wu Zetian to do "good deeds". It is named after the 15,000 small sitting Buddhas carved on the north and south walls inside the cave. It is 570 cm in height, 580 cm in width and 670 cm in depth.

The Wanfo Cave is structured in a front and back chamber. The front chamber features two warriors and two lions, while the back chamber houses one Buddha, two disciples, two Bodhisattvas and two Heavenly Kings. It is the cave with the most complete combination of statues in the Longmen Grottoes.

The carvings inside the Ten Thousand Buddha Cave are exquisitely detailed, with clear patterns and simple knife techniques. The main Buddha, Amitabha Buddha, sits upright on a double-layered lotus throne. His head is adorned with a wavy bun, and his face is full and round, reflecting the aesthetic tendency of the Tang Dynasty to value plumpness. His shoulders are broad and thick,

and his clothing is simple and smooth. At the waistband of the lotus throne, four strongmen dragging heavy loads are carved. They are endowed with dynamic muscles, which form a sharp contrast with the serenity of the main Buddha. On the back wall, there are fifty-four lotus flowers carved, each with a Bodhisattva sitting on it. This design is novel and unique. On the wall, there are carvings of flying apsaras holding fruit offerings and musicians performing. Inside the cave, 15,000 small Buddha statues are neatly carved on the north and south walls, echoing the flying apsaras and musicians up and down, jointly creating an alluring scene of ten thousand people attaining Buddhahood in the Western Paradise. The carving technique employs the round knife carving method of the Tang Dynasty, fully demonstrating the exquisite skills of Tang Dynasty artisans.

The overall layout of the Ten Thousand Buddha Cave and the depiction of the characters are highly secular. The combination of religious themes and the creative intention of "the emperor is the Buddha" has, to a large extent, created the supreme air that the ruler of heaven is the monarch of the human world. The construction of the Ten Thousand Buddha Cave was planned and carved in a unified manner. Its entire layout fully demonstrates the might of the Tang Empire. The carvings of the myriad Buddhas shining all over the walls and the group statues in the cave complement each other, creating an awe-inspiring atmosphere throughout the entire cave chamber. It also indicates to people in reality that as long as you act in accordance with the Buddha's will, you will surely become one of the ten thousand Buddhas in the Buddha's land. Outside the cave, on the south wall, there is a statue of Guanyin Bodhisattva created by Ni Zhenzhi of Yifeng Temple in Xuzhou, which is regarded as a fine example of the Bodhisattva statues of the Tang Dynasty in Longmen. The large cave of Ten Thousand Buddhas, whether in the layout of the group statues or the depiction of the figures, has achieved an artistic effect that combines both spirit and form. It is the product of ancient artisans closely integrating rich imagination with real life, vividly demonstrating the prosperity of the Tang Empire

and its superb cultural and artistic attainments.

3. Huijian Cave

Huijian Cave is also known as the small Fengxian Temple of Longmen Grottoes. There are four statues inside the cave, one master, one disciple and two Bodhisattvas, all concentrated on the main wall of the cave. The main Buddha is Maitreya Buddha, with a high, fleshy bun carved on the top of his head, featuring wavy hair patterns. His face is round and kind, and his body is plump. He wears a square-necked, drooping monk's robe and sits naturally with his legs hanging down on a square platform, fully embodying the Sinicization and secularization characteristics of Chinese Buddhist statues. Behind the main Buddha, there is a head light carved, which is divided into two layers. The inner layer features lotus petal patterns, and around the outer layer of the lotus petal patterns, there are seven small Buddha statues carved. Carvings featuring seven Buddhas and lotus petals are relatively common subjects for the headshots of Buddha statues.



Figure 3-1-9 - Main Buddha of Wanfo Cave

The figures in Huijian Cave have plump and round faces, full postures, and relatively simple clothing folds. They have changed the style of slender and

clear figures since the Northern Wei Dynasty and formed a style of the Tang Dynasty. The sitting posture of the main Buddha Maitreya with his legs naturally drooping has become popular throughout the country since its establishment and has had a significant influence on Maitreya Buddha statues in various parts of the country. At the same time, this group of statues was further secularized and folklorized. The aesthetic taste of the Tang Dynasty, which regarded plumpness as beauty, was very vividly reflected in this group of statues.

Section 2: The Mural Art of Longmen Grottoes

I. The Picture of Emperor Xiaowen and His Empress Paying Homage to Buddha of the Northern Wei Dynasty

The "Emperor and Empress Paying Homage to Buddha" is a relief mural on the east wall of the Binyang Middle Cave in the Longmen Grottoes. It was created during the Northern Wei Dynasty and is an important work of ancient Chinese relief sculpture. Later, it was stolen and sold abroad. Among them, the "Painting of Emperor Xiaowen of the Northern Wei Dynasty Paying Homage to Buddha" is now housed in the New York City Museum of Art, USA, and the "Painting of Empress Wenzhao Paying Homage to Buddha" is housed in the Nelson Museum of Art in Kansas City, USA.



Figure 3-2-1 - Maitreya Buddha in Huijian Cave

The front walls of the central cave in Binyang are all bas-reliefs, depicting

Buddhist scriptures and stories as well as the royal family's worship of Buddha. They are used to promote Buddhism, praise the good deeds of the Buddhas over the ages and show off the dignity of the emperors and empresses. The wall is divided into four layers from top to bottom, with the middle part divided into two sections, north and south, by the cave door. The carvings between the layers are demarcated by horizontal railings. From top to bottom, the "Emperor and Empress Paying Homage to Buddha" is located on the third floor.

The "Emperor and Empress Paying Homage to Buddha" depicts the procession of offerings by Emperor Xiaowen and Empress Wenzhao of the Northern Wei Dynasty. The northern section depicts Emperor Xiaowen, wearing a ceremonial diadem and dressed in Imperial robe, marching slowly in front of and surrounded by princes, middle officials, and palace maids and imperial guards holding umbrellas, feather protectors, long swords and incense boxes. The composition of the southern section is similar to that of the northern section. It depicts Empress Wenzhao wearing a lotus crown and a red wedding dress, holding incense in one hand, followed by two noble ladies wearing lotus crowns. Led and surrounded by the palace maids, they walk slowly in the wind, facing the opposite direction of the northern section. The figures in the picture are densely overlapped, looking at each other, forming a harmonious whole while also having rich variations.

Unlike the common practice of classifying characters by their height and size at that time, although the figures in the picture do not show significant differences in size and their costumes are roughly the same, the positions of the figures, their interrelationships, and especially the subtle differences in their demeanor and dignity all reveal the extraordinary nobility and dignity of the emperor and empress at the center of the entire picture, demonstrating the creator's superb artistic expression skills. Furthermore, judging from the clothing, hairstyles, and the ceremonial system such as umbrellas and feather guards of the figures in the picture, Emperor Xiaowen's policy of Sinicization had achieved remarkable results. Therefore, this work also holds significant historical documentary value. Compared with the relief murals in the Yungang Grottoes, the pictures of emperors and emmortals paying homage to Buddha

have begun to break away from the Gandhara style of ancient India and have strengthened the local artistic language color. The works have become thin and shallow, and the smooth and round light and shadow of high reliefs no longer exist. Lines have become a crucial role in the expression of artistic forms. The Spaces between people and the ups and downs of the human body are all outlined with lines. Especially the treatment of clothing lines is particularly smooth and flowing, with a good balance of density and sparseness, which has the charm of Han Dynasty paintings that seek form through lines, demonstrating a good integration of Chinese national culture and foreign Buddhist art.

The entire picture adopts a horizontal composition, making the human figures appear slender and slightly inclined forward. It not only retains the imperial life style of the grand ceremony but also carries a religious flavor as ethereal as a fairy and a serene and peaceful state of mind. At the same time, the maids' smiling and listless postures as they walked forward formed a subtle contrast with the entire solemn and devout atmosphere, revealing the author's desire to communicate between the human world and the celestial realm. The Spaces between people and the undulations of the human body are all outlined with lines, especially the treatment of clothing lines, which is particularly smooth and flowing, with a proper balance of density and sparseness. Therefore, whether examined from the perspectives of art history and religious history, or evaluated from the historical and cultural values, the Emperor and Empress paying homage to Buddha paintings are undoubtedly national treasures.

Section 3 Calligraphy Art of Longmen Grottoes

There are over 2,800 inscriptions and steles in the Longmen Grottoes, with a total of more than 300,000 characters. It enjoys the reputation of "Ancient Stele Forest". The content of the inscriptions in the Longmen Grottoes is partly the vow text left by the Merit Group when they were carved, the time of the excavation, the reason for the excavation, the content of the excavation, and the purpose or wish to be achieved through the excavation. The content involved is quite rich, including religion,

politics, experiences, etiquette, medicine, as well as some textual and cultural information. In addition, there is a small portion of travelogues left by emperors, Dukes, generals, and scholars throughout history, who were attracted by the beautiful natural environment of Longmen. The last part, as Longmen was an important transportation route in ancient times, also left behind many merit tablets related to road construction.

Stele inscriptions are large-scale stone carvings with commemorative significance and educational functions. Unlike epitaphs buried underground, stele inscriptions are erected in specific public Spaces and usually have the background of the imperial court or government. Therefore, among various stone carving carriers, stele inscriptions are relatively the most orthodox and serious form, which also determines the official background of the writing, calligraphy and engraving of the stele inscriptions. The inscriptions on the statues created by the royal family, nobles, high-ranking officials of the imperial court and local officials share the same background as the inscriptions on the steles, and their calligraphic styles are also relatively similar.

In the Longmen Grottoes, the "Stele of the Yique Buddha Niche" written by the great Tang Dynasty calligrapher Chu Suiliang in the middle of the outer part of the Binyang Middle Cave and the Binyang South Cave, and the "Record of the Great Lushena Statue Niche" engraved on the north side of the main seat of the Great Lushena Statue Niche in the tenth year of Kaiyuan, are respectively representatives of regular script in the early and high Tang Dynasties. On the southern rock face outside the Erlanhua Cave on Dongshan Mountain, there is a stele inscribed with the record of Emperor Huizong of the Song Dynasty visiting the Dragon Gate. It is the only regular script ink left by a Song Dynasty emperor in the Longmen Grottoes area. Unfortunately, it collapsed due to natural factors, leaving only the last few lines. The Northern Wei Dynasty steles in the Longmen Grottoes are one of the main representatives reflecting the Wei Dynasty stele-style calligraphy in China. According to statistics, the Northern Wei Dynasty carvings distributed on the West Mountain of Longmen account for approximately one-third of all the carvings on the east and west

mountains. The main ones include the Ancient Yang Cave, Binyang Cave, Lotus Cave, Wei Character Cave, Tang Character Cave, Putai Cave, Huangfu Gong Cave, Cixiang Kiln, and Lu Cave. The so-called "Twenty Masterpieces of Longmen" refer to the inscriptions on the main statues of the twenty famous Northern Wei Dynasty statues in the Longmen Grottoes. Nineteen of them are in the Ancient Yang Cave, and one is preserved in Cave 660 (Cixiang Kiln). Many scholars have studied the historical dates of the excavation of the Longmen Grottoes, mostly based on the dating of the statues in the Ancient Yang Cave (the content of the twenty chapters), which shows the significance of the Ancient Yang Cave in the Longmen Grottoes.

I. The Stele of the Yique Buddha Niche



Figure 3-3-1 - Emperor and Empress Worshipping Buddha Relief (Emperor Procession)

It is located between the Middle Cave and the South Cave in Binyang. The form of the stele is from the Northern Dynasties, while the content is from the Tang Dynasty. The stele features a wooden house-shaped threshold. The Stele of the Yique Buddha Niche is a representative work of the early extant calligraphy of Chu. This is the largest of Chu Suiliang's regular script seen in China at present. The characters are elegant and dignified, broad and ancient in quality, and it is a standard regular script of the early Tang Dynasty. Although this stele is called a stele, it is actually a cliff inscription. The inscription on the stele of the Yique Buddha Niche was written by Chu Suiliang, who was renowned as a master of regular script. Chu Suiliang was well-versed in literature and history, and was particularly skilled in calligraphy. Following Wang Xizhi, Wang Xianzhi, Ouyang Xun and Yu Shinan, he developed his own unique style. Especially in his later years, his regular script was elegant and graceful, slender and powerful. The "Stele of the Buddha Niche in Yique" is one of his most important representative works and also the largest existing stele in the style of Chu in China. It is precisely because of the fame of Chu Suiliang's calligraphy that the stele at the Buddha Niche in Yique is also known as the "Chu Suiliang Stele", which is a model of regular script in the early Tang Dynasty.

The calligraphy structure of this stele breaks away from the slender and long form commonly seen in the early Tang Dynasty. It broadens the framework and tends to be square and flat. The overall structure is loose and does not seek tightness. The characters expand outward and the strokes spread out as much as possible in all directions, showing a very obvious innovative meaning and completely changing the strict and upright posture. The characters vary in size, are spacious and straightforward, and have an approachable, kind and simple appearance. Yang Shoujing commented, "Square, neat, broad and grand, they are all there; there is no need to use the strange." His brushstrokes are relatively straight and crisp. Especially for horizontal and vertical strokes, the starting strokes are mostly exposed, sharp and refreshing, and the ending strokes are

concise, with no obvious return of the tip. The left-falling strokes are relatively weak, and the right-falling strokes are often used to counter them with strong sharpness and distinct sharp angles. The overall lines are relatively thin, with little variation in thickness except for the horizontal strokes. They are straightforward and consistent in their thinness and vigor. The inscriptions on the stele of the Yique Buddha Niche are in regular script, with vigorous brushstrokes, giving a sense of grandeur and magnificence. Kang Youwei once praised this stele as "elegant, simple and lofty", and Liu Xizai highly commended it as "combining the strengths of both the European and Yu Dynasties". Therefore, the stele of the Yique Buddha Niche, as a representative work of calligraphy in the early Tang Dynasty, is a model of regular script in the early Tang period and also the largest existing cliff inscription in Chinese grotto temples.

II. The Twenty Grades of Longmen

In the process of the development of ancient Chinese calligraphy art from Han clerical script to Tang regular script, Wei stele style calligraphy was a very important intermediate link. The Longmen Grottoes still have a large number of inscriptions on the Northern Wei Dynasty statues, which are not only important historical materials but also precious calligraphy artworks. Among them, the "Twenty Masterpieces of Longmen" is the most renowned among the nearly a thousand inscriptions on the statues of the Northern Wei Dynasty. It is a fine work among the Wei steles of Longmen and serves as a model for the calligraphy style of Wei steles. Among the "Twenty Grades of Longmen", nineteen grades are preserved in the Ancient Yang Cave, and the other grade is found in the Cixiang Kiln.

The "Twenty Masterpieces of Longmen" are twenty vow texts from the Northern Wei Dynasty in the Longmen Grottoes. They were written in Wei script and carved on the stone walls. They are the essence of Wei steles that were carefully selected by scholars of the Qing Dynasty from over eight hundred

Wei steles and have been recognized by society and are still in use today. They have always been masterpieces for Chinese calligraphers and calligraphy enthusiasts to imitate and are an important representative in the history of the development of Chinese characters.



Figure 3-3-2 - Inscription of the Yifu Statue Vow

The term "Twenty Grades" first appeared in Kang Youwei's "Guangyi Zho u Shuangji" and Fang Ruo's "Random Notes on School Steles" in the Qing Dynasty. The content is generally expressed by the sculptor's prayer for blessings and the elimination of disasters. Its calligraphy art developed and evolved on the basis of Han clerical script and Jin regular script, thus forming a unique style that is dignified and elegant, vigorous and simple, and combines the style of clerical script with the elements of regular script. It is the essence of calligraphy art in the Northern Wei Dynasty and a representative of the "Wei Bei" style. The "Twenty Grades of Longmen" inscription is a typical "Wei Stele style". Judging from the brushwork, the brush tip is exposed when entering, and the horizontal strokes are first pressed vertically at the bottom and then run horizontally at the upper right. Mr. Ping Qifan believes that the reason why this phenomenon of "writing vertically before writing horizontally" occurs is ultimately due to the fact that people write with their right hands. When holding a pen with the right hand, the best lines are straight lines from top to bottom and from left to right, as well as curves in an "S" shape. Compressing this "S" shape curve, which is most suitable for right-handed writing, to a certain extent w

ill result in a pen shape where "horizontal strokes come first and vertical strokes come first". In the inscriptions of statues, horizontal paintings with square heads and tails and in the form of parallelograms can be seen everywhere. This should be influenced by the engraving tools of that time.

The "dots" in the inscriptions of the "Twenty Grades" statues are mostly triangular, which is due to the influence of the engraving knife. The knife moves rather slowly and clumsily on the stone, not as smoothly and quickly as the pen on the paper. Meanwhile, due to the influence of clerical script, the strokes on the Wei steles have upward-curving wavy feet. There are also some strokes written horizontally, connecting parallel strokes horizontally into one. The typical feature of the long stroke in Wei steles is that a slanted stroke is carved at the bottom of the head, approximately at a 45-degree Angle, the tail is relatively thick, and at the end, the tip slightly rises or runs horizontally. Most of the paintings have wave break, with slightly exposed or no exposed strokes, retaining the clerical script style. Some of the horizontal strokes have their lower ends as horizontal as straight lines, which is completely the effect of knife engraving. For instance, most of the horizontal strokes in "Shiping Gong's Image Carving Record" and "Wei Ling's Image Carving Record" are square and sharp, as if they were carved by a knife, making them even more prominent and vigorous.

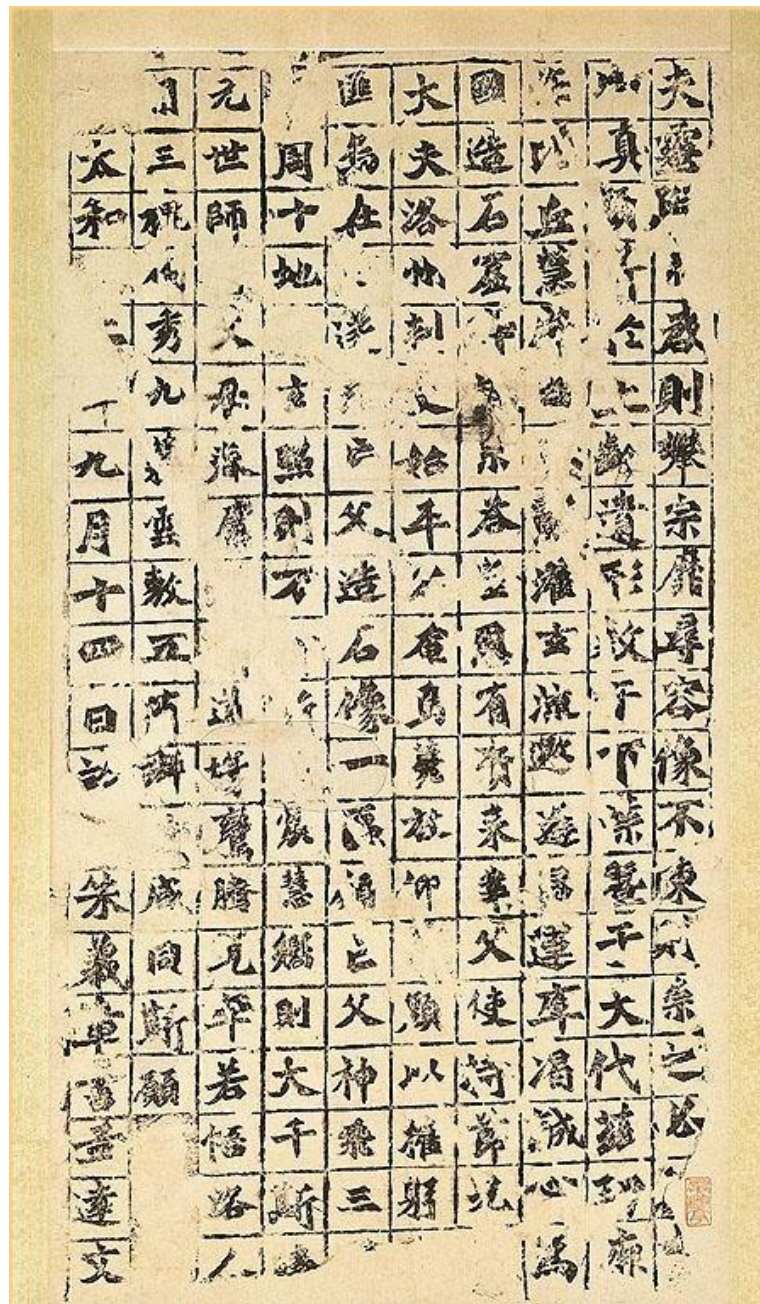


Figure 3-3-3 - Inscription of the Shapingong Statue Vow

The typical feature of a folded stroke is that the outer contour of the right folded stroke is triangular, with the outside being square and the inside rounded. Some square folded brushes are characterized by the oblique engraving technique, highlighting the right folded brush, such as the "Ma Zhenbai Statue Record", "Yuanxiang Statue Record", "Gao Taifei Statue Record", etc., which are both square and round. The "Record of the Statue of Empress Hou" is almost like calligraphy, with round strokes dominating. However, in the "Record of the

Statue of Empress Ci Xiang", there are round and curved strokes, and the brush strokes tend to be running script, making the round strokes more elegant and smooth. Vertical strokes are often characterized by a square starting point and a missing left or right ending point. The expression of "ti" in Wei script is rather sudden, clearly different from the "ti" strokes in other regular script. The "horizontal" brushwork is completely lost, and it comes more directly. This method shortens the time for brushwork and enhances the correspondence between strokes. The hook pen is also a unique stroke shape in books. There are no hooks in oracle bone script or bronze inscriptions. In clerical script, there are only "long curved hooks". It was not until regular script that the "hooks" in Wei steles were no different in shape from those in today's regular script. The true "hard hook" emerged, and the "hook" in Wei steles was no different in shape from the hook in today's regular script.

1. Overall characteristics of character formation

As the regular script was just emerging and the new rules had not yet been formed, the "Twenty Grades" stone inscriptions still retained the strong brushwork and structural habits of clerical script. The turns were neat, and the tips of the horizontal, left-falling and right-falling strokes rose upward at the end. The strokes entered in reverse and left flat, with few lifting and pressing. The clerical script still existed, but the regular script was lacking in momentum and the structure was still immature. In this way, the writer has greater room for creativity and imagination, forming a diverse and varied structural feature.

(1) The structure is dense and the thickness is balanced. In terms of character structure, the characters on Wei steles are relatively dense, and the structure does not emphasize symmetry. The center of gravity of the characters is mostly lower. Because the thicknesses of all the strokes are basically the same, the entire arrangement of the characters is more compact. Deng Shiru described this kind of structure as "the sparse parts of the calligraphy and painting can allow a horse to ride, while the dense parts make it impossible for air to pass through." Among the "Twenty Grades", especially the horizontal paintings, they

are solemn and heavy, with a powerful and imposing momentum, which is in line with the rough character of the people of the Northern Dynasties, such as the "Record of the Statues of Duke Shiping" and the "Record of the Statues of Sun Qiusheng".

(2) Strokes can be added or removed at will, and there are numerous variations. There is a notable feature in the structure of the stone inscriptions of the Northern Dynasties: the calligraphers and engravers arbitrarily added or removed strokes, resulting in a large number of variant styles. For instance, the character "Wei" has over a dozen different forms. Even for characters that appear less frequently, such as "You", in the stele "Zheng Changyou's Inscription", we can see no less than several ways of writing the character "hong", and there are several different ways of writing the character "Jiang". There are approximately 15 ways to write it. In addition, the mixed use of radicals is also widespread and too numerous to mention. In the records of the statues, the characteristics of such characters being continuous and diverse in shape have become a consensus.

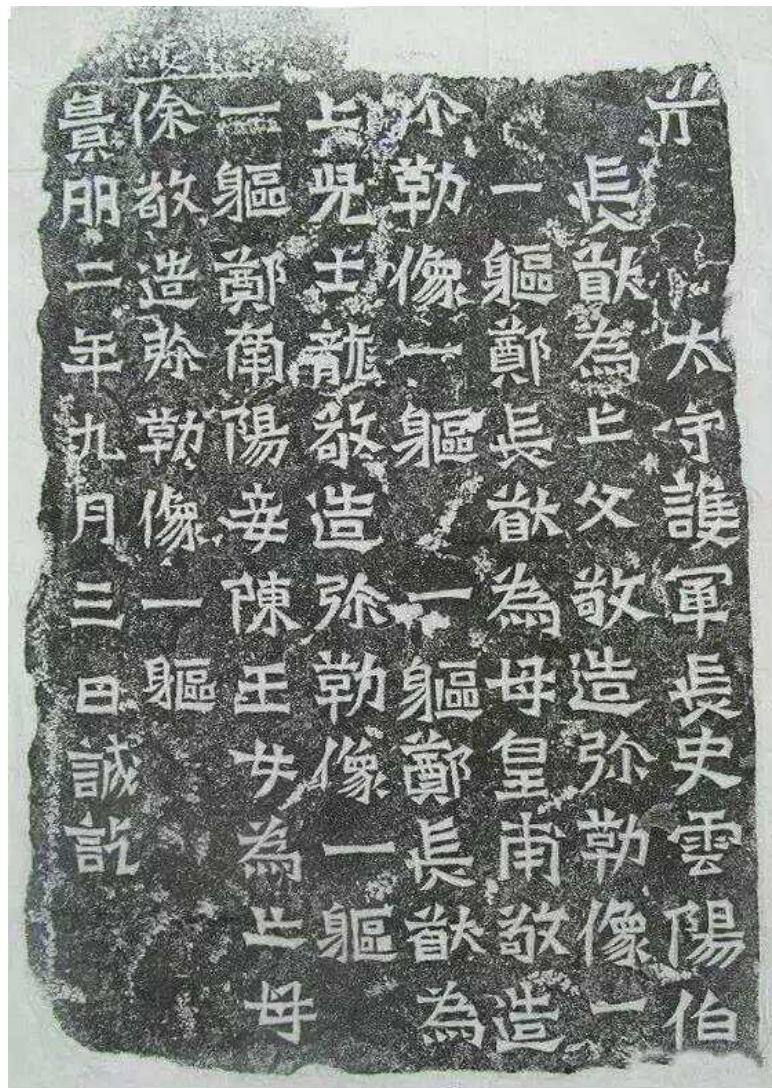


Figure 3-3-4 - Inscription of the Zheng Changyou Statue Vow

III. Relationship Handling in the Composition of Character Shapes

(1) Coverage. When the strokes between characters are in overly close contact or there are obvious differences in the structure of the upper and lower characters, the phenomenon of overlaying occurs. Overlaying not only creates a primary and secondary relationship between the strokes, such as the characters "Pan" and "Luan" in the "Shiping Gong Zangxiang Ji"; The character for "cloud" in "Sun Qiusheng's Inscription" is structurally composed of the upper part covering the lower part, with the upper part appearing dense and dense while the lower part being sparse or concentrated. It creates a sense of leaping, and wh

en used properly, it can make the work appear very lively. There are also the handling between characters, such as the two characters "Meiyou" in the "Record of the Statues of Cixiang and Huizheng". The long left-falling and long right-falling strokes of the character "beauty" are free and open, while the character "seclude" has a sense of contraction. The structure of the character is relatively flat and square, hidden at the lower part of the character "beauty", giving a feeling of being cared for and visually creating a kind of rhythmic beauty. This treatment method must pay attention to the handling of the upper and lower structures of individual characters, or be considered in combination with the specific structures of the preceding and following characters, as well as the flow range of "qi" and "shi", and should not be adopted too casually.

(2) Undertake. If coverage indicates a relationship where the large covers the small and the upper covers the lower, then connection is the opposite. It reveals a sign of response where the lower follows the upper. Its requirements and functions are largely the same as those of coverage. Generally speaking, strokes in the position of connection tend to show a relatively stable trend; otherwise, it would give the impression that the building is about to collapse. For instance, the two characters "jing" and "jie" in "The Record of the Statues of Helan Khan"; In "Sun Qiusheng's Inscription", the characters "Dong" and "Que" both represent a relatively small upper structure, while the lower part appears vigorous, powerful, generous and stable.

(3) Misalignment. This refers to the phenomenon where the central axes of individual characters do not correspond, intentionally or unintentionally distorting and moving the strokes of the characters. For instance, in the "Zheng Changyou's Portrait Record", the center of gravity of the characters "chang", "hu" and "xiang" has shifted downward. The upper part of the "chang" character is elongated while the lower part is compressed. The vertical hook extends beyond the external structure of the character stroke, yet it is so childish and endearing. For instance, the character "hu" has a drooping structure on the right side, and the shape at the bottom appears so cramped, like a child who hasn't stret

ched out his legs, naive and honest.

(4) Insertion. Misalignment represents a twisting relationship between strokes, while wedging in adds horizontal or vertical cutting elements, presenting the phenomenon where one figure surges into the boundary of another. This phenomenon is sometimes a forced rush into a certain space, demanding that people from all directions avoid it, filling the spatial gap and creating a new balance with other plans. As in the "Zheng Changyou's Portrait Record", the lower vertical hook of the character "long" is inserted above the long horizontal bar, creating a new space in the upper left part of the character while also filling the vacant position in the upper left part.



Figure 3-3-5 - The Inscription at Yique Buddhist Shrine

(5) Corresponding. The so-called correspondence naturally indicates that the strokes are neatly arranged and the horizontal and vertical strokes are basically in line with each other. Most of the works that can be written in this way are relatively regular ones in small seal script, clerical script, regular script and a few running scripts. It can show an orderly, rigorous standardization and neat beauty. For instance, most of the numbers in "The Twenty Chapters of Longmen" are written in square and standard strokes. So some people thus believe that this method is relatively easy to grasp and does not require much deliberation. As long as one follows the rules in an orderly manner, the corresponding effect can be produced. However, the phenomenon of "being flush from front to back and resembling an operator" is precisely the type of structure that is

prone to occur. Therefore, the more the situation is like this, the more attention should be paid to the subtle changes. For instance, the characters "Wang" and "Chuan" in "The Record of the Statue of Empress Hou" precisely utilize the variation in the length of the strokes to create an effect that is both harmonious and slightly different from the surrounding environment, making the entire character structure appear lively in a calm state.

(6) Crossover. Correspondence is to seek variation within unity. When this variation increases to a certain extent, the cross-relationship between strokes will emerge. For instance, in the "Zheng Changyou's Portrait Record", the writing of the four "long" characters and the "dead" character all expand the variations of the vertical strokes. Such a handling technique can make the regular calligraphy appear lively and dynamic.

As for the composition of the "Twenty Grades of Longmen", there are two forms: the bounded format and the unbounded format.

(1) Boundary format

The layout form of the boundary grid is most commonly seen in the "Twenty Chapters of Longmen". The writers aim to make the characters neat and uniform, with the same size, and confine each character within a clear boundary grid, giving a strong sense of unity and completeness. Examples include the inscriptions in "The Record of the Statues of Duke Shiping", "The Record of the Statues of Sun Qiusheng", "The Record of the Statues of Wei Lingzang", "The Record of the Statues of Niu Jue", and many others. However, upon a closer look, it will be found that the characters in the grid are actually of varying lengths, with different thicknesses, and their postures are also uneven, each having its own charm. Within unity, they are full of contrasting leaps. The brilliance of these works lies in the fact that in the overall design of character structure and composition by the writers, they are not entirely restricted by the patterned conditions of grid formation, nor do they rely on the conventional uniformity to fill the blank spaces within the grids. Instead, they seize the opportunity to seek breakthroughs within the constraints, in order to break away from

in the possible rigid situation and evoke more layers of visual perception. For instance, the characters such as "fly" and "come" in "The Record of the Statue of Lord Shiping" have a strong running script flavor, lively and dynamic. Especially when the boundaries hinder the expressive power, one might as well push the painting out of bounds. This approach of having a bounded grid without being confined by it and not considering the space within the bounded grid as an independent space is a method that starts from the unity of opposites of the black and white relationship throughout the entire text. It is very inspiring for us to write some works with bounded grids or other works that have standardized production requirements but also need to avoid rigid and stereotyped patterns. If such works were to remove the boundary grids, the overall layout might seem somewhat disordered. It is evident that the boundary grids still play a certain restrictive role.

(2) Unbounded Format

In the "Twenty Chapters of Longmen", the layout of the boundless format is relatively rare. Through the examination of the twenty chapters, there should be six chapters: "Yuanxie's Record of Statues", "Cixiang and Huizheng's Record of Statues", "Helan Khan's Record of Statues", "Sun Bao's Record of Statues", "Yuanxiang's Record of Statues", and "Huigan's Record of Statues". The first three chapters are characterized by an unbounded grid throughout the entire text, which is relatively free to write. The characters vary in size, with strokes extending and enlarging to the left and right. For instance, in the "Record of the Statues of Ci Xiang and Hui Zheng", the "beauty" character has its left-falling strokes extended, expanding its influence to the upper part of the "micro" character. In the "Record of the Statues of Yuan Xie", the line spacing and character spacing of the characters are relatively dense, and the brushstrokes are more casual, especially the "left-falling strokes" and "vertical curved hooks". For instance, the character "Jian" has a natural and smooth stroke, approaching the last stroke of running script characters like "qi" and "jian", with a sudden upward stroke to the upper left, full of vitality. The inscriptions on the last t

Three types of statues have boundaries for the main body but no boundaries for the lines. For instance, in the last line of "The Inscription on the Statue of Sun Bao", the words "Empress Gao of the Beihai Kingdom of Wei created it for Sun Bao" have relatively close character spacing. When viewed as a whole, the line spacing is wide and the character spacing is small, giving it a bold and refreshing appearance. The line inscription at the end of "The Record of Yuan Xiang's Statues" reads, "On the 23rd day of the 9th lunar month in the 22nd year of the Taihe era of the Wei Dynasty, it was created by Yuan Xiang, the General of the Imperial Guard and the Prince of Beihai." The character spacing is tight, and the font size is slightly smaller than that of the main text. It is unified yet contains variations.

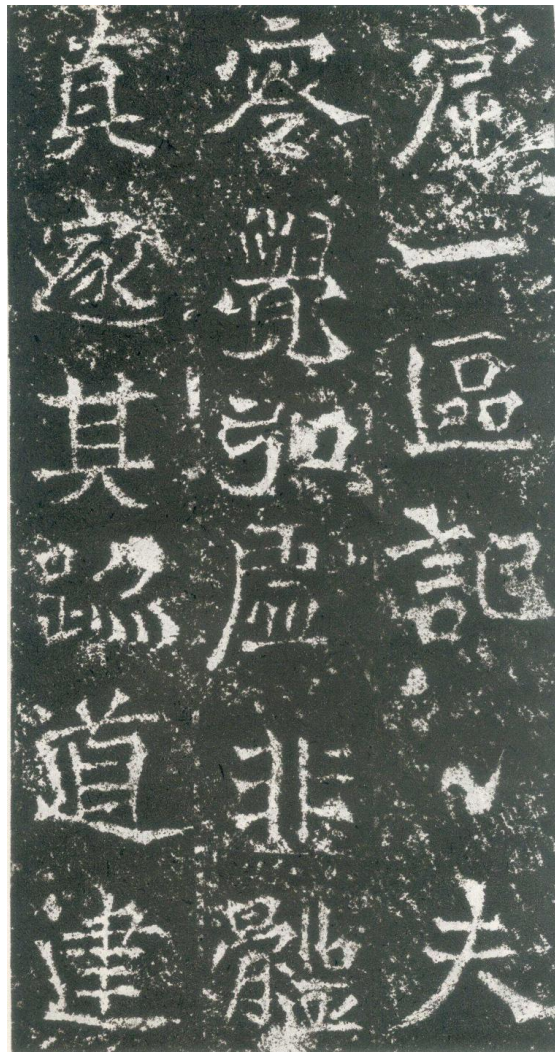


Figure 3-3-6 - Inscription of the Dowager Hou Statue Vow

While people need the delightful beauty of "small Bridges, flowing water and houses", they also need the breathtaking beauty of "ancient road, west wind and thin horse". In the "Twenty Grades of Longmen", whether it is the "Bounded Pattern" or the "Unbounded Pattern" of the composition form, they all give people a sense of magnificent composition form.

There are two forms of changes in the qi flow line, namely the linear form and the curvilinear form.

(1) Linear style

A line of characters with basically straight lines is called a straight-line style. Most straight-line styles also present a vertical line state. This style of writing is widely used in various calligraphic styles such as seal script, clerical script and regular script, and it is also the main form of expression in calligraphy works. This form gives people a sense of neatness, solemnity and consistency. All twenty styles of Longmen are regular script in the Wei style, with little variation in the flow and mostly using linear strokes. In addition, there are also a few diagonal line combinations, in which the qi flow line forms a certain Angle with the straight line. For instance, in "The Record of the Statues of Ma Zhenbai" and "The Record of the Statues of Empress Dowager Hou", although both are in Wei regular script, the characters in the entire chapter are inclined to the lower right, thus forming a slanted line of flowing energy.

(2) Curvilinear layout

The line of a line of characters is curved, that is, the upper and lower characters of this line are uneven to the left or right, causing the line to sway left and right. This type is called a curved line style. This form gives people a lively, changeable, dynamic and vigorous feeling, so it is mostly used in running and cursive scripts. This kind of style rarely appears in the "Twenty Grades of Longmen". Occasionally, it occurs in works such as "The Record of the Statues of Zheng Changyou" and "The Record of the Statues of Ci Xiang and Hui Zheng", but it is not common.

The overall characteristics of the form composition of the "Twenty Chapters of Longmen" image records are powerfully demonstrated from aspects such as the brushwork features, character structure features, composition features, and flow and energy features.

Chapter 4: Buddhist Culture and Symbolic Significance of Longmen Grottoes

Originating from ancient India, the grottoes, along with the introduction of Buddhism to China, collided and integrated with traditional Chinese culture and art, scattering like brilliant pearls across the vast land of China. From vast deserts to boundless grasslands, from dense mountains and forests to quiet river valleys, on the vast land of China, grottoes stand quietly in the mountains and by the rivers, as if pairs of eyes are witnessing history. When they were being excavated, they once accommodated monks and nuns who were devoted to their spiritual practice, received offerings and worship from pilgrims coming and going, and also attracted scholars and poets to compose poems and express their feelings. They are treasures of ancient Chinese art and culture, having weathered many storms and vicissitudes, telling touching stories to the people coming and going.

Section 1: The Embodiment of Buddhist Stories and Legends in Grottoes

In order to promote its doctrines, Buddhism often uses some simple stories to explain many profound principles. At the same time, in order to strengthen the supreme status of Sakyamuni, the object of worship, among believers, great importance was attached to the promotion of Sakyamuni, the founder of Buddhism. Therefore, in Buddhist temples and grottoes, stories about the life of Sakyamuni (referred to as the Buddha's life stories) that are carved or painted can be seen everywhere. There are mainly three types of story paintings in the Dunhuang murals: The first type is the story of the Buddha's life, also known as the "original story", which mainly tells the life story of Sakyamuni. The second type is the Jataka story, which mainly tells the story of Sakyamuni's previous life. The third type is called "karma stories", which tell some karma stories.

ies related to the Buddha. Buddhism talks about reincarnation and retribution, believing that many of the blessings or difficulties in this life are related to the "causes" sown in previous lives. Although these ideas are highly superstitious, many of the Jataka stories originated from ancient Indian folk tales or fables, embodying the simple idea of encouraging good and punishing evil. Even today, they still hold certain positive significance. In addition, there are a small number of Buddhist historical site story paintings, which tell the legends and stories of some eminent monks in the history of Buddhist development or certain Buddhist sacred sites in certain places.



Figure 4-1-1 - Inscription of the Yuanxie Statue Vow

Sakyamuni, whose original name was Siddhartha Gautama, was born around 565 BC in the ancient Indian kingdom of Kapilavastu. His father was King Suddhodana and his mother was Queen Maya. There are all kinds of mysterious legends about the birth of Prince Siddhartha. It is said that Lady Maya dreamed that a Bodhisattva came riding a six-tusked white elephant, and thus she was pregnant. According to the customs of ancient India, when a woman gave birth, she would return to her parents' home. When she was about to reach the tenth month of her pregnancy, Lady Maya, accompanied by many maidservants, returned home. On her way, she passed through the Lumbini Garden. Feeling unwell, she slowly entered the garden. As she climbed the tree of peace, the prince was born from her right flank. It turned out that Sakyamuni did not

want his mother to suffer the pain of childbirth, so he was born under his arm. The crown prince could walk as soon as he was born. He took seven steps, and after each step, a lotus flower grew under his feet. He pointed to the sky and the earth with his fingers and said, "In the heavens and under the earth, only I am supreme." At this time, nine dragons in the sky sprayed sweet dew to bathe the crown prince. Lady Maya and the Crown Prince returned to the palace. King Suddhodana was very pleased and named the crown Prince Siddhartha.



Figure 4-1-2 - Four Outings of the Prince, Northern Liang, Cave 275

He lived in the palace and enjoyed all the pleasures of the world. However, the Crown prince often felt depressed because when he was traveling outside the city, he saw many sufferings in the human world such as disease, aging

and death, and fell into deep thought. This experience is called "The Four Gates of Travel". At the age of 29, Siddhartha decided to become a monk and practice Buddhism, seeking a way to free himself from the sufferings of the human world. To avoid being stopped by the king, he left the city one night and began his ascetic life in the mountains. This experience is called "leaving the city to become a monk". He only ate a little bean soup every day to sustain his life. After six years of asceticism, he felt that asceticism could not solve the problem. So he went to the Niliyan Chan River to wash away the dirt accumulated over the past six years and accepted the milk given by the shepherd girl. Gradually, he regained his strength. When he was lost in thought under the Bodhi tree, he overcame all the obstacles in his heart and suddenly achieved enlightenment. From then on, he understood the true meaning of the world. This event is called "subduing demons and attaining enlightenment". He began to take on disciples and give lectures, promoting his theories. This is known as the "initial transformation of the Dharma Wheel". The doctrine he advocated was Buddhism. He is respectfully called Sakyamuni, which means the sage of the Sakya clan. Later generations also called him the Buddha, meaning a person who has achieved great enlightenment. After the establishment of Buddhism, its development was not very smooth. Sakyamuni constantly went to various places to preach and expand the influence of Buddhism. In 484 BC, Sakyamuni passed away in the twin forests of Kushina.



Figure 4-1-3 - Conception by a White Elephant, Early Tang, Cave 57

Most of the Buddhist biographies depicting the life of Sakyamuni are drawn based on relevant records in Buddhist scriptures. In Buddhist scriptures, Sakyamuni is often deified and endowed with many supernatural elements. This is also a feature of the story paintings in the Dunhuang murals. In the south wall of Cave 275, the earliest cave of the Mogao Caves era, there are paintings depicting the stories of the Buddha. They show Prince Siddhartha's "four Gates" before he became a monk, where he met an elderly person, a sick person, a dead person and a monk respectively. Due to the damage to the wall, only three scenes remain. The figures in the painting have the characteristics of people from the Western Regions, while the architecture of the city gate is a distinct traditional Chinese architectural form, with the eaves and dougong brackets of the gate tower clearly visible.



Figure 4-1-4 - Sneaking Out of the Palace at Midnight, Early Tang, Cave 57

Most of the Buddhist story paintings in the grottoes select one or two representative plots to depict, such as the scene where Lady Maya dreamed of a white elephant before the birth of Sakyamuni, which is called "riding the elephant in the human womb". The scene where Prince Siddhartha decided to leave home for spiritual practice and rode across the city on horseback is called "Crossing the city to become a monk". These two plots, one symbolizing the birth of Sakyamuni and the other the beginning of his spiritual practice, are the most common scenes of the Buddha's life in murals. In the caves of the Sui and early Tang Dynasties, these two scenes were often painted on both sides of the front niches respectively, which had a decorative effect. Caves 57, 209 and 329 are typical examples. On one side, a Bodhisattva riding a white elephant came from the sky, accompanied by many celestial beings playing music. On the other side, Prince Siddhartha rose into the air on horseback, with four little celestial beings holding the horse's feet. Around him, flying celestial beings scattered flowers and flew, creating a lively atmosphere.



Figure 4-1-5 - Conception by a White Elephant from the Buddha Life Story on the Vault Above the West Wall Niche, Cave 329, Mogao Grottoes

Subduing demons and attaining enlightenment, as well as the initial rotation of the Dharma wheel, are also important scenes that demonstrate the transmission of Buddhism. The former shows that when Sakyamuni achieved enlightenment, the demon king Porten was deeply afraid that Sakyamuni's enlightenment would threaten him, so he led a group of demon troops to attempt to kill Sakyamuni. However, in the face of the siege by all the demons, Sakyamuni remained calm and composed. With his supernatural powers, he defeated the demonic army and made all the demons submit. The scenes depicting this theme are also known as the demon-subduing transformation and are very common in Indian and Gandhara carvings. The demon-subduing transformation in the Northern Wei Dynasty murals of Dunhuang fully inherits the foreign composition forms and imagery in terms of composition. For instance, on the south wall of Cave 254, the Buddha is sitting in the center, and all kinds of demons around are holding various weapons and attacking the Buddha. The lower part of the picture depicts the appearance of the defeated demonic army kneeling before the Buddha. On the left side, there are three beautiful women seducing Sakyamuni. On the right side of the lower part, there are three old women with ugly faces. This shows that when the demon king Porten saw that the demon army c

ould not defeat Sakyamuni, he devised a beauty scheme, attempting to tempt Sakyamuni with a beautiful woman. But Sakyamuni remained unmoved and, with his divine power, transformed the beautiful woman into an ugly and old woman. The first turning of the Dharma wheel depicts the scene of Sakyamuni's first preaching at the Deer Park after attaining Buddhahood, also known as the preaching at the Deer Park. It is usually depicted that the Buddha is preaching. In front of the Buddha, there are two deer symbolizing the Deer Field Garden, and there are three circular Dharma wheels. On both sides of the Buddha are painted five bhikkhus, representing the first five bhikkhus who followed Sakyamuni. In Caves 260 and 263 of the Northern Wei Dynasty, there are paintings of the first transformation of the Dharma wheel, especially the mural in Cave 263 is well-preserved.



Figure 4-1-6 - Scene of Subjugation of Demons, Northern Wei, Cave 254

The Nirvana diagram is also an important part of the Buddha's biographies. The Nirvana of Sakyamuni means the disappearance of the physical body and the elevation of the soul, thus entering a state of neither birth nor death. For Buddhism, from then on, the Buddha is no longer a physical figure but a spiritual mentor that exists forever. Therefore, Nirvana is the highest realm of Bu

ddhism. The Nirvana picture holds a very lofty position in Buddhist art, which is the same religious realm as the depiction of Jesus crucified in Christian art.

The Nirvana painting on the west wall of Cave 428 of the Northern Zhou Dynasty is the earliest Nirvana painting in the Mogao Caves. Its expression method is consistent with that of Buddhist art in Central Asia, depicting the Buddha lying peacefully under two trees, surrounded by many disciples. The disciples have sad expressions, and the eldest disciple, Kasyapa, is touching his feet and crying pitifully. The entire picture is filled with a melancholy mood.



Figure 4-1-7 - Nirvana Scene, Northern Zhou, Cave 428

The mural that most comprehensively presents the content of the Buddha's life story is the Buddha's life story on the human-shaped roof in Cave 290, which depicts the story from the birth of the Buddha, his ordination to his enlightenment. Just like comic strips, the two strips of the character "Ren" are each connected by three long scrolls, totaling six scrolls, depicting 87 plots. It can be called the longest comic strip. The lines in the picture are smooth and clear, the colors are simple and light, and the background is architecture and landscape. The figures are simple and concise, reflecting the achievements of early mural story painting art. Cave 61 of the Five Dynasties period also uses screen paintings to divide the lower parts of the south, west and north walls, depicting a complete story of the Buddha's life. Its content is even more abundant, ranging from various legends and stories before the birth of the Buddha to his Nirvana, depicting a total of 128 plots. It is the most comprehensive story painting in the Mogao Caves and is also very rare among existing Buddhist art. The picture also shows various aspects of people's social life at that time, such as life in the palace, singing and dancing, feasts and music, horseback and archery

competitions, market life, farming scenes, etc., reflecting the various living conditions of the medieval society.



Figure 4-1-8 - Detail of Buddha Life Narrative, Northern Zhou, Cave 290

The story of the Nine-Colored Deer was originally a widely circulated legend in ancient India. After the emergence of Buddhism, this story was incorporated into the Buddhist scriptures. The story goes that on the banks of the Ganges River in ancient India, there lived a beautiful deer. Its fur had nine distinct colors, hence it was called the Nine-Colored Deer. One day, the Nine-Colored Deer was walking along the riverbank when suddenly it heard a frantic cry for help coming from the river. The Nine-Colored Deer followed the sound and saw a person who had fallen into the current struggling. Seeing this, the kind Nine-Colored Deer, disregarding its own safety, jumped into the current and swam to the person's side, carrying them on its back and swimming back to the shore. The person who had fallen into the water was deeply grateful and knelt before the Nine-Colored Deer, saying, "Dear lord, I don't know how to repay you." The Nine-Colored Deer calmly said, "There is no need to thank me, but please promise me one thing: after you return, do not tell anyone where I am. People may covet my fur and might harm me." The person swore by heaven, saying, "I will never tell anyone about your whereabouts. If I break my oath, let my body be covered with poisonous sores and die in agony." When he returned to the city, he saw a notice posted at the city gate, and many people were gathering to watch. It turned out that the queen of the country had a

dream in which she saw a very beautiful Nine-Colored Deer. After waking up, she asked the king to capture the Nine-Colored Deer and take off its fur to make clothes for herself. The king thought it was just a dream and might not really exist; but to satisfy the queen's request, he had a notice posted, saying: Anyone who knows the whereabouts of the Nine-Colored Deer, please promise to give half of the country to him and be rewarded with countless gold and silver. The person who fell into the water saw this notice and, under the temptation of the huge reward, became extremely greedy and forgot his oath. He reported the location of the Nine-Colored Deer to the king. The next day, the king, accompanied by a large army, came to the forest on the banks of the Ganges River. The Nine-Colored Deer, completely unaware of the impending disaster, was taking a nap in the forest. When its friend the crow woke it up, the king's army had already surrounded it. The Nine-Colored Deer suddenly saw the person who had fallen into the water leading the way in front of the king and immediately understood everything. It raised its head and walked towards the king, saying, "Honorable monarch, I once did a favor for your country. Why do you want to kill me?" Then it recounted in detail to the king what it had done on the banks of the Ganges River the previous day. The king was deeply moved and said, "The deer, even as a beast, knows good and evil. How can a human being do such a treacherous and ungrateful thing?" So he ordered that from then on, no one was allowed to harm the Nine-Colored Deer. After the person who fell into the water reported the information, he was covered with poisonous sores and emitted a disgusting smell. Soon, he died in agony. This story was painted on the west wall of Cave 257 of the Mogao Caves. The painter used the traditional Chinese long-scroll-style comic strip format, depicting the development of the story in order from the two ends to the center, detailing the scene where the Nine-Colored Deer recounted the events to the king. The central scene depicted the Nine-Colored Deer standing upright, highlighting its upright and kind character. Its imposing image left a deep impression.



Figure 4-1-9 - Detail of the Nine-Colored Deer Jataka, Northern Wei, Cave 257

On the southern wall of Cave 254 in the Mogao Caves, the story of "Saddhu's Birth" was also depicted. It tells of an ancient Indian king who had three sons, with the youngest named Mahosadhu. One day, the three brothers were playing in the mountains and on their way back, they found a mother tiger lying at the bottom of a cliff, starving to death. Next to it were several cubs, also starving and crying loudly. All three were very sympathetic, but none could think of a way to rescue them. Saddhu wanted to find some food for the tiger, but his elder brothers told him that tigers only eat fresh blood and other things were of no help. So Saddhu the prince secretly decided to save these tigers. He sent his elder brothers ahead and quietly returned to the place where the tigers were. He lay down on the ground and let the tigers eat him. But the tigers were so hungry that they had no strength to bite him. Saddhu was very anxious. He found a wooden splinter and climbed up the cliff, using the splinter to pierce the tiger's throat, then jumped off the cliff and landed beside the mother tiger. The mother tiger and the cubs licked the blood that Saddhu's saliva had exuded, gradually regaining strength and eating up all the flesh on Saddhu's body. Moreover, Saddhu's elder brothers found that their younger brother was missing and hurriedly returned to the mountains to search. However, they only found a pile of bones at the bottom of the cliff. They understood that Saddhu had sacrificed himself to save the tigers and were extremely sad. They hurriedly returned to the palace and reported to the king. The king and the queen were deeply saddened upon hearing this. The two brothers gathered Saddhu's remains and built a pagoda to worship him. The

storyline of this story is very complicated and bizarre. The painter depicted the entire story in a square-shaped picture. The center of the picture shows the three brothers looking down, along their line of sight, we see a fierce-looking tiger gnawing at a person lying horizontally. This is the center of the entire picture; on the right side, two continuous scenes of Saddhu the prince piercing his neck and jumping off the cliff are depicted, connecting with the "feeding the tiger" scene, making the picture full of tragic colors; on the lower left, Saddhu's parents are comforting the corpse and weeping, further enhancing the tragic atmosphere of the picture. The entire picture is compact in structure, with strong colors, giving a dramatic effect visually, and is an excellent work of early story paintings.

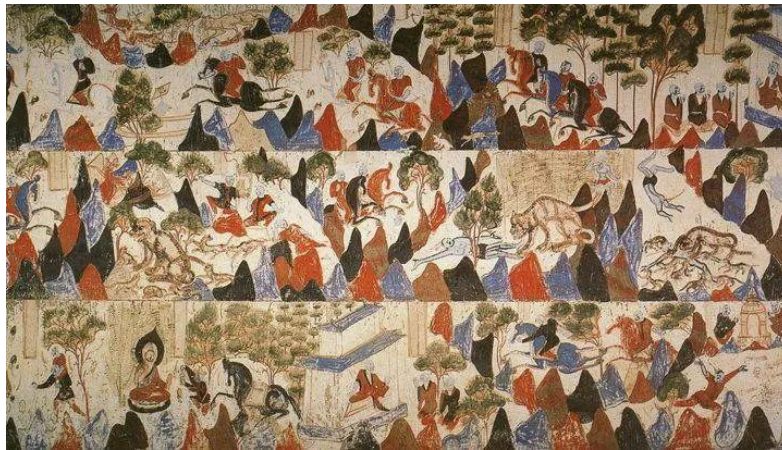


Figure 4-1-10 - Jataka of Prince Sattva, Northern Wei, Cave 254

The same content was also depicted on the eastern wall of the 428th cave of the Northern Zhou Dynasty. Here, the painter used a long scroll-style composition with three sections to detail 14 episodes of the Taishi Prince and his two elder brothers leaving home, entering the mountains, encountering tigers, feeding the tigers, and eventually building a pagoda to offer sacrifices. Although this form of comic strip was not as concentrated and intense as the scene in the 254th cave, it was detailed, clear and easy to understand. Therefore, after the Northern Wei Dynasty, the form of comic strips became more popular in murals.

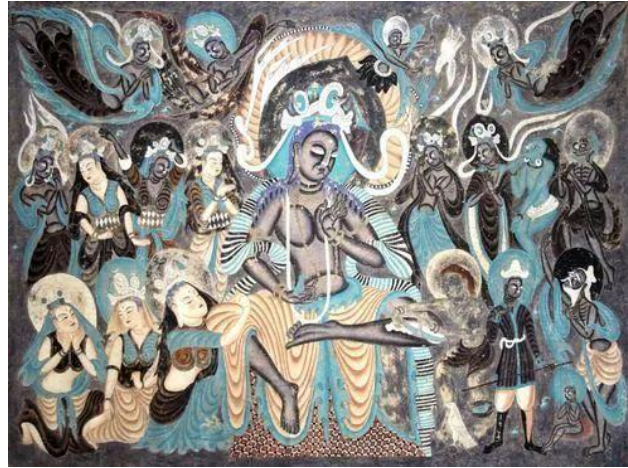


Figure 4-1-11- Jataka of Prince Sattva, Northern Zhou, Cave 428

On the north wall of Cave 254 of the Northern Wei Dynasty, there is a parable of King Shihui. It depicts an ancient story of a king named Shihui who was kind-hearted and generous, vowing to save all living beings. One day, an eagle was chasing a pigeon. The pigeon was in great danger and was flying around with nowhere to hide. It came to Shihui and asked him to protect it. At this time, the eagle had already caught up and was demanding the pigeon from Shihui. Shihui said, "I have vowed to save all living beings. I hope you won't eat this pigeon." The eagle said, "If I don't eat the pigeon today, I will starve to death. Why do you only save it but not me?" Shihui said, "I'll give you other food." The eagle said, "I only eat fresh blood and flesh. I won't eat anything else." Shihui, thinking of his vow, wanted to save the pigeon but couldn't harm other living beings. So he decided to exchange his own flesh for the pigeon's life. He asked his attendants to bring knives, and cut the flesh from his leg to give to the eagle. The eagle said to Shihui, "Since you want to use your own flesh to replace the pigeon, I won't take too much. Please use a scale to weigh out the same weight of flesh as the pigeon's." Shihui had someone bring a scale, placing the pigeon on one side and the flesh from his own body on the other. Surprisingly, the flesh from his leg had been used up, and even his own flesh had been cut off. It still didn't reach the weight of the pigeon. Shihui thought about his vow and, in order to completely rescue this weak pigeon, decided to sit on the scale and offer his entire body to the eagle.

At this moment, the sky shook, and the gods of heaven scattered flowers for Shihui. The cut flesh immediately returned to Shihui. We could see the Indra and the ministers standing in front of the king with smiling faces, saying, "Congratulations! You have achieved the supreme enlightenment." It turned out that Indra and the ministers had transformed into an eagle and a pigeon respectively to test Shihui's sincerity in giving. Indeed, Shihui was firm in his determination to endure humiliation and give, meeting the requirements of Buddhist practice. The painter focused on depicting the image of Shihui. He tilted his head slightly, showing a kind, generous, and fearless spirit. He held the pigeon in one hand and blocked the eagle with the other. On his left, a fierce-looking person was holding a knife and forcefully taking the meat; on his right, another person was holding a scale, with the pigeon on one side and Shihui sitting on the scale on the other. Around him, the king's family members were crying sorrowfully, further highlighting the king's serenity and calmness.



Figure 4-1-12 - Jataka of King Shipi, Northern Wei, Cave 254

The Vimalakirti Jataka tells a story of filial piety. In ancient times, there lived an elderly couple in the Kingdom of Kashi who were both blind. Fortunately, they had a son in their later years and named him Shanzi. When Shanzi grew up, he was extremely filial to his parents. The elderly couple had long earned for a quiet life of cultivation in the mountains far away from the city. When their son was old enough to take care of them, the whole family moved to the deep mountains. Shanzi lived in harmony with the birds and beasts around him. He fetched water from the stream every day and devoted himself to

serving his parents. One day, Shanzi, wearing a deer-skin coat, went to the stream to draw water. Just then, the King of Kashi led his soldiers to hunt in the mountains. Seeing many wild deer by the stream, the king drew his bow and shot an arrow. Unexpectedly, the arrow hit Shanzi who was fetching water by the stream. Shanzi cried out in shock: "With one arrow, you have killed three Taoists!" The king was filled with remorse when he realized he had shot a person. He hurried forward to check on Shanzi, but was very confused by his words, so he asked Shanzi for an explanation. Shanzi explained that his blind parents would be left uncared for and would struggle to survive in the mountains. With these words, he passed away. The king was deeply grieved and promised to take care of the blind parents in Shanzi's place. He then went personally to tell them what had happened. Shanzi's parents followed the king to the place where Shanzi died and burst into loud weeping. Their cries moved the Heavenly Emperor, who then sent someone to bring Shanzi back to life and restore the eyesight of his blind parents. This story is depicted in Caves 461, 438 and 299 of the Northern Zhou Dynasty, among which the mural in Cave 299 is the most representative. It is painted on a long scroll-shaped wall on the north side of the cave ceiling, along the edge of the caisson. The story unfolds from both ends towards the center: on the left side, scenes are depicted from left to right, including the King of Kashi in his palace, traveling on horseback, hunting, and Shanzi being hit by the arrow. On the right side, the narrative proceeds from right to left, showing Shanzi serving his parents in the mountains, the king leading the blind parents to the stream, and them weeping over Shanzi's body. The ending of the story is placed in the center of the painting, highlighting Shanzi's image.

The Sudhana Jataka mural is located on the ceiling of Cave 296 of the Northern Zhou Dynasty. It tells the story of the King of the Treasure Armor Kingdom, who had two sons: one named Sudhana (meaning "good deeds") and the other named Dushana (meaning "evil deeds"). Prince Sudhana was kind-hearted and often opened the national treasury to distribute treasures to the poor. A

As time went by, however, the national treasury gradually became depleted, which aroused much discussion among the ministers. Prince Sudhana thought he should find a better way to enable everyone to obtain wealth. At that time, someone told him that there was a Cintāmaṇi (Wish-Fulfilling Pearl) in the possession of the Dragon King at the bottom of the sea, which could grant any wish. Sudhana decided to go to the sea to find the Cintāmaṇi. Dushana also wanted to go along, so the two brothers bid farewell to their parents and led two large ships respectively to sail deep into the sea. On the way, they encountered a Golden Mountain and a Silver Mountain. The greedy Dushana loaded a great deal of gold and silver onto his ship, which caused the vessel to capsize under the heavy load. Prince Sudhana, however, persisted in sailing forward. Guided by a blind mentor, he overcame numerous hardships and obstacles and finally reached the Dragon Palace, where he begged the Dragon King for the Cintāmaṇi. On his way back, Prince Sudhana met Dushana on an island. The two brothers shared their experiences since they parted. When Dushana saw that Sudhana had obtained the pearl, he was consumed by jealousy. While Sudhana was asleep, Dushana used a poisonous thorn to blind him, seized the Cintāmaṇi, and returned to the kingdom alone. He then made up a lie, claiming that Prince Sudhana had died and that he himself had obtained the precious pearl. Sudhana was suddenly blinded by the thorn in his sleep, but he did not know that it was Dushana who had done it. After a long time, a cowherd passed by with his cattle. One of the cows licked the poisonous thorns out of Sudhana's eyes. Prince Sudhana then followed the cowherd to the Kingdom of Rishipatana. He asked the cowherd to make a qin (a seven-stringed plucked instrument) for him, and made a living by playing the qin and performing on the street every day. Before long, people from the king's orchard took pity on him and hired him to help guard the orchard. Prince Sudhana tied bells with ropes; whenever he heard the chirping of birds, he pulled the ropes to drive the birds away. In his free time, he played the qin under the trees to amuse himself. The King of Rishipatana had a beautiful daughter. When she went for a walk in the orchard

rd, she was deeply moved by the beautiful music of Sudhana's qin. She often came to listen to him play and chat with him. As time passed, she gradually fell in love with this blind man. However, the king did not approve of their marriage. The princess, though, was very determined, and the king had no choice but to agree to their union. Later, everyone was greatly astonished and delighted to learn about Prince Sudhana's true identity—it turned out that the princess had long been betrothed to Prince Sudhana of the Treasure Armor Kingdom. The king then sent a large retinue to escort Prince Sudhana back to his homeland. This story is presented in a two-section horizontal scroll, narrated from right to left, depicting a total of 42 plot episodes. Scenes such as the prince going on an outing, distributing alms, farming, fishermen catching fish, and sailing across the sea are portrayed in exquisite detail, imbued with a strong flavor of daily life.

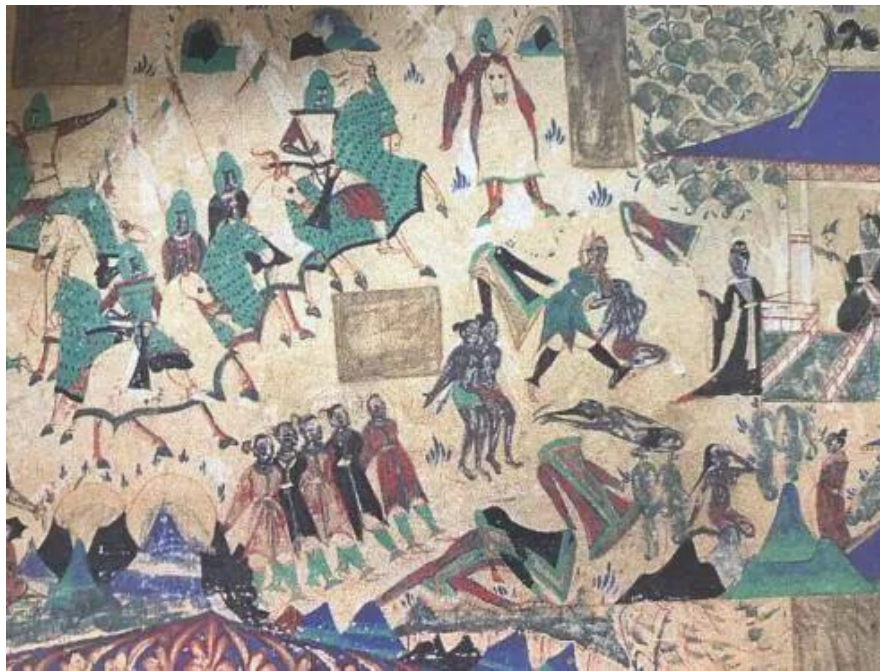


Figure 4-1-13 - Detail of the Syama Jataka, Northern Wei, Vault of Cave 299

The story of the 500 bandits becoming enlightened, also known as the "Eye Liberation" story. In an ancient Indian kingdom, there were 500 bandits who frequently committed robberies and caused chaos. Later, the king sent soldiers to engage in a fierce battle with the bandits, and finally, all 500 bandits were

They were captured and sentenced to severe punishments: some had their eyes gouged out, some had their noses cut off. The bandits were crying in pain and anguish in the forest. The cries startled the Buddha in the sky, so the Buddha, out of compassion, descended from the sky and preached to them, making them repent and all vowing to join the Buddhist community. The Buddha then scattered divine medicine, causing their wounds to heal and their eyes to regain sight. The 500 bandits changed their ways and devoted themselves to practice, and eventually, all of them achieved enlightenment.



Figure 4-1-14 - Detail of the Five Hundred Robbers Achieving Buddhahood, Western Wei, Cave 285

This story demonstrates that even the most evil bandits can become enlightened if they renounce their evil ways. This story is depicted in both Cave 285 and Cave 296 of the Mogao Caves. In the southern wall of Cave 285 from the Western Wei Dynasty, this story is depicted in the form of a long scroll-style series of pictures. The picture proceeds from left to right, depicting the battle between the government troops and the bandits, the bandits' arrest, punishment, and exile in the mountains, the Buddha's preaching to them, and the 500 bandits' conversion. The painter not only depicted the characters but also paid attention to the surrounding environment, including tall buildings, distant mountains, trees, and ponds, as well as animals in the mountains. Especially the scene where the Buddha preaches to the bandits, the picture shows a pool surrounded by hills, with rippling water and ducks, herons, etc. in the pool; animals

such as deer and foxes can be seen in the mountains; and behind the Buddha is a grove of green bamboo. If we ignore the story content, what we see is a completely charming landscape painting. The peaceful and beautiful atmosphere during the Buddha's preaching contrasts sharply with the cruel scenes of the battle and punishment of the bandits depicted in the picture, and it is highly artistic. The southern wall of Cave 296 also depicts the same content, using the same long scroll-style format, detailing the scenes of the government troops' departure, the fierce battle with the 500 bandits, capturing the bandits, punishing them, the bandits' wailing, the Buddha preaching to the bandits, and the bandits' conversion. The picture emphasizes the battle and punishment of the bandits and deliberately showcases the power of the monarchy.



Figure 4-1-15 - Detail of the Five Hundred Robbers Achieving Buddhahood, Western Wei, Cave 285

When Buddhism was first introduced to China, it emphasized the practice of the six perfections (also known as the six paramitas, which refer to giving, observing precepts, enduring suffering, diligence, meditation, and wisdom, representing six types of spiritual practices). Therefore, the murals were filled with parables about giving, endurance, and the spirit of sacrifice, and some of these stories were difficult for the Chinese to accept. During the Northern and Southern Dynasties, there was a long period of conflict among Confucianism, Buddhism, and Taoism. During the reigns of Emperor Wu of Northern Wei and Emperor Wu of Northern Zhou, there were large-scale campaigns to eradicate Buddhism, including the demolition of temples, destruction of Buddha statues, and

forcing monks and nuns to return to secular life. This dealt a heavy blow to Buddhism. As a result, Buddhism had to adopt more flexible measures to adapt to the cultural environment of China. To compromise with Confucianism, stories promoting filial piety became more prevalent, and thus Buddhism quickly integrated with Chinese traditional culture. The development of story paintings in Dunhuang murals also reflects this historical fact in the history of Buddhism.

Due to the need to depict a large number of story paintings, it stimulated the development of Chinese story painting art.

Section 2: Analysis of Buddhist Rituals and the Functions of Grottoes

I. Buddhist Rituals

For Buddhist disciples, the scenes of lining up to perform obeisance and recite scriptures during repentance and precept ceremonies in the temple, as well as the solemn appearance of the presiding master wearing a Vairocana crown in the Hungry Ghost Feeding Ceremony, are all familiar sights.

These folk beliefs and Buddhist rituals often prompt ordinary people to ask: What are they doing? Why are they doing it? Do such things really exist? What is the purpose of these practices? Despite having a series of such questions, most people just stop there and do not delve deeper into them. When faced with similar situations themselves, they can only follow suit mechanically.

We believe that this kind of confusion stems from ignorance about the meanings and procedures of Buddhist rituals. Therefore, we will elaborate on Buddhist rituals from the following aspects:

Definition of rituals

Scope and categories

Origin of their formulation

Basic contents and core doctrines

Comparison between Buddhist rituals and traditional customs

Exploration of the roles and functions of Buddhist rituals



Figure 4-2-1 - Detail of the Five Hundred Robbers Achieving Buddhahood, Western Wei, Cave 285

(I) Definition of Rituals

Buddhism uses rituals to express the various principles and doctrines within the Buddhist tradition. In simple terms, it is like a general ceremony, such as the ancient national ceremony of offering sacrifices to the heavens, the emperor's accession to the throne, or the current military parades, sacrificial ceremonies for Confucius, river deities, land deities, etc.; in the folk world, there are rituals for sacrificing to ancestors, mountain gods, river gods, land deities, etc.; the ancient Chinese rituals included funeral rites, wedding ceremonies, the initiation ceremony for adulthood, etc., all of which aimed to achieve harmony in the hearts of people, enhance morality, and demonstrate a high level of civilized spirit. The spiritual significance of Buddhist rituals is similar to these secular ceremonies, but unlike secular rituals, there are also the principles of changing the flow of life, correcting the nature of the mind to make the body, speech, and mind pure, through practice to transform karma, or to communicate with Buddhas, Bodhisattvas, kings, dragons, and gods, in order to avoid ghosts, sins, and suffering, and to obtain peace and ease in life.

"Ritual" in Buddhism means "manner" and refers to our body, speech, and mind. Through the body, speech, and mind, it drives the six elements' realm. Through the transformation of the six-element realm, it then triggers the arising and manifestation of the body, mind, mountains, rivers, and the earth, and the understanding of the theory of consciousness-only. This is what is meant by "ritual". "Track" means rules, like the two rails of a railway allowing the train to move freely; "Track" is also like a compass, by following the center, one can achieve completeness, can rely on it, can engage in practice, change the realm of life, nature, and interpersonal relationships, as a method. Therefore, combining "ritual" and "track" is a combination of the body, speech, and mind of the masses, along with various implements, time, causes and conditions, various buildings and arrangements, such as gongs, bells, drums, wooden fish, jugs, etc., and various offerings such as incense, flowers, lamps, coatings, fruits, music, curtains, etc., along with melodious chants and elegant music, and profound scriptures, mantras, and praises. Through the hand gestures, hand seals, body postures, spoken words, and mental contemplations of the masses, this is presented through the rituals. At the same time, through the ritualization, it changes the nature of the mind, interpersonal relationships, and life power of the masses, and even changes the realm of the universe and life.



Figure 4-2-2 - Buddhist Ceremony Scene

(II) Scope and Types

The ritual encompasses the conduct of body, speech and mind, which is formulated based on the principles of the fundamental teachings of Buddhism, aiming to help sentient beings eliminate sins and increase virtue and wisdom. When Buddhist disciples enter the temple gate or step into the hall, they perform rituals such as paying homage to the Buddha, offering incense, greeting the master, having conversations, learning meditation, reciting scriptures, and even when leaving the temple or when living in the temple, they perform morning board beating, drumming, bell ringing, chanting sutras, morning prayers, passing meals, going out for a walk, reciting scriptures, meditating, and even during large-scale ceremonies. There are certain rules for every aspect of their activities; from the smallest details of daily life to every action and thought of the disciples, whether in the monastery or outside, they are all within the scope of the ritual. However, most people often mistakenly believe that the ritual is merely some prayers to eliminate disasters and superstitious ceremonies for the deceased, as well as some rituals for Buddhist monks to meditate and recite scriptures. In fact, this is not the case. The ritual was formulated by the patriarchs of past generations based on the teachings of the Buddha and the records of the scriptures, integrating the spirit of Buddhism into the daily activities of laypeople, monks, and nuns, and regulating them so that they can cultivate good deeds and eliminate bad ones. It can be said to be a kind of life rule expressed through a high degree of religious sentiment, philosophy, and moral norms. This is the spirit of the Buddhist ritual. During the Song Dynasty, a great Confucian scholar visited a temple and saw the monks having meals and reciting scriptures during the morning assembly. He couldn't help but exclaim: "The rituals of the three dynasties are all present in the Buddhist world." From this anecdote, it can be seen that the rituals of the Buddhist world can express the spirit of secular rituals and have a normative function for people. The rituals of the Buddhist world start from the spirit of Buddhism and, before Bai Juyi asked the Zen master of the Bird's Nest Temple what the essence of Buddhism is,

the Zen master replied: "Avoid all evil deeds, practice all good deeds, purify one's mind, this is true Buddhism." This sentence embodies the spirit of Buddhism and conforms to the concept of the ritual.



Figure 4-2-3 - Schematic Diagram of Grotto Functions

The categories of Buddhist rituals are summarized as follows:

1. Ceremonies Celebrating the Birthdays, Enlightenment, and Parinirvana of Buddhas and Bodhisattvas
2. Memorial Days of Buddhist Patriarchs
3. Rituals for Blessing Kings and Monarchs (no longer in use today)
4. Rituals for Praying for National Peace and Well-being
 - (1) Benevolent Kings' Dharma Assembly for Protecting the Nation: centered on the Benevolent Kings' Prajna Sutra and the Golden Light Sutra
 - (2) Rain and Good Harvest Prayer Assemblies: centered on the Avalokitesvara Sutra Invocation
 - (3) Green Seedling Assemblies for Praying for Crop Growth
5. Rituals for Relieving the Suffering of Beings in the Six Realms
 - (1) Heavenly Realm: Great Celestial Feasting Assemblies
 - (2) Human Realm: Free-Will Offering Assemblies (open to all beings)

(3) Hungry Ghost Realm: Hungry Ghost Feeding Ceremonies, Mengshan Ceremonies

(4) Animal Realm: Animal Release Assemblies

(5) Hell Realm: Ksitigarbha Dharma Assemblies

(6) Crossing Beings of the Six Realms: Water and Land Dharma Assemblies

6. Rituals for Spiritual Practice

(1) Precepts: Five Precepts Assemblies, Eight Precepts Retreats, Bodhisattva Precepts Assemblies, Three Platform Ordination Ceremonies

(2) Samadhi (Concentration): Vajra Chan Meditation Assemblies, Seven-day Chan Retreats, Seven-day Buddha Recitation Retreats, etc.

(3) Prajna (Wisdom): Sutra Invocation Assemblies, Buddhist Studies Lectures, etc.

(4) Repentance: Water Repentance Ceremonies, Emperor Wu of Liang's Precious Repentance Ceremonies, Great Compassion Repentance Ceremonies, etc.

7. Rituals for Blessing and Merit Transfer

(1) Blessing Prayers: Thousand-monk Feasting Assemblies, Ullambana Dharma Assemblies, Bright Lamp Assemblies, Gratitude Repayment Assemblies

(2) Merit Transfer for the Deceased: Memorial Dharma Assemblies, Rebirth Transference Dharma Assemblies

8. Others: Dharma Transmission Assemblies, Temple Abbot Installation Ceremonies, Pilgrimage Ceremonies

II. Historical Functions and Roles of Buddhist Grottoes

The excavation of Buddhist grottoes was originally a form of architecture and art created by Buddhism to facilitate spiritual practice, propagate Buddhist doctrines, teachings and tenets, and it has possessed diverse historical and cultural functions and roles.

As an important carrier of Buddhist culture, the most crucial functions of

Buddhist grottoes lie in "inner cultivation" and "outer propagation". They served as spiritual practice venues where monastics engaged in meditation and contemplation of Buddha statues, and also functioned as significant sites where lay believers worshipped Buddhas, prayed for blessings and fulfilled their utilitarian wishes.

Naturally, since grottoes usually housed a large number of statues and murals, they played an irreplaceable role in propagating Buddhist doctrines and disseminating Buddhism.

First, for monastic Buddhist practitioners, grottoes served as crucial venues for their spiritual cultivation practices. According to existing historical records, the excavation of numerous grottoes was closely associated with the meditation practices of Buddhist monks. Take the Bingling Temple Grottoes as an example: in Cave 169, which has the earliest recorded date, a ink-written dedicatory inscription mentioning "Chan Master Tanmopi" was discovered. Research has verified that this Tanmopi is the same figure as Tanwupi recorded in *Biographies of Eminent Monks*, who "entered this region, led his disciples to build a temple, and instructed them in the way of meditation". Another Chan master, Xu'an Shao, hailed from Longxi in Qinzhou; he "mastered various meditation methods and possessed supernatural powers". He "later entered Tangshu Mountain (present-day Bingling Temple) and passed away in a state of nirvana". These facts demonstrate that the Bingling Temple Grottoes were already a site for Chan monks' meditation practice as early as the Western Qin Dynasty.

The excavation of the Yungang Grottoes was linked to Tan Yao, a monk "renowned for his Chan practice". The Mogao Grottoes had connections with Yue Zun and Fa Liang, both devoted to meditation. Additionally, grottoes such as the Southern Xiangtangshan Grottoes, Xiaonanhai Grottoes and Lingquan Temple Grottoes were all excavated by Chan monks specifically for meditation purposes. At the Mogao Grottoes, Cave 285 features four small meditation chambers on each of its southern and northern walls, while the ceiling is adorned with paintings depicting 35 monks engaged in rigorous meditation practice in mountainous

tain grottoes. These artworks provide vivid visual evidence of the ancient practice of "excavating grottoes in fairy mountains for meditation".

From the perspective of the existing grotto layout, the earliest grottoes were simple meditation chambers with a single function, designed exclusively for meditation. They were small in space, accommodating only one or two people, and their surrounding walls were basically undecorated. However, after the Buddha's parinirvana, believers still aspired to remain in the Buddha's presence at all times and receive the protection of his boundless spiritual power. Thus, statues began to appear inside the grottoes. As the worship of Buddha statues deepened, a grotto spatial layout centered around Buddha statues gradually took shape. This layout was necessarily tailored to meet the needs of Chan monks for visualizing Buddha images and conducting their spiritual practices, and the selection of themes for the statues also had to satisfy this requirement. In other words, the themes of grotto statues were first and foremost determined by the need to create a space conducive to Chan visualization, as well as by Buddhist canonical doctrines. The so-called forms and techniques were all dedicated to serving the creation of such a religious space. The magnificent and colorful grotto statues were carved to meet the demands of Chan monks practicing different meditation methods based on various Buddhist scriptures and constructing distinct spaces for Chan visualization.

In summary, as an important architectural form of Buddhism, grottoes were used for meditation practices from the very inception of the religion. Every aspect related to them, including their location selection, excavation, spatial design and layout, as well as the choice of themes for statues, carvings and paintings, was inextricably linked to the meditation practices of Chan monks. It can be said that the earliest grotto statues were primarily created to fulfill the needs of Chan visualization, aiming to construct a religious space favorable for observing and contemplating the Buddha and his images.



Figure 4-2-4 - Summary of Buddhist Ritual Types

Second, for lay Buddhists and ordinary believers, grottoes served as vital venues for worshipping Buddhas, praying for blessings, and accumulating merit.

The most renowned example is none other than the Imperial Family Worshipping the Buddha bas-reliefs at the Longmen Grottoes in Luoyang, Henan Province, which vividly depict scenes where nobles represented by emperors and empresses entered the grottoes to pay homage to the Buddha. Wang Xinying analyzed the blessing-themed elements at the Shuilian Cave Grotto Complex in Luomen Town, Wushan County, Tianshui City, Gansu Province. This grotto complex is reputed as the sacred site where Mahasthamaprabhita Bodhisattva manifested herself as the "Maxian Goddess". Every year on the ninth day of the second lunar month, believers from far and wide gather here to worship Buddhas and reverence deities, praying for blessings and good fortune, making it a well-known blessing sanctuary in Gansu. In terms of artistic expression, the Shuilian Cave Grotto Complex integrates Buddhist decorative motifs with the evolution of China's traditional Five Blessings culture, forming a unique cultural heritage of blessing worship.

Based on four systematic surveys of the grottoes in northern Shaanxi, Gu Dongfang conducted research on 130 grottoes of the Ming Dynasty scattered a

cross 39 sites in 16 cities and counties. Focusing on 103 pieces of inscribed e pigraphs identified and collated, he analyzed in detail the identities of the meri t donors and the motivations behind grotto construction during the Ming Dynas ty. Research findings indicate that the merit donors of the Ming-dynasty grotto es in northern Shaanxi generally fell into four categories: clan donors (those w ho pooled family or clan resources to build or renovate grottoes based on bloo d ties), ten-direction donors (believers from different regions), military househol d donors (military families affiliated with guard stations who funded grotto and statue construction), and official donors (government officials of various ranks who participated in such projects). Their motivations for engaging in grotto c onstruction were diverse, but they primarily focused on secular interests, donati ng money and resources to build grottoes in pursuit of karmic blessings and re wards in the present life.



Figure 4-2-5 - Function of Grottoes for Worship and Prayer by Lay Followers

Third, for the broad body of believers, grottoes functioned as a medium f or spreading faith and propagating Buddhist doctrines. The original purpose of creating the murals and statues inside grottoes was to disseminate the fundame ntal tenets of Buddhism to the general public through vivid, visual forms.

Take, for example, the Buddha Jataka tales that frequently appear in grotto

murals. These narratives depict Sakyamuni Buddha's numerous benevolent deeds in his past lives during the cycle of reincarnation, when he took on forms such as a king, prince, Brahmin, merchant, hermit, or various animals. They extol his willingness to abandon his status, wealth, wife, children, and even his own limbs and life in pursuit of the Dharma and to save others, reflecting the diverse practices, paths, and processes of Buddhist cultivation and salvation.

Another case in point is the concept of samsara—one of Buddhism's core doctrines—which reflects the inherent nature of worldly existence: a cycle of suffering. It also expounds the path to transcendence and liberation into the state of anatta (non-self) through means such as generosity, observance of precepts, meditation, and wisdom. Through the intuitive medium of art, the murals in Buddhist grottoes proclaim the sufferings of existence across the different realms of samsara, as well as the karmic consequences of good and evil deeds—the core idea of "karma and retribution".

A specific illustration can be found in the diamond-shaped lattice murals on the vaulted ceiling of the main chamber in Cave 17 of the Kizil Grottoes: the scene "The Bear Saves the Woodcutter but Meets a Tragic End". The story recounts how a woodcutter, caught in a violent rainstorm while chopping firewood in the mountains, was rescued by a bear and thus survived. Driven by greed, however, on his way home after the rain, he revealed the bear's den to a hunter and conspired with him to burn the bear to death. As soon as the woodcutter reached for his share of the bear's meat, he received immediate karmic retribution: his hands fell off spontaneously. The mural depicts the bear lying prostrate inside its cave, the hunter aiming his bow to shoot, and the woodcutter's severed hands lying on the ground. This artistic portrayal undoubtedly conveys the Buddhist philosophy of karma and retribution.



Figure 4-2-6 - Function of Grottoes for Spreading Faith and Doctrine to the Public

Fourth

Grottoes serve the function of documenting the historical process of Buddhism's founding and propagation, as well as enhancing the religion's sacredness. For instance, Buddha's life scenes record the entire life story of Sakyamuni. The scene of "Birth Under the Tree" manifests the Buddha's noble status; "Subduing Mara and Attaining Enlightenment" depicts the full process of Sakyamuni's cultivation and enlightenment; "First Turning of the Dharma Wheel" portrays his preaching process—delivering his first sermon to the five ascetics at Deer Park; "Parinirvana" shows the scene of the Buddha's passing away: while his disciples grieve bitterly, the Buddha remains calm and serene, as if falling into a deep sleep without any suffering, revealing the supreme state of transcending the cycle of birth and death and all pain.

Fifth

Grottoes can create a devout and solemn atmosphere for Buddha-worship, and strengthen the religious emotions of Buddhists. The Buddha statues painted or sculpted inside grottoes, with their cross-legged sitting postures, preaching mudras, and dignified bearing, are rooted in the fact that worshipping the Bud

dha and listening to the Dharma constitute the most important religious practices of Buddhism as a faith. Through worshipping the Buddha, believers deepen their reverence for the supreme object of their faith; through listening to the teachings expounded by monks, they comprehend and learn the principles of Buddhism (the Dharma). The creation of Buddha statues enables Buddhist believers to instantly feel admiration and devotion toward the Buddha, which is also an indispensable process for further understanding Buddhist doctrines. Take the Buddha Preaching scenes as an example: with their grand scale and numerous figures, these scenes vividly depict the moments when believers are deeply moved by the profound philosophy and life insights contained in Buddhist doctrines, as well as the joy of attaining enlightenment and the scenes of praising the Buddha. The paintings emphasize the Buddhist concept of the Pure Land—an ideal paradise free from suffering. Without such beautiful depictions of the Pure Land, it would be difficult for believers to be drawn to the religious doctrines.

Sixth

Objectively speaking, grottoes play a role in reflecting real-life scenarios. When analyzing the significance of the murals in the Kucha Grottoes, Yao Wei categorized the real-life content they reflect into four types: reflecting the royal aristocracy's belief in and support for Buddhism; depicting the commercial travel life along the Silk Road; showing scenes of agricultural labor; and representing the grand spectacle of local music and dance.

Specifically, the murals in the Kizil Grottoes include numerous portraits of donors, some of whom are members of the royal family. The grotto murals also contain many story paintings about merchants, such as the scenes of "The Tortoise Saves the Merchant but Is Killed" in Cave 17 and Cave 38 of Kizil, as well as the tale of the merchant leader Sapta, who burned his arm to serve as a torch to lead a group of merchants out of a dark canyon. In the murals related to the cycle of birth and death, there are records of local people's toil and some farming activities, such as peasants plowing the fields with a plow pulled

d by two oxen and peasants digging the land. The Heavenly Musician and Dancer scenes in the Kizil Grottoes elaborate on the magnificent spectacle of the world-famous Kucha music and dance, truthfully reflecting the scenes of local folk music. These depictions bear formal similarities to the masked ghost dances in preserved Tibetan Buddhist rituals and the folk Dolans song and dance of the Uyghur people.

It is evident that grotto art reflects the authentic real-life content of its time, providing us with rare physical materials for historical research.



Figure 4-2-7 - Function of Grottoes for Recording the History of Buddhism

To sum up, as a special category of cultural heritage, Buddhist grottoes boast profound cultural connotations and vivid artistic forms. They also possess multifaceted functional values, such as the educational function (in terms of Buddhist doctrines and tenets), informational function (recording historical information), normative function (with religious precepts serving as a moral guideline), and aesthetic function (manifested through vivid and lifelike artistic forms). These all fall into the category of common functional values shared in secular culture.

Meanwhile, Buddhist grottoes also have unique functions in religious culture.

re, such as strengthening believers' religious emotions and facilitating religious emotional experiences. Specifically, they mainly enable believers to feel a sense of solemnity and sacredness, compassion, tranquility and transcendence, aversion to secular defilement, as well as joy and delight.

The cultural functions of Kucha grotto murals identified by Yao Wei are equally applicable to grottoes as a whole:

"Throughout history, grottoes have undertaken a variety of cultural functions. Their main roles are as follows: to visually interpret Buddhist doctrines, tenets and precepts, acting as a substitute for reading and reciting scriptures in that historical era; to enhance religious believers' devotional feelings, making them perceive the sacredness of the supreme object of faith—the Buddha—and the beauty of the Buddhist Pure Land, thereby rendering Buddhist doctrines authentic and credible; to clarify the paths to spiritual practice; and to strengthen Buddhists' religious emotions of sacredness, joy, compassion, peace and selflessness, thus transforming Buddhist doctrines and tenets into religious sentiments and heartfelt experiences of religious faith."

Even today, the rich heritage of Buddhist grottoes, as witnesses to history, have taken on new significance and value in modern times. They not only hold great historical, cultural and relic value, providing vivid historical materials for textual research and interpretation of history, but also possess significant aesthetic value and the value of integrated cultural and tourism development.

III. Symbolism and the Meaning of Images

On the cliff faces of the Longmen Grottoes, in addition to the majestic Buddhist statues and intricate niche decorations, there are also scattered special visual symbols. These do not appear in the form of narrative or realistic sculptures, but rather convey religious meanings through highly abstract, stylized geometric shapes. These symbols serve as “keywords” within the visual language of Buddhism—concise, recurring, and often transcending geographical and temporal

al boundaries. By identifying and interpreting these symbolic motifs, we can gain insight into another layer of the operational logic of the Longmen Grottoes as a Buddhist “visual sanctuary”: how symbols convey doctrinal teachings and how they are adapted and reshaped across different cultural contexts.

(1) The Lotus: From a Sacred Object of the Buddha’s Realm to a Chinese Icon

The lotus is virtually ubiquitous in the Longmen Grottoes, appearing everywhere—in the coffered ceilings, on the Sumeru pedestals beneath the Buddha’s thrones, as objects held by bodhisattvas, and in the decorations of halos. In Buddhism, the lotus is regarded as a sacred object that “emerges from the mud yet remains unstained,” symbolizing the purity, immaculacy, and transcendence of the Dharma. Among the extant Tang Dynasty caves at the Longmen Grottoes, the ceiling decorations in 23 main chambers are relatively well-preserved, with compositions featuring lotus flowers surrounded by flying apsaras being the most common. Based on differences in the stylistic representations of lotus flowers and flying apsaras, as well as variations in their combined patterns, scholars have divided the ceiling decorations of Tang Dynasty caves into six phases—from the legacy of the Northern Wei dynasty to the gradual decline of Tang style—throughout which the lotus has consistently remained the central motif.

The massive high-relief lotus flower on the ceiling of the Lotus Cave takes this symbolism to its ultimate expression. The lotus measures over three meters in diameter; its center features a carved lotus pistil and seeds, surrounded by three layers of petals, with honeysuckle patterns carved on the outer edge of the petals. The sculptor employed a realistic approach, giving the lotus three distinct layers: the most prominent is the lotus pod filled with seeds; the second layer consists of double rows of petals radiating outward from the pod, creating a strong sense of depth; and the outermost layer is a pattern formed by honeysuckle motifs, which blends seamlessly with the lotus. On either side of the lotus—north and south—six celestial maidens are carved, their robes flowing gracefully as they soar toward the main statue on the west wall, creating an

artistic tension between stillness and motion. Such a massive lotus coffered ceiling, rendered in high relief, is rare not only in Longmen but also among grottoes nationwide.

It is worth noting that lotus motifs have long been a part of indigenous Chinese culture. In traditional folk customs dating back to the Western Zhou Dynasty, auspicious meanings such as “the lotus brings noble offspring” and “abundance year after year” have long been deeply ingrained in the collective consciousness. After the introduction of Buddhism, the religious symbolism of the lotus merged with the auspicious connotations of Chinese folklore, granting this symbol dual legitimacy—it is both a sacred object of the Buddhist realm and an auspicious sign of the Central Plains. The evolution of lotus motifs precisely illustrates one aspect of the Sinicization of Buddhist symbols: they were not transplanted, but rather assimilated.

(2) The Three Treasures Emblem: The Symbol’s Journey from India to Longmen

If the lotus is the most common Buddhist symbol in the Longmen Grottoes, then the Three Treasures Emblem is one of the rarest. Originating in ancient India, this emblem represents the “Three Treasures” of Buddhism—the Buddha, the Dharma, and the Sangha—and was originally composed of a circular disc and a trident-shaped element resembling the letter “W.” As early as the 3rd century BCE, it had already appeared on stupas during the reign of Emperor Ashoka in ancient India.

However, the Three Jewels symbol is extremely rare in the Longmen Grottoes, with only four instances discovered to date. This rarity itself is a trace of cultural selection. After Emperor Xiaowen of the Northern Wei Dynasty moved the capital to Luoyang, he implemented a policy of Sinicization, culturally emphasizing the “distinction between the Chinese and the barbarians.” In India, the Three Treasures symbol was not only a Buddhist symbol but was also shared by Brahmanism and Jainism; this “interfaith” background meant that it was once overlooked in the Central Plains. Consequently, the Three Treasures symbol

ol is almost entirely absent from the early carvings at the Longmen Grottoes.

The turning point occurred in the late Northern Wei period. In 518 CE, Empress Dowager Hu dispatched envoys Song Yun and Hui Sheng on a western mission to seek Buddhist teachings. They not only brought back a large number of Buddhist scriptures but also visited the famous “Qielin Stupa” in India and drew sketches of it to bring back to the Central Plains. This provided craftsmen in the Central Plains with direct reference models. In 528 AD, an image of the Three Treasures symbol with a clear date appeared in the Lotus Cave. The inscription on the northern wall of the stupa reads: “On the 23rd day of the 11th month of the first year of the Jianyi era, the nun Daohui carved a stupa.” This marks the first clear appearance of the Three Treasures symbol in the Longmen Grottoes.

However, the Three Treasures symbols at the Longmen Grottoes were not direct copies of their Indian prototypes but had undergone localization. Taking the two examples in Lotus Cave as illustrations, they retained the core feature of the “W-shaped trident,” but replaced the originally rounded lines with straight, geometric shapes, omitted the complex central symbol, and flanked it with Central Plains-style pediment and banana leaf motifs. This approach of “adopting the meaning while altering the form” reflects the Central Plains artisans’ understanding and re-creation of foreign symbols.

By the Tang Dynasty, the Sanbao Mark reappeared at the Longmen Grottoes, though its role had changed. On the Stele of the Buddha’s Footprint at Leigutai, it was paired with the Thousand-Spoked Wheel, together symbolizing the authority of the Wheel-Turning King. This period coincided with Empress Wu Zetian’s reign, when Buddhism and politics were closely intertwined. The Sanbao Mark “returned” with a curved form closer to its Indian prototype, and its function shifted from architectural decoration to that of a ritual relic, demonstrating the evolution and reuse of its symbolic meaning.

The trajectory of the Sanbao Mark at Longmen—from its absence to its emergence, and from adaptation to return—condenses the complex process by w

high Buddhist symbols spread eastward along the Silk Road and gradually became Sinicized.

(3) The Buddha's Footprints: Imported Relics and Local Interpretations

Images of the Buddha's footprints are also imported elements among Buddhist symbols. According to Buddhist scriptures, no statues of the Buddha were created within the first two hundred years following his parinirvana; instead, his disciples paid homage to symbolic objects representing him, including the imprints of his feet left behind. Thus, venerating the Buddha's footprints was equivalent to venerating the Buddha himself. Since the Middle Ages, depictions of the Buddha's footprints and the associated faith have spread widely across Buddhist regions in Asia, embodying people's longing for the Buddha and their hope for the flourishing of Buddhism.

A stele bearing an image of the Buddha's footprint, discovered at the Leigu Tai site in the Longmen Grottoes, is currently the only stone stele in China found to feature the Buddha's footprint carved on multiple sides. Located on the south side of the South Cave at Leigu Tai, the stele consists of a main body and a base and is carved from a type of limestone unique to Leigu Tai. The western face of the stele features two footprints carved in incised lines; the left footprint is relatively clear. Engraved on the Buddha's footprint are a thousand-spoked wheel and the Three Jewels emblem—composed of W-shaped and circular wheel-like elements. On either side of the base of the Buddha's foot are figures depicted in a seated posture. The footprint on the southern face, which is the best-preserved, has clear lines, and the figure of a monk is carved beneath the Buddha's foot.

In ancient India, the wheel was associated with the concept of the “Chakravartin” (Universal Monarch), representing an all-conquering force and imbued with sacred significance. In Buddhism, the wheel symbolizes power, truth, and light. The combination of the Three Treasures emblem and the wheel symbolizes vitality and prosperity, serving as a metaphor for the enduring flourishing of Buddhism.

The most striking detail of this Buddha's Footprint Stele is the figures on either side of the heel. Based on the figures' poses, researchers have proposed three hypotheses: the most common interpretation is that they represent the donor—that is, the person who commissioned the stele; another possibility is that these figures are actually depictions of the Buddha, forming a composite composition with the Buddha's footprint; the third hypothesis stems from the image of a monk depicted in a running posture on the south face of the stele—this monk has bare calves, is barefoot, and carries a long object on his back, which matches the image of Xuanzang's journey westward in search of Buddhist teachings. If this is indeed Xuanzang, the figures on the other sides of the stele may form a complete narrative.

Images of the Buddha's footprints in China's Han cultural regions were introduced and developed in the mid-7th century by pilgrims such as Xuanzang and Wang Xuance, spreading from the Guanzhong region to the Sichuan Basin and the southeastern coast. The Buddha's Footprint Stele at Leigu Tai in Longmen serves as a crucial physical testament to this chain of transmission. Unlike previous discoveries, the Leigu Tai Buddha's Footprint Stele is simply engraved with a thousand-spoked wheel and the Three Treasures symbol; it does not feature other common Buddhist motifs such as lotus flowers, the swastika, or the twin fish. This simple and restrained style endows it with unique artistic and religious value.

(4) Dragon Motifs: A Visual Metaphor for the Sinicization of Buddhism

Dragon motifs are also a symbol worthy of attention in the Longmen Grottoes. Dragons have long held profound symbolic significance in indigenous Chinese culture, and after the introduction of Buddhism, they entered the Buddhist visual system as “guardian deities.” The dragon motifs in the Longmen Grottoes are not merely decorative patterns; rather, they are quintessential visual symbols of the Sinicization of Buddhist art, combining decorative functions with profound cultural metaphorical significance.

From an iconographic perspective, the dragon motifs in the Longmen Grot

toes can be categorized into four main types: the Looking-Back Dragon, the Intertwined Dragons, the Ascending Dragon, and the Consecration Dragon. Through their specific placements and forms, they construct a four-tiered system of metaphors—sacredness, narratives of power, cultural fusion, and secular aspirations—vividly bearing witness to the process of integration between Buddhism and indigenous Chinese culture. The presence of dragon motifs in the Longmen Grottoes is, in itself, an example of the localization of Buddhist symbols—a cultural symbol bearing the connotations of Chinese imperial authority and auspicious omens was incorporated into the visual system of Buddhism and acquired new meaning within the grotto space.

The symbolic system of the Longmen Grottoes—from the ubiquitous lotus, to the rare appearance of the Three Treasures emblem, to the uniqueness of the Buddha's Footprint Stele, and finally to the cultural fusion embodied by the dragon motifs—collectively reveals the complex facets of Buddhist visual language during its dissemination: it includes both a faithful transmission of Indian prototypes and localized adaptations that “retain the essence while altering the form”; it encompasses both the cultural selections and exclusions of specific historical periods, as well as the evolution and reuse of meanings across different eras. These symbols carved into the stone walls still quietly narrate the civilizational dialogue of a thousand years ago, serving as small yet authentic testimonies to the cultural exchange, assimilation, and reinvention along the Silk Road

Conclusion

I. The Place of the Longmen Grottoes in the System of Chinese Grotto Temples

Chinese Buddhist grottoes spread from west to east along the Silk Road, giving rise to several landmark sites along this long chain of transmission. The “Kucha Model” at the southern foot of the Tianshan Mountains retained a strong South Asian style, while the “Liangzhou Model” and “Pingcheng Model” in the Hexi Corridor reflected the profound influence of Western Regions and Xianbei cultures. The Longmen Grottoes, however, represent the pivotal stage along this chain of transmission where Buddhist art ultimately completed its transformation into a distinctly Chinese form.

The assessment by the UNESCO World Heritage Committee provides a benchmark: “The grottoes and Buddhist niches in the Longmen area represent the most extensive and outstanding examples of sculptural art in China from the late Northern Wei Dynasty to the Tang Dynasty,” and “represent the pinnacle of Chinese stone carving art.” Compared with the other three of China’s Four Great Grottoes, the uniqueness of the Longmen Grottoes thus becomes apparent: Dunhuang excels in murals, Yungang is renowned for its early imperial projects, and Maijishan is famous for its clay sculptures, whereas Longmen’s core value lies in the exquisite craftsmanship of its stone carvings and the systematic evolution of its artistic style.

It may be more appropriate to understand the significance of Longmen from the perspective of “completion.” “Completion” signifies the endpoint of a process: the art of Buddhist sculpture, which traveled eastward along the Silk Road, completed its transformation from “Sanskrit-style” to “Han-style” at Longmen. The Northern Wei style, characterized by “delicate bones and refined features” and “loose robes with wide sashes,” marked the formal establishment of a

Sinicized style, while the Tang Dynasty's emphasis on "plumpness as the standard" pushed this tradition to its pinnacle, achieving a perfect balance of form and spirit. The fact that this "completion" took place at Longmen is inseparable from the political and cultural influence radiating from Luoyang, the capital of both the Northern Wei and Tang dynasties—from the very beginning, the Longmen Grottoes were not merely religious spaces but integral components of the dynasty's political rituals, representing "a matter of great national importance."

The Longmen Grottoes' status as a "culmination of artistic traditions" is equally worthy of emphasis. Drawing on ancient Indian traditions and building upon the legacy of the Yungang Grottoes, while integrating the cultural traditions of Luoyang during the Wei and Jin dynasties and the Southern Dynasties, Longmen served as a convergence point for the artistic experiences of grottoes in Gandhara, the Western Regions, the Hexi Corridor, Pingcheng, and other regions. The resulting "Central Plains style" and "Tang Dynasty elegance," once established, became the standard for all regions, influencing cave temples across the country and even extending to Korea and Japan. In this sense, Longmen is not merely a site of cave temple relics but also the origin of cultural dissemination.

Related to this is Longmen's international character. The Greek-style capitals beneath the arch of the Central Cave in Binyang, the inverted-bowl-shaped stupas outside the Lotus Cave, the niches carved by Chinese and foreign monks, and the foreign surnames appearing in the inscriptions on steles collectively paint a picture of Longmen as a crossroads of Eastern and Western civilizations during the medieval period. The "Sinicization" and "internationalization" of the Longmen Grottoes are not only not contradictory but are, in fact, two sides of the same coin—it is precisely because they are situated at an open and inclusive crossroads of civilizations that they have achieved artistic creations that are most distinctly Chinese.

II. Prospects for Archaeological and Artistic Research on the Longmen Grottoes

Scholarly research on the Longmen Grottoes has evolved from the cataloging of inscriptions and epigraphy to field surveys and, ultimately, to comprehensive multidisciplinary research. Currently, research is facing several areas worthy of further exploration.

The continued advancement of archaeological work remains fundamental. The compilation of the complete set of archaeological reports for the East Mountain section is nearing completion, and Guyang Cave has been selected as one of the first pilot sites for the national initiative to digitize archaeological reports. This signifies that the archaeological records of the Longmen Grottoes are transitioning from traditional paper-based formats to digital formats. At the same time, the findings from recent archaeological excavations—such as those in the area in front of the Leigu Tai Caves and at the Xiangshan Temple site—still require systematic organization and publication. These materials are crucial for reconstructing the diachronic construction process of the Longmen Grottoes. In 2026, the Longmen Grottoes Research Institute explicitly set the task of “continuing to advance archaeological excavations and accelerating the publication of archaeological reports and academic monographs,” indicating that the development of foundational data remains a priority.

In terms of broadening the academic horizon, two directions deserve particular attention. The first is the systematic construction of “Longmen Studies.” In 2025, the Longmen Grottoes Research Institute officially launched the “Longmen Studies” cultural project, aiming to integrate research efforts scattered across disciplines such as archaeology, art history, history, religious studies, and ethnology into a unified academic framework. The success of this effort depends on whether it can distill core questions of genuine methodological significance from interdisciplinary collaboration, rather than merely serving as a label for co

mpiling research findings from various fields. The second is the re-examination of the cultural and social value of grotto temples. Some scholars have pointed out that past research has largely focused on engineering, materials science, and art history, while insufficient attention has been paid to the cultural and social value of grotto temples. Many grottoes (including a large number of small and medium-sized ones) still maintain a connection with the spiritual lives of local communities today. How to expand the dimensions of research beyond the traditional “three major values” of history, science, and art is a question that needs to be addressed in the future.

Furthermore, breakthroughs in national-level research projects have injected new momentum into the field. Two specialized research projects on the Longmen Grottoes have been selected for the National Social Science Fund’s Key Special Projects and the Research on Obscure and Endangered Disciplines Program, marking the first time Longmen research has secured national-level cultural heritage preservation funding. This signifies that Longmen research is now receiving support from higher-level academic resources, raising hopes for substantial progress in fundamental theoretical and methodological innovation.

III. The Preservation and Transmission of the Longmen Grottoes in the Digital Age

Digital technology is profoundly transforming the methods of preservation and the landscape of dissemination for the Longmen Grottoes; however, the integration of technology cannot replace the original intent of preservation—it offers new possibilities, not an end in itself.

In terms of conservation, the Longmen Grottoes have gradually established an integrated, end-to-end conservation model encompassing “detection—analysis—assessment—restoration,” and have upgraded their intelligent early-warning monitoring system for World Cultural Heritage sites. Technologies such as 3D laser scanning, multispectral imaging, and microbial mineralization reinforcement

have been incorporated into daily conservation efforts, shifting the focus from “treating acute conditions” to “preventing potential damage.” The high-precision digital survey of the Lotus Cave and the gradual completion of digital archives for caves such as the Guyang Cave signify that the Longmen Grottoes are acquiring a digital “duplicate”—even if the physical structures continue to weather, at least there remains an accurate digital record in the digital world for future reference.

Another key value of digital technology lies in “restoration” and “reunification.” With nearly 200 cultural relics from the Longmen Grottoes currently scattered overseas, 14 of these—including the Guanyin Bodhisattva statue from the Ten Thousand Buddhas Cave, the lotus-patterned coffered ceiling from the Central Bin Yang Cave, and the Empress Wenzhao Paying Homage to the Buddha—have been digitally restored and made available for data sharing through point cloud data collection and 3D modeling. Those sculptures—chipped to pieces, stolen and sold, or scattered across foreign lands—have been “reunited” in the digital realm. While this certainly cannot replace the return of the physical artifacts, it at least allows their complete forms to be viewed and studied.

In terms of public outreach, the Longmen Grottoes’ digital initiatives are equally noteworthy. The “Cloud Longmen” mini-program offers 3D virtual tours, while the immersive VR film Longmen Vajras presents grotto culture through a cutting-edge artistic form; its online livestream was recognized as an outstanding national case study in cultural heritage education and outreach. The significance of these initiatives lies in their ability to break down the physical barriers between cultural heritage preservation and public access—visitors can clearly see the texture of the flying apsaras’ robes without crowding in front of the grotto niches; researchers can access 3D data with millimeter-level precision without having to visit the site in person.

Looking ahead, digital tools will take on an even more proactive role in cultural dissemination. In 2025, the Longmen International Communication Center will be completed and put into operation; the English-language website and o

fficial accounts on five overseas platforms will go live; and the micro-documentary series Ten Images of Longmen will be released to an international audience. Digital technology is not only a tool for preservation but also a medium for telling China's stories and fostering dialogue among civilizations. In this sense, the digital transformation of the Longmen Grottoes serves not only to safeguard millennia-old stone carvings but also to expand the reach of Chinese culture—allowing these imprints of civilization carved into stone to gain new life in the digital world.

From the chisels of Northern Wei artisans to the laser scanners held by today's young people, the methods of safeguarding the Longmen Grottoes have evolved, yet the act of “safeguarding” itself has never ceased. Thanks to the continuous efforts of generation after generation, this World Cultural Heritage site remains as magnificent as ever after a thousand years. As General Secretary Xi Jinping urged during his inspection visit: “We must protect, preserve, and promote these treasures of Chinese culture.” The fate of the Longmen Grottoes has always been deeply intertwined with the continuity of Chinese civilization—it is both a legacy of the past and a resource for the future.