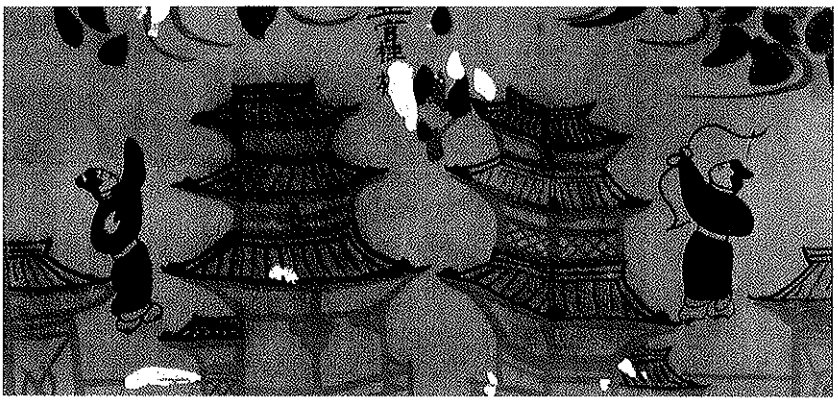
Chinese Architecture

English text edited and expanded by

Nancy S. Steinhardt

CHAPTER 2



The Qin and Han Dynasties

LIU XUJIE

If Chinese architecture took root during the Three Dynasties, it first flowered when China was unified under the dynasties of Qin and Han. Qin Shi Huangdi, the first emperor of a unified China, built enormous palaces and mausoleums, including his famed underground world populated with terra-cotta warriors, horses, and chariots. He connected the defensive barriers along the northern border to make the Great Wall, built the Lingqu canal, and created roads that made transit across China possible. Qin's grand projects were matched architecturally by those of the far more long-lived Han dynasty. The Han capital cities of Chang'an and Luoyang were filled with many palaces (some used for governance and others for more pleasurable pursuits), gardens, and parks. To the north, the Han expanded and improved the Great Wall.

Through it all, the wooden structures that had slowly evolved over previous eras grew far more complex, sophisticated, and strong. The more stable timber frames made it possible to build high wooden towers, which gradually replaced the high-platform buildings long associated with the Three Dynasties period. Complementing these breakthroughs were advances in brick making, masonry construction, and arches of various kinds, as well as the first use of iron parts on a significant scale.

The Qin

Though Qin was originally a small vassal state on the western edge of Zhou territory, by late in the Warring States period (475–221 B.C.E.) a series of reforms had dramatically increased its importance. In particular, Shang Yang, a Qin official, espoused Legalism (one of the "hundred schools of thought" that stressed the role and power of the state), and Gongsun Long, a later leader associated with "the Chinese Sophists," proposed sweeping changes that propelled the Qin's rapid rise to power. After almost a century of warfare, the Qin emerged victorious over their archrivals, the Qi, in 221 B.C.E. Qin Shi Huangdi, as he became known, ruled an empire significantly larger than that of the Zhou dynasty.

The First Emperor, fearful of uprisings among the conquered former states, centralized power and suppressed both the slightest deviation from his severe laws and any schools of thought that might contend with his vision of Legalism. As part of this effort, he unified China's systems for law and bureaucracy, weights and measures, and writing, and he standardized currency, measurements, and conveyances. But his excesses and severe policies eventually cost the Qin their empire: when he died, rebellion spread throughout China and led to the fall of the Qin in 206 B.C.E.

What we know about Qin city planning comes from the remains at Xianyang, which was the Qin capital from 350 B.C.E. to the end of the empire. Situated on the north bank of the Wei River, the city measured 6 kilometers east to west by 7.5 kilometers north to south. Because the city was destroyed in wars at the end of the Qin empire, and because the course of the Wei River has shifted four kilometers northward, little of the Qin capital survives and not much excavation has occurred there. But pieces of the north, west, and south walls enclosing the Qin palace area, the "palace city," have been found and indicate that this area was in the northern part of the larger walled capital. The palace area is believed to have been about 900 meters east to west and 580 meters north to south. The foundations of eight palatial buildings have been located; so have five workshops west of the main palace area and one to its east. Pottery workshops believed to have been used by the local population were found about 4 kilometers west of the palace, as were more than one hundred wells. An additional palace, accessible via a long bridge across the Wei River, was built to its south.

The Han

Xianyang was destroyed at the end of the Qin dynasty. A new capital for the Han, Chang'an, was created nearby, by the leader Liu Bang, known as Han emperor Gaozu after he became the first emperor of the new dynasty. The Han city was roughly rectangular, with a 22.7-kilometer outer wall that enclosed an area of 35 square kilometers (fig. 2.1). Each wall had three gates. The major thoroughfares in the city passed through two of these gates, one northward through Heng Gate to the Wei River and the other eastward through Xuanping Gate in the direction of Luoyang. After passing through the Heng Gate one could follow its street, which was a remarkable 50 meters wide, for 5.5 kilometers, almost the entire north–south span of the city. In all there were eight main roads running north–south and nine east–west, interconnecting a city that grew to some 240,000 residents by the end of the Western Han.

Most of the space inside the Han capital was taken up by five palace complexes: Changlegong, Weiyanggong, Guigong, Beigong, and Mingguanggong (in this context, the transliteration *gong* means "palace" or "palace complex"). There were also government offices, arsenals, and two markets. Commoners usually lived outside the city walls, in simple dwellings to the north or east. The ancestral temple and the soil altar were near the ritual complex

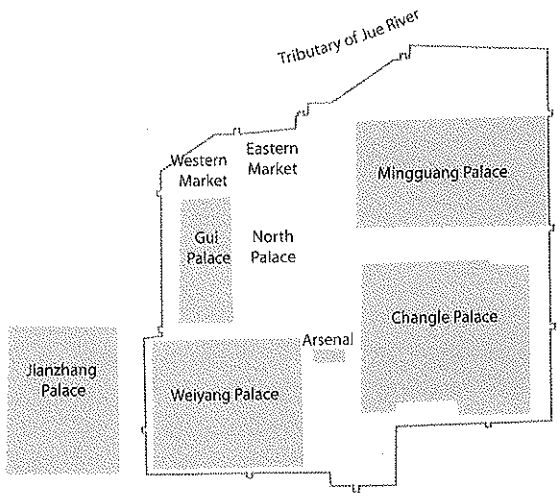
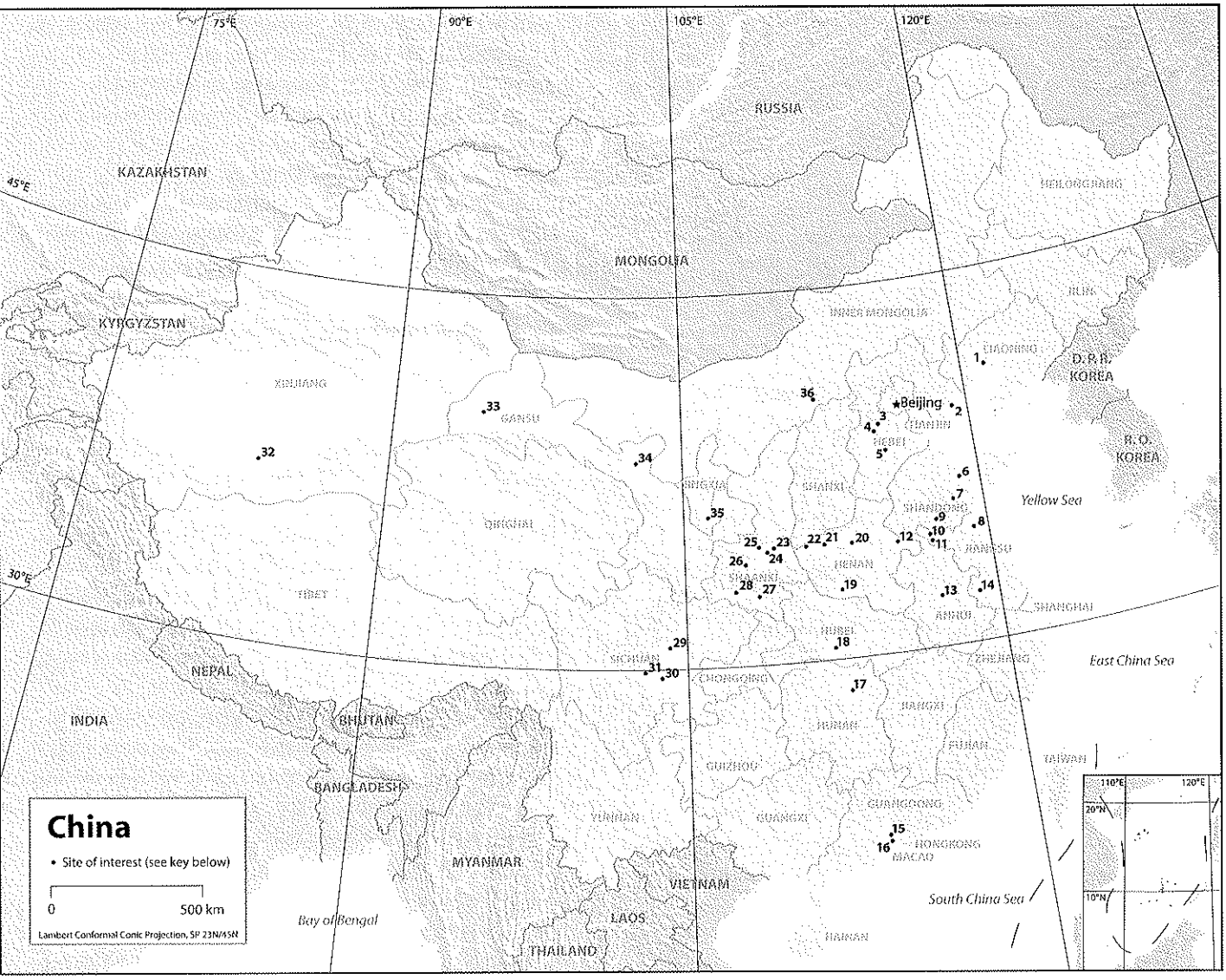


Figure 2.1. Plan of Chang'an, Western Han capital



Map 2.
Qin and Han Sites

Anping 5
Anqiu 6
Cangshan 9
Chang'an 24
Chengdu 29
Dahuting 20
Dunhuang 33
Guyuan 35
Hanzhong 27
Hefei 13
Helinge'er 36
Jiangling 18
Jieshi 2
Kongwangshan/Lianyungang 8
Leitai/Wuwei 34
Lishan/Lintong 23
Luoyang 21
Mahao 30
Mancheng 3
Maocun 10
Mawangdui 17
Mayinggang 15
Nanjing 14
Nanyang 19
Niya 32
Panyu 16
Sanmenxia 22
Suiyang 12
Suizhong 1
Tangguang 28
Wang 19
Wangdu 4
Weigu 26
Xianyang 25
Xuzhou 11
Ya'an 31
Yi'nan 7

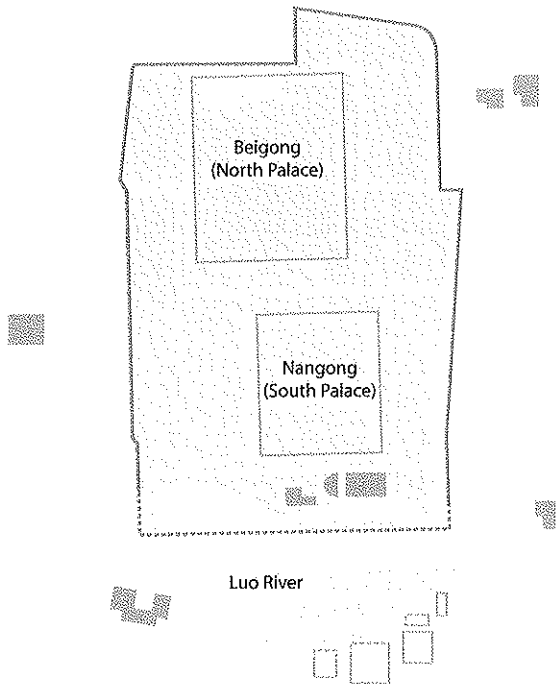


Figure 2.2. Plan of Luoyang, Eastern Han capital, redrawn from Wang Zhongshu, *Han Civilization* (New Haven: Yale University Press, 1982)

south of the city. During the long reign of Emperor Wudi of Han (140–87 B.C.E.), Zhang Palace, Jianzhang Palace, and Shanglin Park were built to the west.

The plan of Han Chang'an did not follow the prescription of the *Rituals of Zhou:* that is, there was no symmetrical scheme with a palace area in the center and regularly laid-out streets. One reason for this departure is that the new palaces, Weiyang and Changle, were built before the completion of the southern wall (Changle stood on the ruins of a Qin palace). Geography also played a role — the northwestern wall followed the bank of the Wei River. But although palaces may not have been at the geographic center of Han Chang'an, they were a vital part of the city. No later Chinese capital would have so many palaces, with such a large percentage of the walled part of the city devoted to them. Unfortunately, this spectacular city is not well preserved. During the last years of the Han dynasty, war broke out in the capital, which led to almost total destruction of the city and abandonment of the site.

After the death of the powerful Han Wudi, corruption was rampant. At the beginning of the first century C.E., power was usurped by Wang Mang, a family member of an empress, who began a ruling dynasty that called itself Xin. The era of Xin ascendancy (9–23 C.E.) is thus often called the Wang Mang interregnum.

The new ruler did not last. Neither the Chinese peasantry nor the former Han nobility accepted Wang Mang, and in 23 C.E., the Han court was restored. The new ruler, Emperor Guangwu (r. 25–57 C.E.), moved his capital eastward to Luoyang. The period from 23 C.E. to the true collapse of Han, in 220, is thus known as the Eastern Han, or Later Han, dynasty.

To move the capital eastward was to follow in the footsteps of Zhou rulers from the first millennium B.C.E. Indeed, Chang'an and Luoyang were to be among the most popular locations for imperial city construction through the rest of China's history. Yet like Han Chang'an, the second Han capital was not built on the Zhou site; rather, palaces that had existed from Qin times were rebuilt or reused. Building had also occurred at Luoyang during the first half of the Han dynasty, when it had been a capital city, but not the main one.

Luoyang was smaller than Chang'an during the Han — only about thirteen kilometers around at its outer wall — and it had two significant features not present in the first Han capital. First, the shape of the outer wall was a quadrilateral, almost rectangular (fig. 2.2). Although like so many earlier Chinese cities natural features helped define its boundaries (in this case, the Luo River in the south and the Mang Mountains in the north), the end result was a city with three much straighter walls than those at the earlier Han imperial city. Second, Luoyang had two palace areas, north and south. Each emperor chose one as his primary official and residential complex, but the two were joined by a covered walkway so that he could pass secretly between them.

Eastern Han Luoyang had ten major thoroughfares, five east–west and five north–south. As in Chang'an, main streets passed through the twelve city gates — four at the south (whose ruins are now beneath the Luo River), two at the north, and three each on the east and west sides. The southern gates on the east and west sides of the city were joined by a boulevard 2.8 kilometers long. Twenty-four streets are named in texts about Han Luoyang, and excavation has shown them to have been between twenty and forty meters wide.

In response to the unprecedented economic development during the Western and Eastern Han dynasties, many

cities and towns sprang up away from the national capitals. Some Han cities rose at sites that had urban histories from the period of the Warring States, such as Linzi and Handan. Other Han cities with histories that dated to the first millennium B.C.E. or even earlier—Wan, Jiangling, Nanjing, Hefei, Panyu, and Chengdu—remain cities today. Little is known about the plans of most of these in Han times. One exception is a Han city in Nanyang county, inside the area associated with Wangcheng of the Zhou dynasty. The city in Nanyang county was nearly square, about 1.4 kilometers on each side, surrounded by a wall six meters wide at its base. Excavation of administrative structures, storage buildings, residences, and wells has shown that ceramic tile was used on walls, floors, and well platforms, and in the drainage system.

The scattering of towns and cities during the Han dynasty meant that each was encouraged to develop its own defense system. Enter *wubao,* also known as *wubi:* fortified structures where many people lived in the manner of clan communities in earlier times. From the outside, wubao resembled castle towns, with high walls, deep moats, and high turrets at the corners of the walls and in the center. Wubao are believed to be represented in a mural from an Eastern Han tomb found in Lujiazhuang, Anping county, Hebei, and in elaborate pottery models for tombs unearthed at Mayinggang in Guangzhou, Suiyang East Village in Henan, and Leitai in Wuwei county, Gansu (fig. 2.3). The larger wubao were as large as villages, and the smaller ones were more on the scale of courtyard-style residences. Some had adjoining farmland, pens for domesticated animals, and ponds. Most wubao were entered by a gate at the center of the south wall and had a courtyard behind the entrance. Inside the courtyard were the main halls as well as subsidiary buildings, such as kitchens, lavatories, and pigsties. The back gate was not directly across from the front one; rather, it was in the north corner of the east wall.

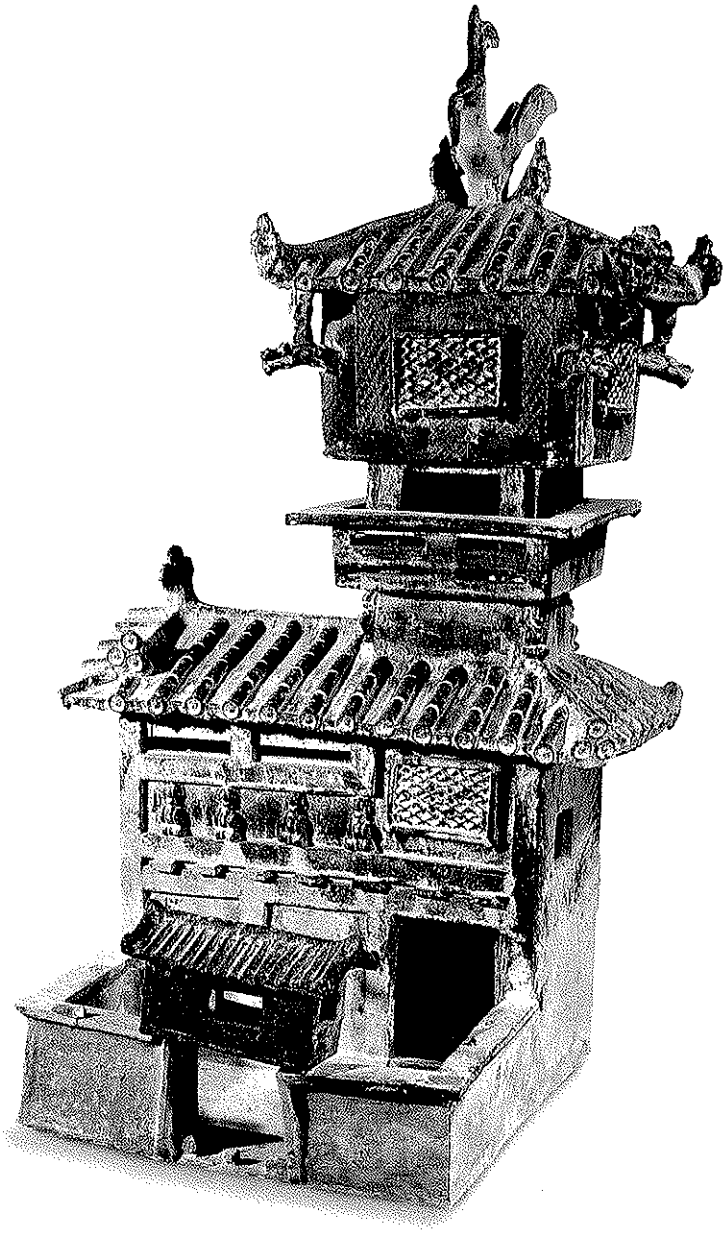


Figure 2.3. Pottery model of architecture excavated in Wuwei county, Gansu province

The Great Wall

While cities were being transformed, the tremendous effort to build the Great Wall began. During the Warring States period, the states of Qin, Yan, and Zhao had erected walls along their northern borders to help defend against potential invaders, such as the Xiongnu. The First Emperor of China improved this system by connecting the pieces of wall and adding beacon towers. Remains of the wall are evident in Guyuan today (fig. 2.4). During the reign of Han

Figure 2.4. Remains of the Qin Great Wall in Ningxia Hui autonomous region

emperor Wudi, wars were launched against the Xiongnu, and the Great Wall was extended to the region of Dunhuang in Gansu on the west and northward beyond the Tianshan mountain range. At this time, parts of the wall were actually doubled in thickness, and the cities, towns, defensive passes, and beacon towers were all fortified to create a large and comprehensive system of defense.

The border defense system had five basic architectural components. First were the border towns, the equivalents of county-level administrative posts. Of varying shapes, most of them had moats, walls, gates, wall towers, corner towers, streets, administrative offices, shops, residences, and storehouses. Some had additional wall fortifications and beacon towers. The border towns were the administrative and military centers, and garrisons, of their regions.

Second, checkpoints were usually situated on major roads at dangerous places of strategic importance. Most were built as part of walls, gates, or other defensive structures. Relief sculpture from the Han dynasty includes numerous examples of two-story and three-story towers. Third were the fortifications, wall-enclosed entities similar to border towns but administratively one rank lower. Square or rectangular in plan and ranging from about 50 to 150 kilometers square, the outer walls were made of pounded earth or stone. Often the additional wall fortification was placed at the entrance gate. Deep moats and spikes made the perimeter even more impenetrable.

The beacon towers, the fourth component, were high towers on platforms where lookout guards could warn of an enemy attack with smoke signals. The towers were positioned on or inside the Great Wall about 130 meters apart. Circular or square with earth or stone foundations, their diameters range from 5 to 30 meters, and they may have been 10 meters high or more (fig. 2.5). Below the towers were small rooms that served as living quarters for the guards. The fifth and final component was the wall and moats.

Whenever possible, the wall part of the Great Wall backed onto mountains or was positioned to make full use of strategic vantage points at China's northern border. In other words, the Great Wall was a combination of natural topography and man-made construction. Some of the wall was made of pounded earth and paved with stone. Other parts used Chinese tamarisk and reeds, bundled and arranged in a checkerboard pattern on the ground, then filled in with sand and stone. Next, tamarisk and reed were piled on the flat surface to form the wall face. When made wet and allowed to harden, it made an extremely durable wall. Examples can be seen near Dunhuang, where portions about three meters thick and four meters high survive.

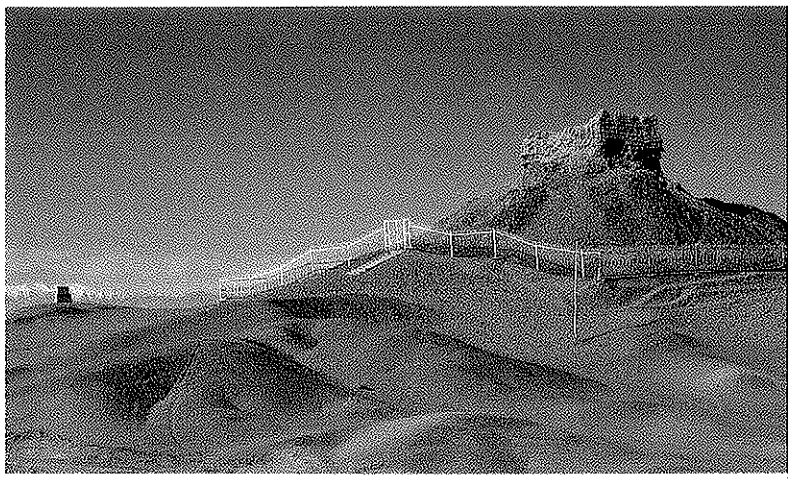


Figure 2.5. Han beacon tower

Palaces of the Qin

Information about palatial architecture of the Qin comes from both excavated evidence and literary records. Between 1974 and 1982, three large groups of palatial foundations were discovered in Xianyang. The largest and most magnificent, and a fairly complete one, is Palace 1, a two-level building complex with the upper level raised about six meters higher than the lower one (fig. 2.6). This upper-level, L-shaped complex extended sixty meters east to west and forty-five meters north to south. The principal hall was located roughly in the middle, with a large pillar positioned in its center. This hall could be entered on all but its west side. To its north, the hall joined the covered arcade that surrounded the entire palace complex. A smaller hall to its southeast, with a single southern entry, is thought to have been the emperor's residence. Additional rooms whose purposes are still unknown were located west of the principal hall. All these structures are believed to have been on the upper level.

The lower level joined the upper level on the north and south. To the south, adjoining the enclosing corridor, were five rooms. On the eastern side were bathing chambers, suggesting that the concubines and palace ladies may have lived there. Two large rooms on the northern side of the upper level might have been residences for palace guards. Both levels were enclosed by covered corridors, and there were drainage and sewage systems on the perimeters. Staircases were located on the east and west sides of the palace complex.

The L-shaped plan has led to the theory that a palace complex similar to this one, perhaps even symmetrically placed, was located to its east. Such a structure has not

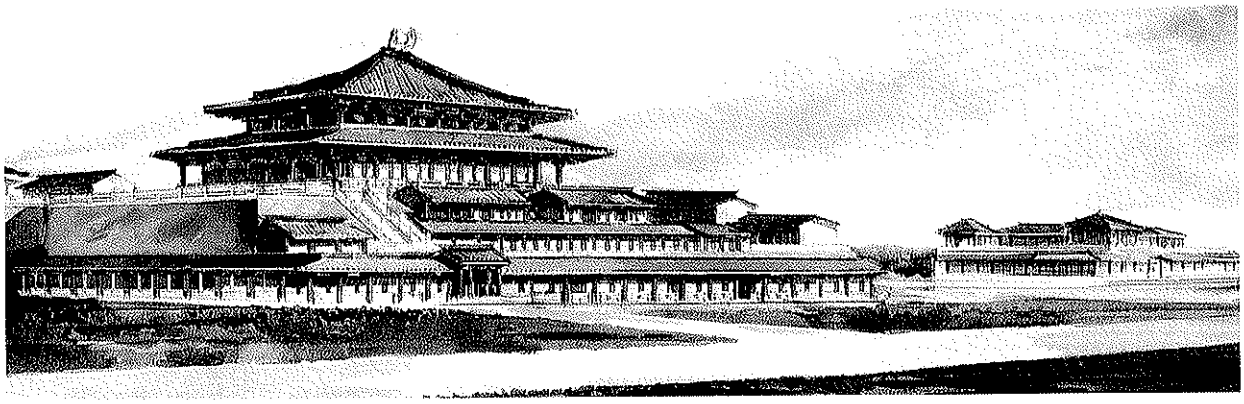


Figure 2.6. Reconstruction drawing of Palace 1 in the Qin capital Xianyang, near Chang'an, Shaanxi province

yet been found, but another palace complex, number 3, has been unearthed south of Palace 1. Although nearly destroyed, traces of wall paintings have been discovered on what may have been the side walls of the surrounding covered arcade. Delicate renderings of figures, horses and carriages, and trees in red, black, blue, green, yellow, white, and other colors further illustrate the daily life of Chinese royalty at this time.

The Xianyang palaces were not spacious enough for the ambitious First Emperor and the many activities of his court. So in 212 B.C.E., the thirty-fifth year of his reign, he built audience and palatial halls south of the Wei River in what had until that time been Shanglin Park. The halls must have been breathtaking. The First Emperor's biography in *Shi ji* (Records of the Historian) describes one palace compound alone measuring 675 meters east to west by 112 meters north to south. Ten thousand people could sit in the upper story, and flagpoles more than 10 meters high rose from the lower story. Surrounding this were elevated pathways said to provide passage from the lower story of Epang Palace to the mountains to the south. According to *Guanzhong ji* (Record of Guanzhong [the Chang'an region]), "The summit of the Southern Mountains was designated to be the gate of the palace." Equally impressive was the elevated passageway that crossed over the Wei River to connect the Epang Palace with Xianyang. This was in imitation of a heavenly corridor described in *Shi ji* that leads from the Heavenly Apex star across the Milky Way to the Royal Chamber Star. *Guanzhong ji* also tells us: "[The halls of Epang Palace] were a thousand *bu* [1,350 meters] east to west and three hundred *bu* [about 400 meters] north to south. Ten thousand men could be entertained there." The Qin period is the earliest in China so far for which written texts and excavation seem to verify the claims of each other.

Epang Palace was said to be so large that when it was destroyed by conquering armies at the fall of the Qin, the fire burned for three months. Although this is probably an exaggeration, the site was certainly enormous. Archaeological surveys have shown the complex to be about 1,400 meters east to west by 450 meters north–south. In the back part, a pounded-earth foundation perhaps 7 or 8 meters high has been uncovered, showing a section of the rammed-earth platform on which the palace stood. These dimensions are close to those described in *Guanzhong ji*, but not so similar to those provided in *Shi ji*—perhaps because the local record was written significantly later. Moreover, only limited excavation has been possible. It is also conceivable that grander structures are yet to be found. If building platforms of 8 meters or more were standard in the back part of the palace complex, for example, one might assume that the front halls would be even higher.

The palaces featured ornate and varied tiles and ceramics. The tile patterns included sunflower designs, animals, leaves, and whorls. At least one floor tile had characters lauding the Qin with the saying "The whole empire is filled with subjects, the annual harvest has all ripened, may no person go hungry on the streets" (fig. 2.7). The costs for Epang Palace, in human labor and building materials in the third century B.C.E., must have been tremendous. But the undertaking fits the image of the First Emperor, documented in later texts and memorialized in the Great Wall, as unparalleled in his ambition, wealth, and quest for monuments to his importance.

The image of the emperor was further strengthened by the many detached "traveling palaces" built during the Qin dynasty, especially after the First Emperor had unified the seven states. Qin Shi Huangdi in particular embarked on frequent inspection tours of his empire, and he stayed at such palaces throughout the country. The

number of these traveling palaces was staggering. It is known that he used remains of palaces in the six conquered states for this purpose, but he also built many palaces anew. According to *Shi ji,* "He built three hundred traveling palaces in Guanzhong [near Chang'an in the Wei River Valley] and four hundred beyond." The text continues: "Southward alongside the Wei River, and eastward from Yong Gate to the rivers Jin and Wei, were palatial rooms and scenic towers, all interconnected by elevated walks and covered ways. They were filled with beautiful women, draperies and wall hangings, bells and drums." The rules of the palaces were extremely strict. The women were assigned to specific palaces and forbidden to leave them, and "anyone revealing which palace the emperor was visiting at any particular moment was put to death."

Within two hundred *li,* or one hundred kilometers, of Xianyang were 270 palatial and official structures, all interconnected via covered ways *(fudao)* and paved passageways *(yongdao).* The architectural styles were varied, for "each time he conquered a prince, he erected a palace in imitation of the one he had acquired north of Xianyang." The discovery at Xianyang of ceramic roof tiles identical to those found at sites of the Chu and Yan states seems to confirm this claim.

The traveling palace farthest from the capital is in Jieshi on the shore of the Bohai Sea. Sites of Qin and Han palaces also have been uncovered at the seashore in Suizhong county of Liaoning. Among the remains there are pounded-earth foundations, hollow brick tiles, roof tiles, pieces of ceramic brick with patterns or other markings distinctive of the period, and watchtowers at Heishantou (fig. 2.8).

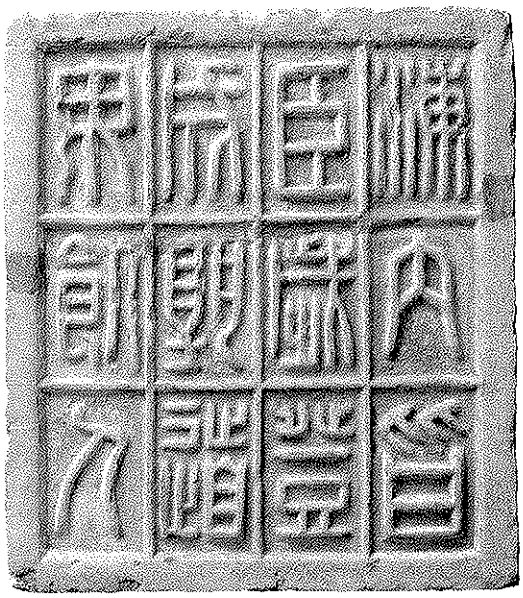
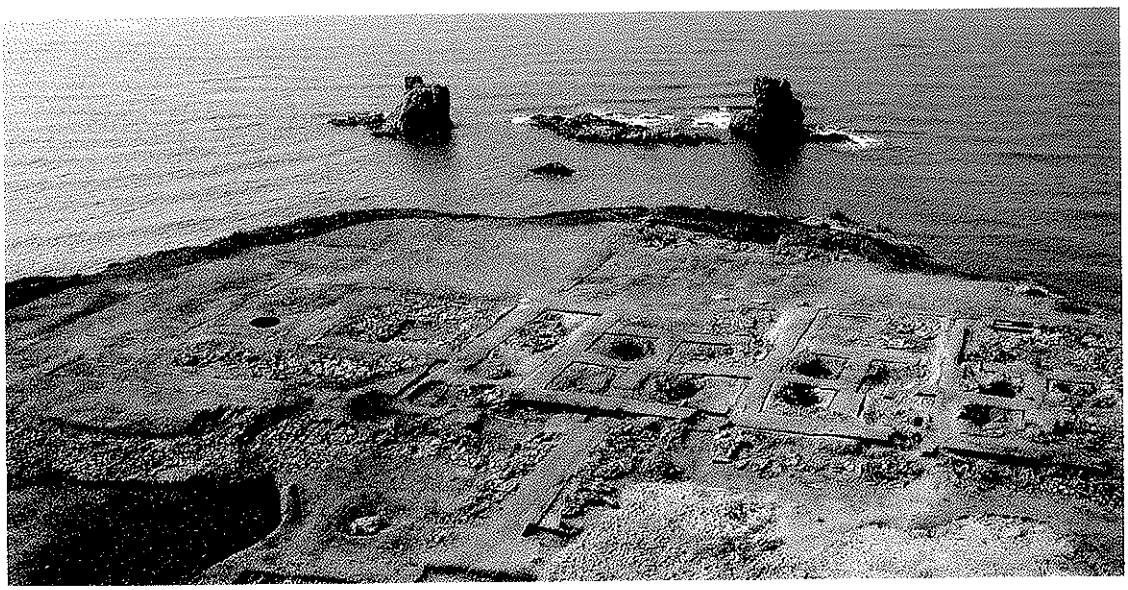


Figure 2.7. A brick floor tile, 27 by 31 centimeters by 4 centimeters thick, from Epang Palace of the Qin dynasty. Inscribed in relief on the tile are twelve characters that read "The whole empire is filled with subjects, the annual harvest has all ripened, may no person go hungry on the streets."

Figure 2.8. Remains of watchtowers at Heishantou, Suizhong, Liaoning province



Palaces of Western Han Chang'an

Of the six palaces shown in the plan of Han Chang'an in fig. 2.1, three are somewhat well known through textual records and excavation. The Changle Palace complex was begun in 202 B.C.E., the fifth year of the reign of Emperor Gaozu, on the ruins of the former Qin detached palace Xinglegong. The first formal palace of the Western Han dynasty, Changlegong took two years to complete, was 2.9 kilometers east to west and 2.4 kilometers north to south, and occupied one-sixth of the total area of the Western Han capital. Records show that the palace had a gate on each side and that the eastern and western gates were framed by towers. It also had a front hall for large public events and a back hall for residences, in keeping with the ideal layout proposed in the *Rituals of Zhou*. In 198 B.C.E., the court was moved west to Weiyang Palace, making it the political center of the Western Han dynasty, and Changlegong became the residence of the empress dowager.

The Weiyang Palace complex, which occupied one-seventh of the city's area, measured 2.25 kilometers east to west and 2.15 kilometers north to south. Although slightly smaller than Changle Palace, its buildings were far more grand. Like the Changle Palace complex, Weiyanggong seems to have had an entry gate at each side, with gate towers flanking at least two of them. At Weiyanggong there were forty or more halls, six hills, thirteen ponds, and about one hundred residential structures. Among them was a centrally located pounded-earth foundation about 200 meters by 350 meters, and 15 meters high. Believed to have been the front hall of the complex, it was situated alongside Longshou plain (fig. 2.9). The remains of palace complexes 2 and 3 are north and northwest of the front hall. Judging from objects excavated at the two sites, Palace 2 is thought to have been the residential space of imperial concubines and Palace 3 may have been offices for holding court. Of particular interest have been tunnels discovered underneath palace complex 2. Made with walls of mud and earth that were supported by wooden pillars and then whitewashed, and with floors paved in brick, these may have been the sort of underground passageways for imperial escape described in texts about the palace system of the later Eastern Han dynasty.

North and slightly west of Weiyang Palace was the Gui Palace complex. Its foundation was rectangular, approximately 800 by 1,800 meters. Constructed in 101 B.C.E., during the reign of Han emperor Wudi, it was a residence of the crown prince during the reign of Emperor Yuandi (48–32 B.C.E.) and subsequently a home for the empress dowager. Among its halls were Hongning (Swan's Peace) Hall and Mingguang (Bright Radiance) Hall. An elevated passageway, presumably above the Zhicheng Gate thoroughfare, connected it to Weiyanggong. In addition to these elaborate administrative palaces, Han Wudi was an enthusiastic builder of detached palaces and parkland; his reign was a high point during the dynasty for such construction. Most of the detached palaces and other recreational spaces of the Western Han either had been used by Qin emperors or were rebuilt on former Qin sites.

The Jianzhang Palace complex, for example, was a place for the emperor's leisure situated outside the walls of Western Han Chang'an, to the city's west. Construction began in the last years of the second century B.C.E., more than two-thirds of the way through the reign of Han Wudi. The complex was connected to Weiyanggong by means of elevated corridors that passed above the outer city wall. The principal entry to Jianzhang Palace was a gate in its south wall. Within the complex were more than twenty halls besides the front hall, and a large body of water known as Taiye Pond. Three sacred islands there symbolized the isles of the immortals. Han texts, such as *Shi ji* and *Sanfu huangtu* (an illustrated description of the three imperial districts of the Han capital collated in the late eighteenth century), describe two platforms. Jiantai, the first, rose more than seventy meters, higher than any structure in the capital, and was where the emperor could make contact with the spirit world. On top of Shenmingtai, the second, was a bronze statue of an immortal holding a plate to catch dew from the "pure sphere beyond the clouds."

The emperor could also relax at Shanglin Park, located on the south bank of the Wei River. It had been parkland under the Qin dynasty, and continued to be used as such early in the Western Han period. During the reign of Emperor Wudi, however, the site was expanded. Historical records say it became 340 li square, with scores of palatial halls (one record says thirty-six, another says seventy). When complete, it was a huge detached palace complex with many natural scenic spots — hills, dense wooded areas, and lakes — for imperial rest and enjoyment. There the emperor could watch fish swim in the lakes, take in a dog or horse race, cheer on a favorite contender in an animal fight, and appreciate beautiful flowers and exotic trees. The largest body of water in Shanglin Park was Kunming Lake, which in former times had been used for naval training. Along the shores of the lake were many high buildings as well as stone sculptures of huge sea creatures and legendary Chinese heroes.

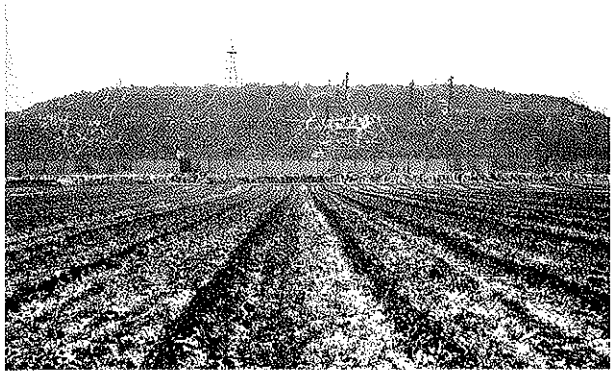


Figure 2.9. Remains of the foundation of the front hall of Weiyang Palace, Chang'an

According to literary sources, more than two thousand kinds of plantings were brought to Shanglinyuan from all over the empire (*yuan* means "park"). Shanglin Park was also a gathering place for creatures of the sea and land, so that besides being a place of natural beauty it was where the imperial family could hunt wild animals.

The foundations of Luoyang's palace complexes and of other structures inside the city walls have not been excavated. But texts inform us that the northern palace had more lakes and gardens, and thus was more popular, than the southern one. The Han emperors had residences in addition to the two main palaces inside this city, suggesting that, as was the case at the earlier Han capital, Luoyang's architecture was primarily imperial, although high-ranking officials were allowed to have residences inside the city walls. A granary and arsenal were located in the north of Luoyang, and most of the government offices were in the southeast. Luoyang had three main markets: a gold market northwest of the South Palace inside the city walls, a horse market outside the city walls to the east, and a third market, known simply as south market.

Sacrificial Temples and Ritual Structures of Qin and Han

Imperial worship and sacrifice in Qin and Han times were primarily devoted to heaven and the imperial ancestors, and remains of several ritual structures have been identified in both Han capitals. According to *Shi ji,* the Qin performed sacrifices known as *zhi,* which followed rituals established about four hundred years earlier. During the zhi, which probably were performed on high ground in forested areas, offerings were made to the four deities, each from a different direction and represented by the colors white, azure, yellow, and red. Sacrifices to the dynastic ancestors also were performed in the ancestral temple of the imperial capital.

After unification, Qin emperor Shi Huangdi transformed Xin Palace, located in Weinan, into Ji Temple, a ritual structure for ceremonial offerings to the heavens. Shi Huangdi's real objective, however, was to have the temple used for sacrifices to him. Furthermore, he had an underground passageway built to connect the temple to his funerary complex in Lishan, which was also constructed during his lifetime. Upon the First Emperor's death, his son and successor turned that structure into the Ancestral Temple for the Emperor and abolished the system that had existed in Zhou times of *tianzi qimiao,* or "seven temples for the son of heaven."

The Han added to the rituals and beliefs that the Qin had established. They built a group of ritual structures in the southern suburbs of each of their capitals. Han Gaozu, founder of the dynasty, added himself as Black Ruler to the four deities worshiped by the Qin. And a full spectrum of sacrifices was offered to gods of heaven and earth, mountains and rivers, the sun and moon, the stars and planets. Shamans are believed to have performed many of the various sacrifices.

During his reign, Han Wudi turned to intermediaries between the spirit world and himself for help in his quest for immortality. For this purpose he had numerous shrines built for worship of the spirits, and promoted the performance of sacrifices to them. In Later Han times, a circular altar for worshiping heaven was built in the southern suburbs, and in the north a square altar for worshiping earth.

Initially the Han emperors followed the Qin practice of sacrificing to the ancestors at temples located inside the capital city. Gaozu, for instance, built temples to the legendary emperors and to his own father in Chang'an. Under Han emperor Huidi, however, the ancestral temples were moved alongside the imperial tombs — a system that was maintained until the end of the Western Han dynasty. When Wang Mang seized the throne, he adopted a "nine temple system." Its remains may be the eleven rectangular foundations, arranged in three rows, excavated in the southern suburbs of Chang'an. In Eastern Han times the tablets with the names of each emperor were gathered in a single ancestral temple that was divided into rooms for each ruler. This system was followed by later dynasties.

Ritual structures known as Mingtang and Biyong,

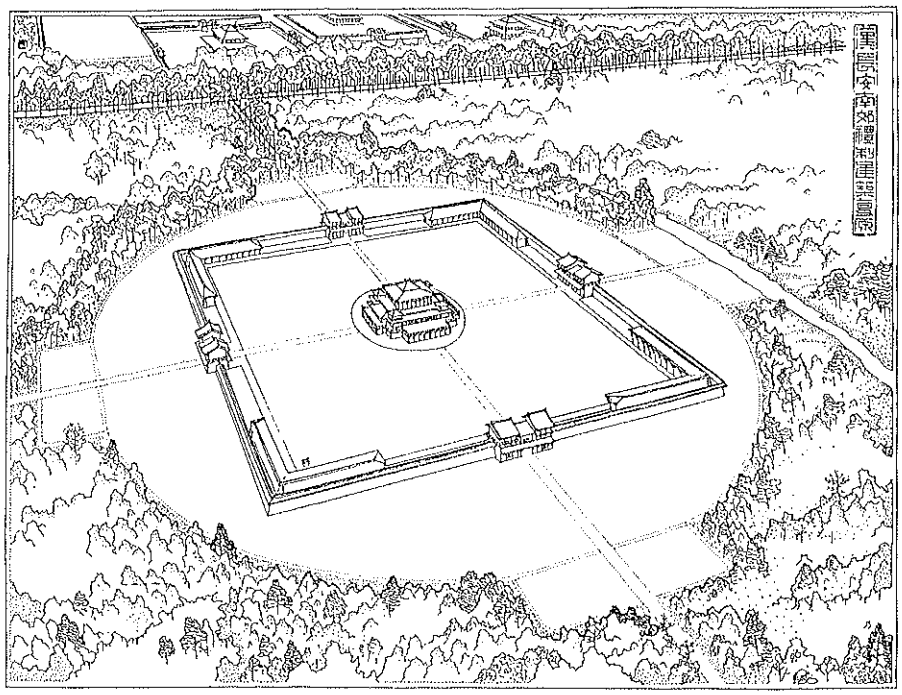


Figure 2.10. Proposed reconstruction drawing of the Mingtang and Biyong complex, from the Han period, found near Chang'an

sometimes translated as Hall of Light and Jade Ring Moat, were first built during the reign of Han Wudi to regulate the calendar and disseminate knowledge. With time, they came to be where the emperor was educated and offered enlightenment about texts. A building complex excavated in the southern suburbs of Han Chang'an, east of the remains associated with Wang Mang, has been identified as the composite ritual complex of Mingtang and Biyong (fig. 2.10). The exterior was a circular moat, and inside was a square enclosure surrounded by a wall. A gate opened at the center of each side of the square. In the very center was a twenty-sided bilevel structure elevated on a pounded-earth platform.

Han Religious Architecture

Daoism began at least as early as the Zhou dynasty, and was later associated with shamanistic practices and a quest for immortality. During the Han dynasty, Daoist buildings were constructed, though none so ancient has survived. By the end of the Han dynasty, Daoist schools of thought had been codified into a sort of religious system. Buddhism was also introduced to China during the last years of the Western Han dynasty. Han Mingdi (r. 58–76 C.E.) sent envoys as far west as India and welcomed the arrival of the Buddhist monks Kasyapa-Matanga (known in China as Zhufalan) and Gobharana (Dharmaraksa, known to the Chinese as Shemoteng), Buddhist sutras, and Buddhist images. In 68 C.E., Mingdi established the Baimasi (White Horse Monastery) in his capital Luoyang. It has been said that its plan was based on an Indian Buddhist monastery, but there is no documentary evidence to prove this claim.

In the last years of the Eastern Han, Zhai Rong, a warlord who usurped power in Jiangsu, began a huge building program. In particular, he built a "pagoda shrine" in Xuzhou city of the province. Placed in the center of a monastery courtyard, the *stupa* (pagoda) had covered arcades and pavilions surrounding it. No fewer than three thousand worshipers are said to have witnessed the Bathing of the Buddha ceremony there. The architectural plan with its central pagoda is believed to have been imported from India, but the building materials and designs, which included timber-frame structures, seem to have been Chinese. Later, during the Northern and Southern dynasties, the central pagoda plan, or "pagoda courtyard" *(tayuan)* plan, was dominant in Buddhist architectural complexes in China, and was to inspire Buddhist construction in Korea and Japan.

Many rock carvings of Buddhist and Daoist images and inscriptions have been found on the walls of cliffs of Mount Kongwang in the vicinity of Lianyungang, Jiangsu province (fig. 2.11). Included there are Buddha images with nimbus flames behind their heads; a reclining image of the Buddha, probably a parinirvana scene, represent-

Figure 2.11. Cliff carvings at Mount Kongwang, Jiangsu province, possibly depicting a standing Buddha and attendant

ing the death of the historical Buddha Sakyamuni; Buddhist disciples; as well as animals. At least some of these images were carved during the Later Han dynasty, making Mount Kongwang one of the earliest Chinese sites, if not the earliest, with rock-carved Buddhist imagery.

Mahao, Sichuan province, is a Later Han site with Buddhist imagery carved in a cave or cave-tomb. The site has fewer images than Mount Kongwang, but in contrast to the Jiangsu site, where many carvings are visible from the cliffs, the Sichuan site has images carved inside the caves. Both types of carvings, inside and outside, were derivative of Indian Buddhist cave architecture. Although Chinese artists continued both traditions for a long time, the carving of interior cave worship spaces eventually became the more popular.

Gardens

The private gardens of the Han nobility and wealthy merchants featured highly sophisticated landscape architecture. The Rabbit Garden of Prince Liangxiao of the Western Han, also known as East Garden, was one of the most famous. According to *Han shu* (Standard history of the Han), the garden was more than 300 li (150 kilometers) square with a great pond, palatial halls, and covered ways that joined the garden's architecture with that of the detached palace Pingtai more than 30 li away. Prince Liangxiao's own residence was northeast of the city of Suiyang. Liu Xin's (d. 23 C.E.) *Xijing zaji* (Miscellaneous notes on the Western Capital) tells us that inside Rabbit Garden were

> some one hundred "spirit mountains" composed of extraordinary stones, cliffs, and grottoes. There was also Yan Pond in which were Crane Isle and Wild Duck Islet. Palaces and towers were interconnected, all of them extending several tens of li. Exotic plantings, rare trees, and unusual creatures of the land, sea, and air filled his park. Day and night the prince and his guests went boating and fishing there. Besides palaces, towers, and other structures, the park was filled with many kinds of birds and beasts, as well as natural and perhaps man-made scenery.

Probably the most well-known Western Han garden belonged to Yuan Guanghan, a wealthy merchant. He built a garden four li east to west by five li north to south at the foot of Mount Beimang on the outskirts of the capital city, Chang'an. According to *Xijing zaji,* the park was spectacular. Rapids cascaded through man-made mountains taller than ten *zhang* (more than twenty meters), with eddies and whirlpools created in the river to form a home for nesting birds. Roaming throughout the park were rare and exotic beasts, including white parrots, purple mandarin ducks, yaks, and gray gaurs. The garden had an artificial mountain made of sand and pebbles, and ponds were surrounded by exotic trees and grasses. There were so many courtyards and causeways linking the buildings that one could scarcely maneuver through them. But the garden did not last. Yuan Guanghan was discovered to have been involved in criminal activity, forbidden from entering his garden, and eventually executed. Birds and beasts, plants and trees, all were confiscated by the emperor and removed for installation in Shanglin Park.

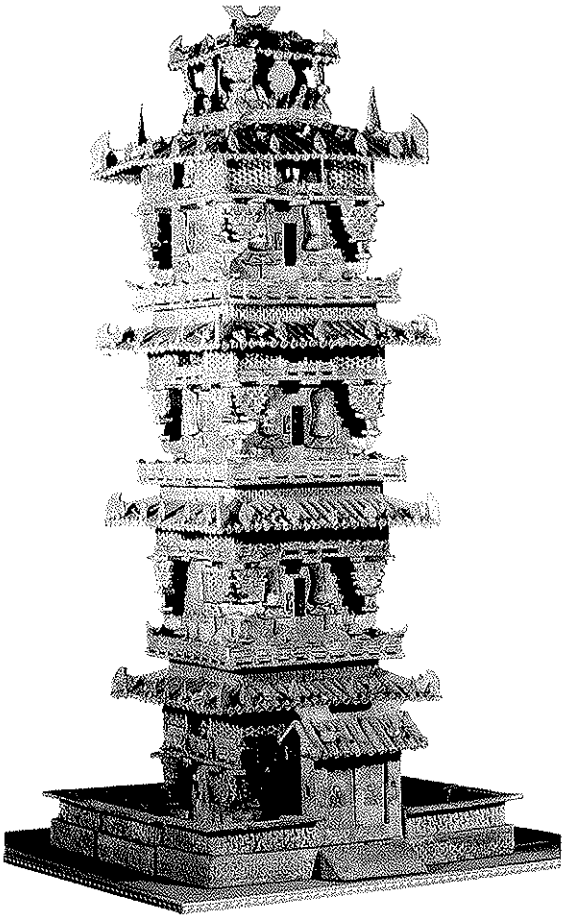
Although smaller than Rabbit Garden, the architecture, landscape, and plantings of Yuan Guanghan's private garden far surpassed the construction of Prince Liangxiao. Furthermore, Yuan Guanghan's garden had many more man-made features, including mountains, the sand-and-pebble beach, and waterways. Indeed, if the plantings and animals had not been of the highest quality and rarity, it is unlikely that they would have been moved to the emperor's own Shanglinyuan. Thus through the description of the garden of Yuan Guanghan we get a glimpse of imperial gardens of the Han, as well as an indication of the sophistication of landscape architecture at that time.

Han Residential Architecture

More is known about residential architecture of the Han than about that of any previous time period in China. In addition to building foundations uncovered at larger excavation sites such as cities, houses are depicted in relief sculpture that survives from Han tombs, and many models of houses have been excavated in Han tombs throughout China.

Most houses of the Han dynasty were not especially large. One house from the early part of the Western Han dynasty, for example, excavated in the western part of Luoyang, was nearly square, about 13.3 meters on each side, and enclosed by a pounded-earth wall 1.15 meters thick. The house had two entries, each about 2 meters wide. Just under the western wall inside the house was an earthen pit, probably used for cooking.

Han-period residential architecture has been uncovered in Niya in Xinjiang, where the foundation of an L-shaped house shows that it was divided into two rooms,



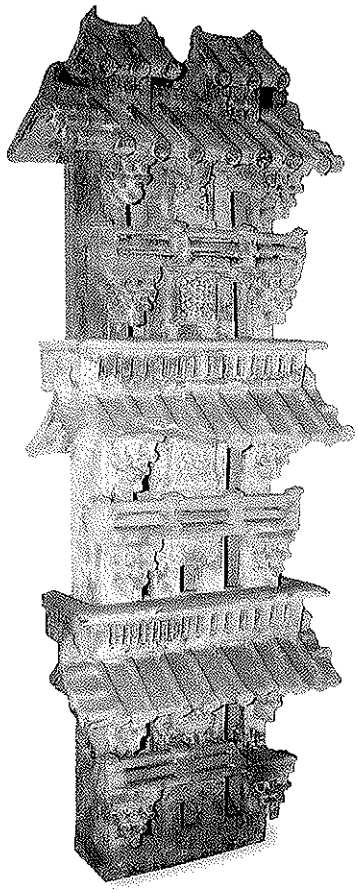


Figure 2.12. Funerary pottery model of a multistory building, Han period, excavated in Fucheng, Hebei province

Figure 2.13. Multistory pottery tower excavated from a Han grave in Beijing

roughly north and south of each other. There were exterior and interior doors, each 1.25 meters wide. The north room had a small fireplace, whereas a larger, U-shaped fireplace was located in the south room. The larger heat source suggests that this was the main residential room.

From models, we know that the Xinjiang house was only one of many possible Han house plans. Various styles of buildings were constructed: square, I-shaped, corridor-enclosed, L-shaped, and north-and-south adjoining. Houses could have one or two rooms, multiple stories, and one or more courtyards around which rooms were arranged. Three varieties of post and lintel construction are believed to have been built: column and tiebeam (with a flat side facade beneath the roof eaves); column, beam, and strut, with gabled roof; and raised on stilts. Roofs could have one, two, or four sloping eaves projecting from the main roof ridge at the top of the building (figs. 2.12 and 2.13).

Hundreds of examples of relief sculpture and pottery models have been discovered in tombs near Chengdu, Sichuan province. Like all pictures in brick, these depictions are especially important because the tombs from which they come belonged not to emperors, or the highest-ranking nobility, but to Han China's upper middle class. Most of the Sichuan houses are two-chambered, with the principal room on the west and another on the east. A few, however, are more unusual. In one courtyard-style residence shown in a relief sculpture, the entrance is located on the west side of the south wall (fig. 2.14). Someone passing through the gate would first enter a front courtyard where animals were kept; to the east is a three-bay structure of column-and-tiebeam construction with a flat facade and overhanging eaves in front and back. Inside, two seated figures talk while eating. The two eastern courtyards show, in the north, a multistory tower, perhaps the artist's attempt to depict a structure that was actually attached to and projected beyond the courtyard

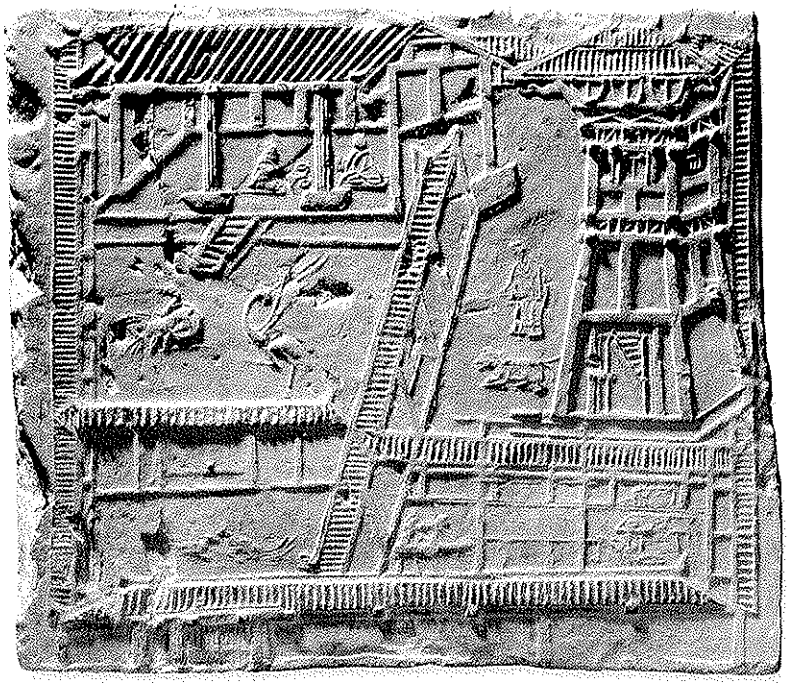
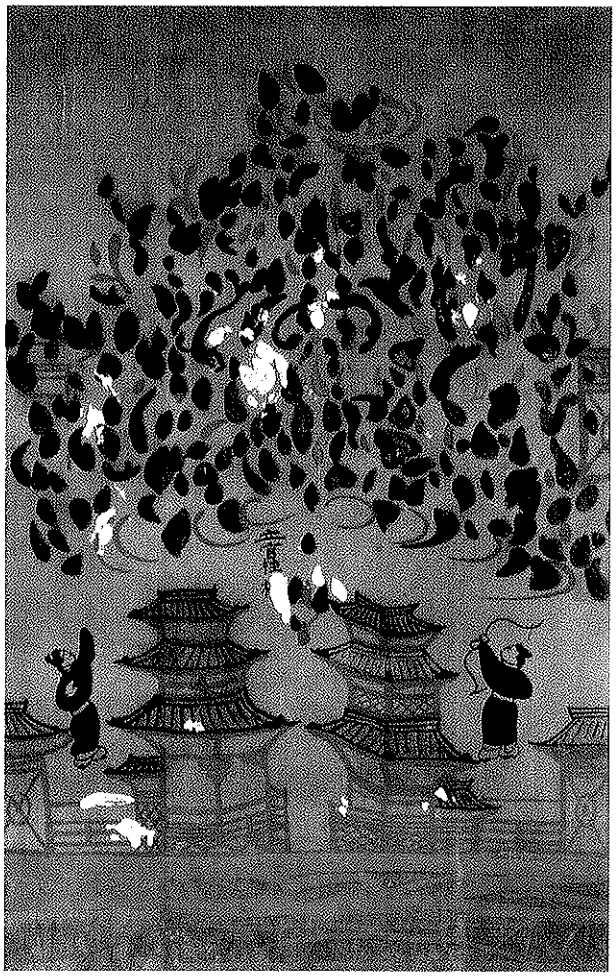


Figure 2.14. Relief sculpture showing a house with courtyards, from an Eastern Han tomb unearthed at Yangzishan, Chengdu

Figure 2.15. Detail of a painting from the wall of a Han tomb in Helinge'er, Inner Mongolia, second century C.E.



wall, and, in the south, the kitchen and additional storage space. The scene is probably a fairly realistic representation of the daily activities of a wealthy Han citizen.

The more well-to-do inhabitants of Han China probably had houses with gardens as shown in various relief sculptures and wall paintings from provinces throughout China (fig. 2.15). The biography of General Liang Ji of the Later Han dynasty in the history *Hou Han shu* (Standard history of the Later Han) describes one such home:

> Ji constructed his residence using the top grade of wood. Both the public and private chambers had hidden and exposed parts. The rooms were so interconnected that they appeared like the interior of a cave. Pillars and walls were carved, with metal and lacquer filling in the spaces. The windows were covered with strips of the highest quality of silk, painted with floating clouds and immortal spirits. The platforms and pavilions were close enough together so as to see from one to the next. The flying beams and stone steps made it possible to cross between water and land. Gold, jade, and pearls, precious objects from exotic places, all were gathered here.

Some large residences of Han China were built like fortifications with high walls, corner watchtowers, and elevated passageways. These heavily protected homes probably would not have been permitted in China's big cities and towns.

The Tombs of Qin and Han

Qin Shi Huangdi's tomb, located in Lishan, southeast of the Qin capital Xianyang, is among the most well known and spectacular finds of Chinese archaeology. The hill beneath which the First Emperor of China was laid to rest has been known for centuries, and excavation in the area has been ongoing for more than twenty years. Much is known about the mausoleum complex, though to date Qin Shi Huangdi's corpse and the objects thought to be in its immediate vicinity remain untouched.

The funerary complex of the First Emperor of Qin was a doubly walled site oriented to the four cardinal directions. A tower was positioned at each corner of the outer wall. Along the center north–south line, south of the center, is the mound beneath which he is buried. It rises 76 meters and is 350 meters square; the orientation of the burial is believed to be east–west.

Although no wall parts survive today, we know that the outer wall of the complex measured 2,165 meters north to south and 940 meters east to west. Made of pounded earth, it was 6 meters thick. The main entrance was on the eastern side but each of the other walls also had a gate. The inner wall was 1,355 by 580 meters and had five entries, two at the north and one at each of the other sides. Four of them were in line with gates of the outer wall.

West of the funerary complex are pounded-earth foundations of various sizes believed to have been official and other auxiliary structures. To the north are the graves of more than twenty members of the Qin nobility. The most important excavations so far have occurred north of the road that leads to the east gate of the tomb. In the three burial pits, weapons, flagpoles, and life-size terra-cotta statues of those who served the emperor in life — his imperial bodyguard as well as cavalry and infantry — have been found (fig. 2.16). West of the mound another famous set of burial objects of the First Emperor was excavated: the exquisite gilt-bronze carriage, horses, and charioteer now in a museum adjacent the site of pit number 1. The grandeur, scale, and concept of the funerary complex built by the First Emperor initiated a new ideology of imperial burial in China that was to influence the tombs of all later rulers.

The emperors of the Western and Eastern Han dynasties are buried near their capital cities, Chang'an and Luoyang, respectively. The tombs of nine of the eleven emperors of the Western Han are spread along the north bank of the Wei River in the northern and eastern suburbs of Chang'an. The other two were built southeast of the capital. The names of each Han emperor's tomb and much about funerary rites in the Han dynasty have been known for centuries, because the information is preserved in historical and ritual texts. Excavation of the sites has shown as well that no two Western Han tombs were identical, although it seems that in general the Han royal mausoleums had square-shaped mounds enclosed by four-sided walls. Nor do any of the tomb remains follow exactly the spaces prescribed for rituals in front of the tumulus. All of the Western Han mausoleums were burned or pillaged when the dynasty fell, and little has been recovered from any of them.

Two general points can be made about the Western Han imperial burials. First, each emperor had his own funerary complex. This self-containment marks a clear separation from the burial system employed by Shang kings. Whether this was a Han innovation, an unfulfilled plan of Qin emperor Shi Huangdi, or a development undertaken by Zhou kings may one day be known if the Zhou rulers' burials are located and uncovered. For now these questions remain, although it is assumed that the Han emperors were aware of the burial customs of former dynasties.

Second, each Han empress was buried in a separate tomb alongside or near her husband's. In dynasties after the Han, we shall see imperial family cemeteries, individual imperial graves, and joint emperor-and-empress burials.

Liu Bang and his wife, Empress Lü, are buried beneath separate tumuli shaped like truncated pyramids, his to the northwest 280 meters from hers. His mound rose 32.8 meters and was 55 by 35 meters at the top sides; hers was slightly smaller. Each was enclosed by its own wall, and then by a common wall roughly 780 meters square. The enclosed space was known as a funerary park. Near the middle of the wall was a *sima* gate, the same name used to refer to gates of the outer walls of imperial cities, and at the wall corners were L-shaped towers. North of the "funerary park" and adjacent to it was a funerary city also enclosed by a wall.

Excavation of Han tombs so far suggests that each of the first seven Han emperors, at least, had a funerary town adjacent to or near his mausoleum. They were Gaozu's Changling, Huidi's Anling, Wendi's Baling, Jingdi's Yangling, Wudi's Maoling, Zhaodi's Pingling, and Xuandi's Duling. By the time Emperor Jingdi was buried in 140 B.C.E., just a few meters east of the Han founder's tomb, the funerary park had come to have front-and-back hall complexes, covered arcades, guardhouses, and gate towers. Although archaeological evidence has not yielded a plan of Jingdi's funerary town with walls that are as clearly defined as those of Han Gaozu's tomb, an entire underground funerary city definitely existed,

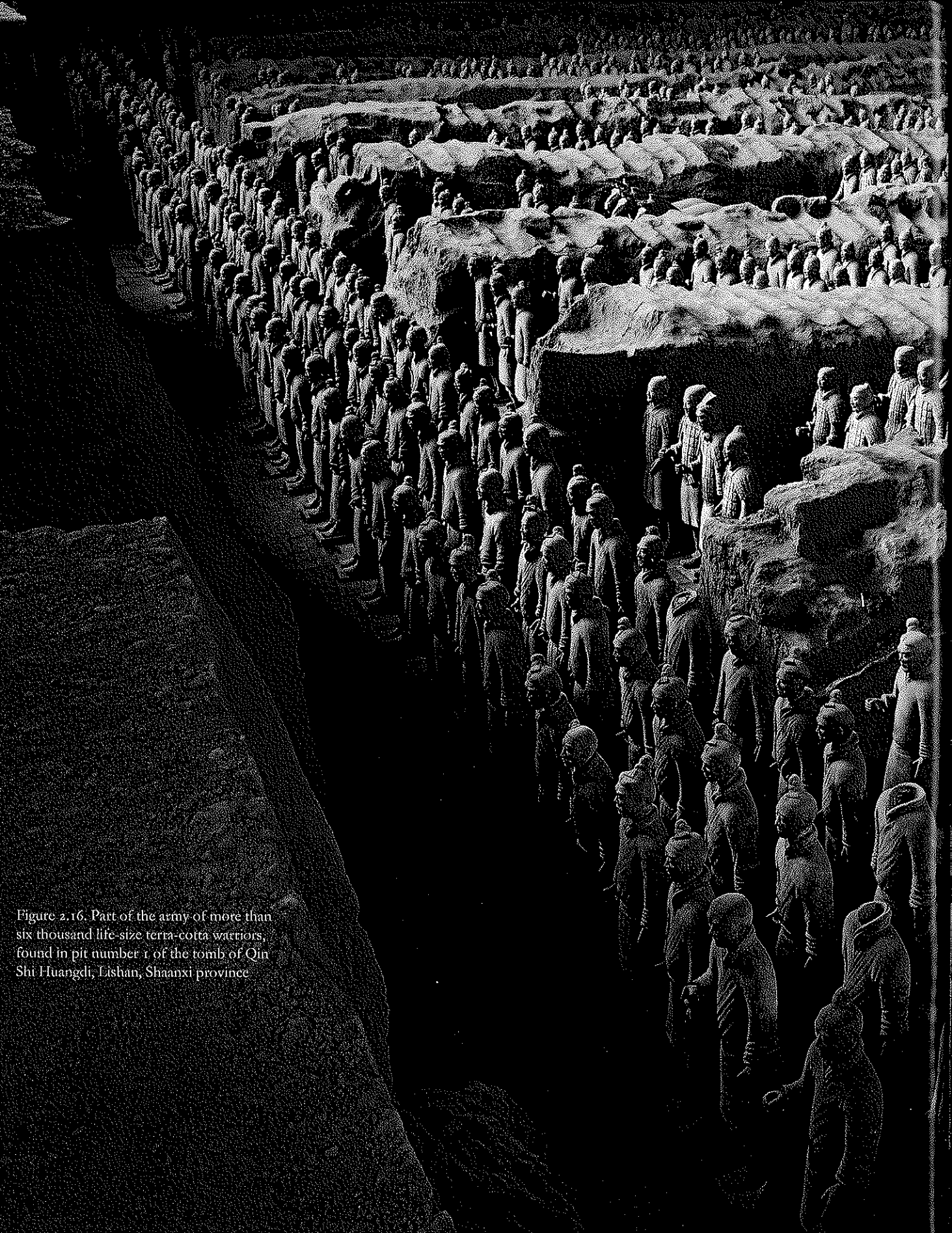


Figure 2.16. Part of the army of more than six thousand life-size terra-cotta warriors, found in pit number 1 of the tomb of Qin Shi Huangdi, Lishan, Shaanxi province

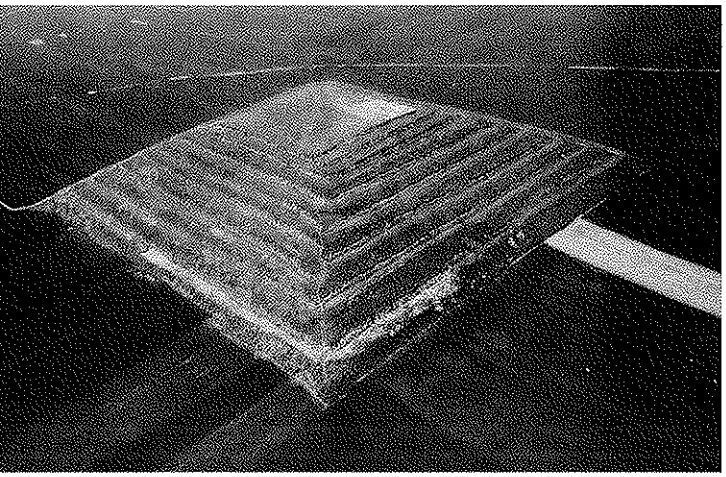


Figure 2.17. Funerary mound of the Western Han emperor Xuandi

populated by smaller versions of the renowned tomb figurines buried in Qin Shi Huangdi's funerary complex. Although a one-to-one correspondence between architectural remains and ritual is still impossible to establish, the ever more elaborate funerary parks and cities may be evidence that ritual sacrifices to the emperor known as *zhaomu,* once performed in the capital, may by this time have been moved closer to the tomb.

It also appears that Jingdi's tumulus was near the exact center of his funerary park. Thereafter this positioning became the tradition, though one that was not always followed. The mound of Jingdi's empress is northwest of the emperor's, in the same place with respect to her funerary park, but her complex was smaller. Jingdi's funerary town was two li east of his funerary park and contained five thousand households, most from the Guangdong region of southeastern China.

Records tell us, too, that members of rich and powerful families were moved to Han funerary towns from various parts of the country, and that some of the towns had as many as thirty thousand to fifty thousand inhabitants, or more. The funerary city of Han emperor Wudi, for example, is said to have had some three hundred thousand residents. By the time the seventh Han emperor, Xuandi, died in 49 B.C.E., funerary towns came to have government offices, shops, handicraft workshops, and even squarish-shaped wardlike divisions. It is unknown whether moving the population after the death of an emperor to a location so close not only to his tomb but also to the capital where his descendant ruled was a means of monitoring nobility who might potentially rise against the new ruler.

After the demise of Emperor Xuandi, the tradition of funerary cities ended, although the site of Duling, his tomb, is one of the most completely excavated Han funerary complexes and has yielded extensive architectural remains. It is also one of the two tombs southeast of the capital city. Like the tomb of Han Jingdi, Xuandi's tumulus was located in the center of his funerary park (fig. 2.17). And like the earlier Western Han imperial tombs, there were sima gates to the funerary park near the center of each enclosing wall. Excavation has provided other details of the funerary complex, however, that for most other Han tombs are known only through written descriptions. South of the funerary park in which the tumulus lay was another enclosed complex that shared the eastern end of the larger complex's south wall. Known as the "residential" or "sleeping" park, the area was subdivided into a larger western precinct and a smaller, eastern one.

Along the main north–south line of the western enclosure was a main hall, the sleeping chamber that could be entered on the east and west sides, and a central front gate that joined the outer enclosure. This was probably a sacrificial hall. The western precinct contained several courtyards and buildings, arranged roughly symmetrically and believed to have been an administrative sector. The funerary mound of Xuandi's empress survives almost as it appeared in the last century B.C.E.

The tomb of Han Wudi is significant less for its scale and magnitude than as an example of the practice of rewarding deserving officials with burial close to the ruler they served. Such practices go back to at least the Shang royal tombs at Xibeigang, and it is likely that burials next to the tomb of the ruler had a continuous history through the Han dynasty.

In 117 B.C.E., in the twenty-fourth year of the reign of Han Wudi, the brilliant young military leader Huo Qubing died at the age of twenty-four. His military career lasted fewer than ten years, but during that time Huo led campaigns in the far west beyond Gansu province and into the Altai Mountains. Historical records indicate that he was responsible for the deaths of tens of thousands of China's enemies and that his military maneuvers led to the final Han victory against the Xiongnu. His funeral is said to have lasted a full day, with a cortege so long that it stretched uninterrupted from the capital to the tomb site.

For his services, General Huo was awarded a tomb site two kilometers northeast of the eventual site of his emperor's tomb, and some of Huo's relatives received burial rights near his. Moreover, the Han general had life-size stone sculptures erected at the approach to his grave, including the famous statue of the horse tram-

pling a barbarian, symbolic of Huo Qubing's victories (fig. 2.18). Though the first appearance of sculpture along the approach to a tomb has not been determined, it certainly existed during the Han dynasty. Eventually the paths to Chinese imperial tombs were lined by monumental images of men, animals, and mythological beings, and became known as "spirit paths."

The imperial tombs of the Eastern Han were destroyed so completely that excavation tells us little about their sizes or shapes. Located in the suburbs of Luoyang, they are divided into two groups, seven southeast of the city and four in the north. What little we know comes by way of historical records. Dimensions of the mounds of Later Han imperial tombs are recorded as between 136 and 380 bu (paces), and their heights ranged from 18.15 to 49.5 meters. Today their bases average about 10 meters on a side. Sleeping chambers and auxiliary buildings for guards were in the immediate area of the mausoleums. By this time, the practice of building funerary cities had ended. Compared with the traditions of the Western Han, the Luoyang imperial tombs were significantly smaller and humbler.

Besides the imperial tombs, there was a tremendous variety in nonimperial Han tomb construction: mausoleums ranged from earthen pits with wooden coffin chambers, to burial chambers carved into the walls of cliffs, to tombs built with solid and hollow brick and sometimes faced with decorated ceramic tiles, to combination brick and stone tombs, to stone tombs such as the one in Yi'nan, Shandong province (fig. 2.19). Often tombs had vaulted ceilings. One Eastern Han tomb of an unknown occupant in Luoyang has a chamber divided into two parts — a front part that includes a side room and a passage, and a rear part with a front hall and a rear room — as well as a partition between the parts. The tomb was built with hollow bricks (fig. 2.20). The front of

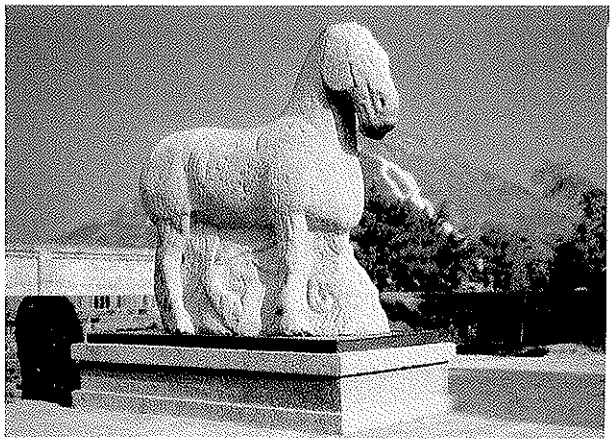


Figure 2.18. Statue of a horse trampling a barbarian, from the front of the tomb of Huo Qubing

the pillar is engraved with designs of an azure dragon and a dragonlike animal. In general, commoners had the simplest tombs, often a single coffin placed into a dirt pit. Yet during the early years of the Han dynasty even members of the aristocracy were generally buried in simple pit tombs. The famous tombs of a Han marquis and his family excavated at Mawangdui in Hunan province, for example, in which two silk "guide to the soul" paintings were excavated along with thousands of other objects, were all simple pit tombs, though the coffins were made of lacquer and multilayered.

Tombs carved into natural rock are generally associated with Han nobility. The rock-carved tombs of Prince Liu Sheng and his wife, Dou Wan, date from the first half of the second century B.C.E. The inhabitants were interred in jade suits pieced together with gold thread. Tombs carved into natural rock are also found in

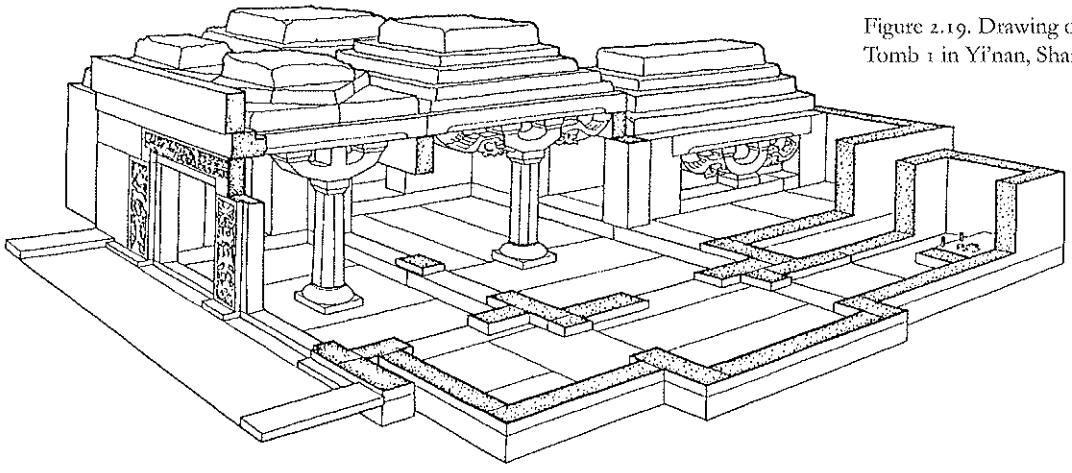
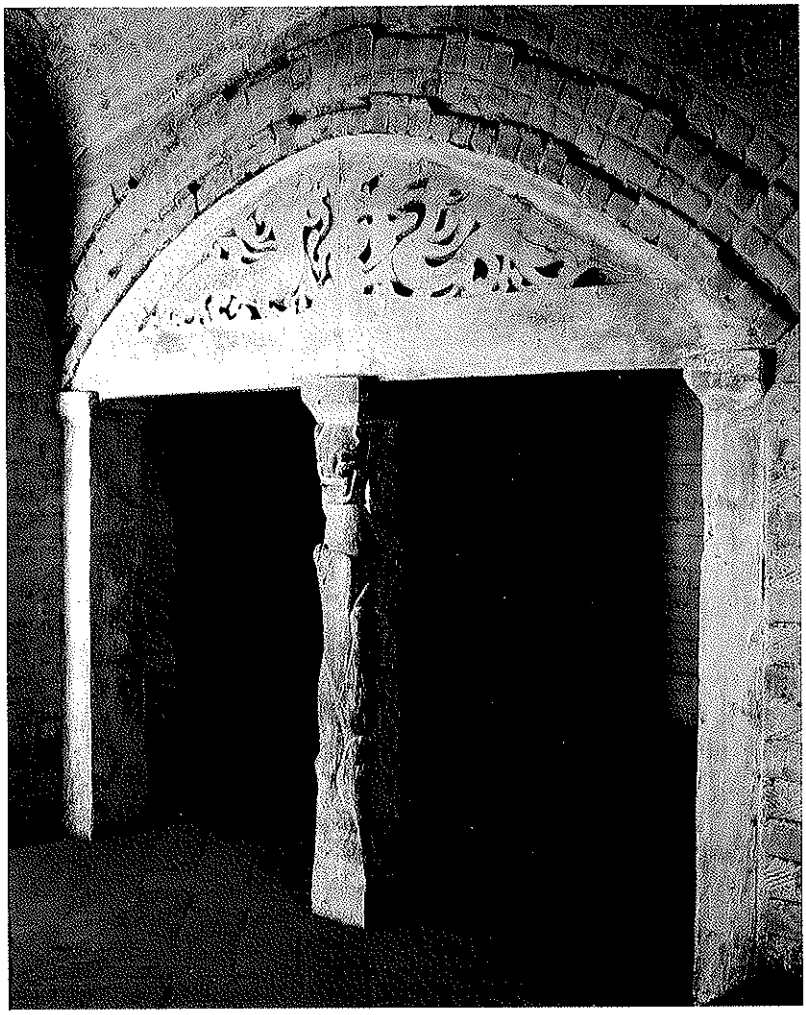


Figure 2.19. Drawing of the interior of Tomb 1 in Yi'nan, Shandong province



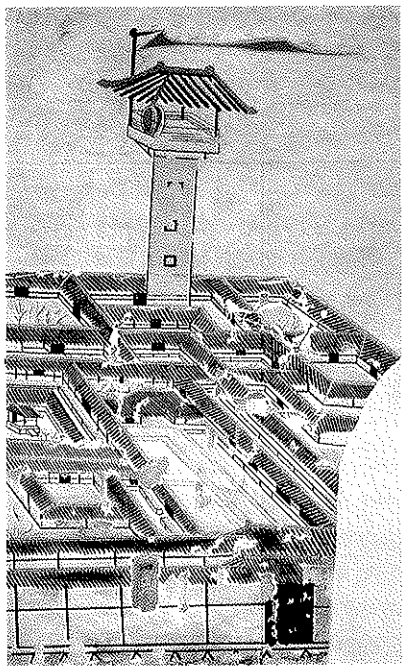


Figure 2.20 *(left)*. Chamber of an Eastern Han tomb at Luoyang

Figure 2.21 *(above)*. Mural showing city walls and gate tower in a Han tomb in Lujiazhuang, Anping county, Hebei province

Xuzhou, northern Jiangsu province, from the Western Han dynasty, and in Shandong province.

Brick tombs were built throughout the Han dynasty; subterranean tombs of hollow bricks were made even during the Warring States period. By the middle of the Western Han dynasty, bricks came to be smaller, segmented arches became common in ceiling construction, and tombs were often multichambered, with main chambers along the primary tomb axis and auxiliary rooms off it. Examples of the variety of brick tombs surviving in and around Luoyang include Han tombs noted for their richly painted interiors. Sometimes smaller or wedge-shaped bricks were mixed in with or lodged between larger ones to compensate for structural inadequacies; in other cases, segmented vaults were employed. In still other examples, stone slabs or stone strips were used in tomb construction, most often in Shandong and Jiangsu. Whether made of stone, brick, hollow brick (decorated tiles), or a combination, tomb interiors often were painted or decorated with relief sculpture. The subjects of decoration were historical events, myths, legends, and scenes from the life of the tomb occupant. Important tombs had architecture aboveground as well as the underground chambers. Aboveground tomb construction included walls around the tomb precinct, gate towers at the entry, a line of monumental sculpture on either side of the approach to the tomb, stelae, and sacrificial temples.

Eastern Han tombs are some of the most extraordinary in Chinese history. It was not uncommon to have ten or more rooms arranged as three main chambers and connective corridors to side rooms. Tombs in the northern Chinese provinces of Hebei, Henan, and Inner Mongolia were covered with murals (fig. 2.21); those farther south in Shandong, Jiangsu, and Sichuan more often had relief sculpture carved into the interior walls or wall facings. Some of our most important information about Han urban and residential architecture survives in the form of wall decorations from these tombs.

Other Architectural Types of the Qin and Han Dynasties

Various other architectural forms are notable from these years. Gate towers were an important type of multistory architecture. They were often erected on either side of a road to mark the entry to a tomb, official building, altar, temple, palatial compound, pass, or even city. The exterior was composed of three parts: base, body, and eaves. Single-, double-, and triple-body gate towers were constructed, but those with three horizontally positioned bodies were built only for the emperor. The eave layer could be supported from underneath by diagonal struts or bracket sets. The support structures were often densely placed and very decorative. Gate towers were made of brick, earth, stone, or wood with earthen or stone cores. They were not intended to be climbed inside. Sometimes a set of eaves connected two of them, emphasizing their function as an entryway.

There are many references to such gate towers in Chinese literature. The southern entry to Qin Shi Huangdi's palace reportedly was framed by gate towers. And such towers at the Changle, Weiyang, and Jianzhang palace complexes of Western Han Chang'an are equally well known from literature. The earliest extant gate towers are from the Eastern Han dynasty. Actual gate towers survive, as do pictures of them in tomb painting and relief sculpture. Most of these examples and images are in Henan, Shandong, and Sichuan provinces.

The west gate tower from the tomb of Gao Yi in Ya'an county, Sichuan, is one of the most famous and best preserved. The upper section of the double gate tower rises 6 meters and is 1.6 meters wide and 0.9 meter thick (fig. 2.22). Including the body, or shaft, the gate tower is composed of thirteen stories from base to roof, each a different height. The lower section, without its base, is 3.39 meters high, 1.1 meters wide, and half a meter thick. Both the shaft and the upper section are carved with relief sculpture. The sculpture on the higher section begins with a procession, followed by mythological creatures above, then perhaps entertainers, and, highest, possibly another procession as well as animals and mythological beasts. The roof is a replica of a ceramic tile roof, including ridges, eaves, and eave tiles, as well as the bracket set and brace support system that would help hold up an actual roof.

In addition to gate towers, multistory timber-frame buildings probably first appeared in China during the middle of the Eastern Han period. Although no actual examples remain, pictures of such buildings survive in relief sculpture and tomb wall paintings, and small-scale versions have been found among excavated tomb objects. Most depict four-sided, probably square-based towers with three to five total stories (fig. 2.23). The existing technology probably limited construction to no more than five stories, although Han towers and pavilions, regardless of their actual heights, would make possible the technology required for Buddhist pagoda architecture in later centuries.

Figure 2.22. Double-body gate tower from the tomb of Gao Yi in Ya'an county, Sichuan province

Illustrations, excavated objects, and the few extant remains together suggest that Later Han builders accepted not only the principle of narrowing the exterior size story by story toward the top of the structure, but also the existence of a superstructure marking each level on the exterior (presaging what came to be known as *pingzuo*) as well as the presence of simple hipped roofs with five ridges. In addition, there were probably bracket sets and braces to help support the weight of roof eaves, decorative balustrades on the pingzuo, lattice windows and doors on each level, and upturned roof eaves.

Figure 2.23. Pottery model of a multistory watchtower in Sanzhuang, Fucheng county, Hebei province

Areas for commerce and business had their own architectural needs. Details about marketplaces in Qin times are vague, but by the time Chang'an was the capital of the Western Han there were six markets in the western part of the city and three in the east, and Luoyang had three market areas (fig. 2.24). A brick tomb tile from Sichuan depicts a market divided by orthogonally arranged streets. This conforms closely with texts that describe Han markets enclosed by walls on four sides, each with a centrally positioned gate (similar to any other city ward). The central tower is the most prominent and important feature of the brick tile. With two stories, its lower level was probably a government office and in its upper story hung the drum that was beaten to announce the opening and closing of the markets. The buildings inside the courtyard were positioned along the interior of the market wall. Presumably these were offices, residences of city officials, storage places such as granaries, and perhaps bathrooms. This layout for city markets was to be maintained through the Sui-Tang period.

Along with the various kinds of towers and pavilions, bridges are found in Han wall painting and relief sculpture. From the pictures and texts, it seems that at least two kinds of bridges existed in Han China. First were those bridges, either flat or segmented, supported by columns and beams built of both wood and stone. In either case, a wooden or stone pier was put into the water and the bridge was built on a frame above it. A rubbing of relief sculpture from the Wu Family Shrines in Shandong province shows a river crossing supported by a row of wooden posts.

In some illustrations a double line can be seen across the top of the bridge, probably indicating a two-lane road that made it possible for carriages to cross in opposite directions. Railings on either side protected those crossing the bridge from falling off. The Yangqu Stone Bridge, which spanned the Gu River in the Eastern Han capital, Luoyang, appears to have been of this type.

There are also pictures of segmented bridges, but from the side these looked more like a trapezoid than an arch. Such bridges could be ascended by a diagonal ramp from either side, and the central area, flat on top, was high enough for boats to pass beneath. From illustrations it is evident that high posts could be erected on either end.

Arched bridges constituted a second kind of bridge constructed during these years. A relief sculpture from a tomb in Sichuan province shows an arched bridge that was probably made in segments (fig. 2.25). The gradual curve made this sort of bridge easier to cross than those made of three straight parts. Segmented-arch bridges are not described in Han literature, but their depiction in sculpture suggests their use.

Connective roadways can also be considered a specialized architectural form of Han China. When elevated, they are called *zhandao* and *gedao*. Two other types of roadways, mentioned earlier, are yongdao and fudao. Yongdao, "connective passageways," were paved. When connective ways are underground, the Chinese term is

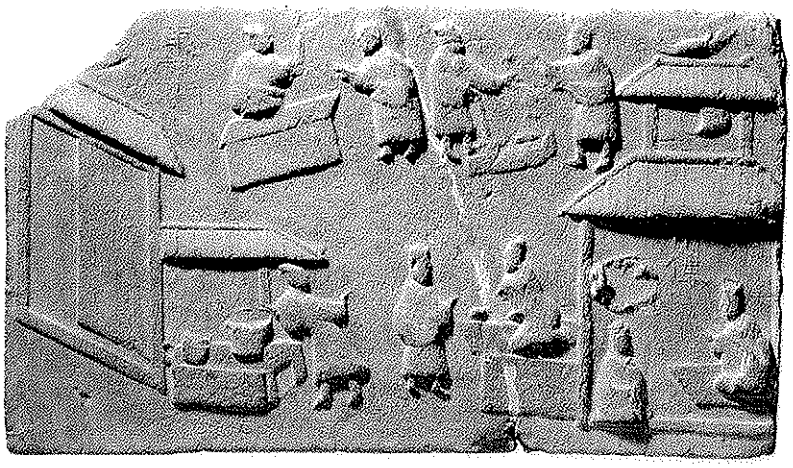


Figure 2.24. Brick engraving of a market scene, showing a two-story tower, from an Eastern Han tomb in Sichuan

Figure 2.25. Brick relief showing a segmented-arch bridge, with horses, carriages, and acrobats

usually yongdao, whereas fudao, "covered ways," are usually aboveground. In both premodern and contemporary Chinese writings, however, yongdao and fudao, and occasionally gedao, may be used interchangeably.

Connective passageways in Han China had two main functions. Their primary purpose was to join one building to another. Texts tell us that zhandao and gedao, "elevated roadways," passed above city walls, supported from below by poles of different heights. Yongdao in Han Chang'an connected the Changle, Wei-yang, and Jianzhang palace complexes with the Gui and North palace complexes. These connective passageways probably were elevated high off the ground (in spite of the use of the term *yongdao* for them in texts), extended long distances to connect all the palaces, and were roofed and walled to protect those who passed through from sun, wind, and rain. Gedao are pictured in pottery models of wubao from tombs excavated in Gansu province. They had a railing on either side but were not roofed.

A secondary function of the roadways was to cross dangerous places safely. Yongdao also were constructed to make it possible to traverse hazardous cliffs and mountain passes, such as the crossing from the Qin to the Sichuan mountains. The passage was constructed by first cutting away a stone path one to two meters wide into the wall of the cliff. Then wooden beams and planks were laid on it. Another method of constructing passageways through mountains was to cut large holes horizontally into the cliff wall, about two meters apart, and then insert beams into the holes. The beams were supported from underneath by diagonal braces. Thick wooden planks were laid on the row of beams and fastened in place with iron chains or wooden railings fixed on the outer side of the roadway. Plank roads of this type were five to six meters across, wide enough to allow horse-drawn carts to pass over them. Some may have been roofed. Zhandao built close to the bottom of a valley were supported by straight poles instead of

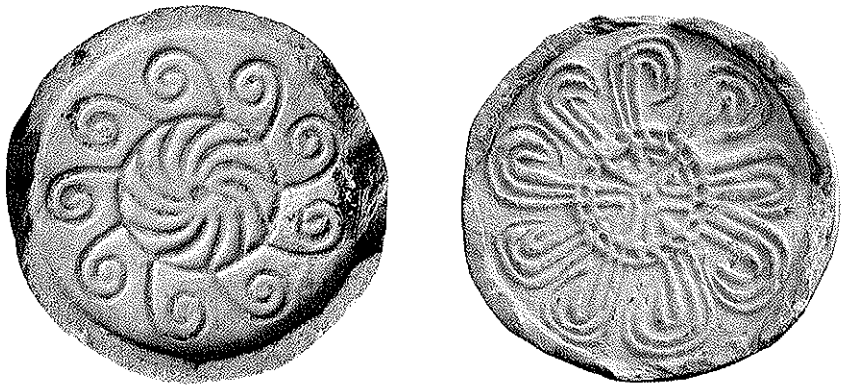


Figure 2.26. Ceramic tiles used at the ends of roof eaves in construction of the Han period

braces. In certain instances this might have been advantageous, but such poles also risked being washed away by torrential rains.

A plank roadway to Sichuan constructed in Qin times was used through the late Eastern Han. The Ziwu Roadway joined the Chang'an region not only to Hanzhong and to Bao Roadway in the west but also to Dasan Pass; in addition it joined Luogu Roadway from Weigu to Tangguang. These were the main mercantile and military routes of Qin and Han China. In addition, Han emperor Wudi opened up Jidao Zhandao so that he could lead his troops into Sichuan and built the Caoyuan Zhandao to pass across the Sanmen Gorge on the Yellow River. Most of the plank roadways were destroyed in wars at the end of the Han era or during the subsequent period of the Three Kingdoms.

Achievements of Qin and Han Architecture

Both the Qin and the Han left important architectural legacies. The Qin created the Epang Palace, the First Emperor's mausoleum at Lishan, the Great Wall, and speedways to the interior of the country and the border regions — all achievements whose significance and influence lasted for hundreds of years. The Han designed and erected equally magnificent building projects, and many more of them during the course of their four centuries of rule. The greatest Han achievements in architecture were the capital city Chang'an, its Weiyang and Jianzhang palace complexes, Shanglin Park, and the transformation of the Chinese afterlife into an architectural world.

Major breakthroughs occurred in timber-frame construction during this period. The post and lintel system had several subtypes by this time, of which *tailiang,* or column, beam, and strut, was the most important. Qin palaces almost certainly used the tailiang system whereby beams crossed columns perpendicularly in two directions and small vertical struts rose above the beams. The reconstruction of Palace 1 from Xianyang assumes that the tailiang system was used, and it was probably employed in Epang and all other grand Qin and Han palaces. In particular, it is thought that beams, or girders, were extremely long, perhaps spanning up to ten meters. Even the later palaces of the Tang dynasty (618–907), in its capital Chang'an, had beams no longer than these.

Although no multistory wooden buildings from the period exist today, Han China was sophisticated enough to produce such column-beam-and-strut architecture, and brick gate towers, relief sculpture in brick, and tomb wall paintings suggest that they were indeed built. Whether multistory wooden buildings supported by timber skeletons existed before the middle of the Eastern Han dynasty remains an open question. It is just as likely that the *jinggan,* or *ganlan,* system, whereby pieces of wood were laid one on top of another and crossed log-cabin style, was employed in the construction of tall wooden buildings such as those reportedly built by Han emperor Wudi.

Architectural developments also involved the use of a wide variety of brick and ceramic tiles. Floors and roads were paved with brick, walls were lined with brick, and ceramic tiles were placed at the ends of roof eaves (fig. 2.26). The drainage and sewage systems were made of the same materials. The most important place where brick and ceramic tiles were used, however, was in the subterranean tombs, including the pits of the First Emperor himself. Sometimes patterns were carved into tiles; at other times the patterns were stamped onto them. Clay was the main medium for funerary urns, and decorated ceramic tiles projected from the ends of roof

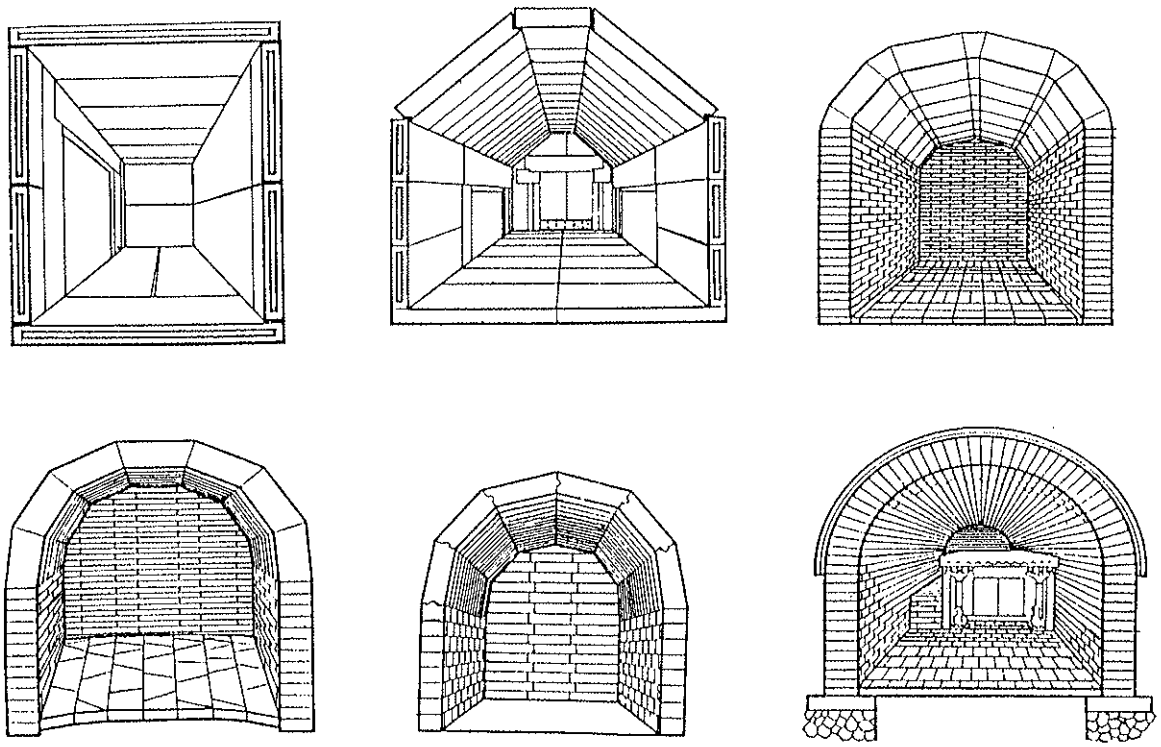


Figure 2.27. Forms of vaulting used in Han tombs

ridges. From pictures in tile and brick we have our ideas about tower construction in Han China. The bases of *que* (towers) also have led to the suggestion that they were raised on high foundations of alternating colors of brick, in checkerboard patterns, a feature evident in later Chinese pavilion architecture. Semicircular arches seen in underground tomb ceilings also are pictured on a few tall buildings preserved in relief sculpture.

Finally, Qin-Han China advanced the technique of vaulting, and vaults were used in such places as tomb interiors (fig. 2.27). Arches were made of flat and curved segments, of even and uneven sizes. Sometimes beams were lodged between the layers of arches, and other times mortar was used. In early Han China, trabeation, a column-and-tiebeam system supporting an arch on top, was the most common kind of construction. But during the Han period, arcuate construction appeared — that is, buildings came to be supported by the arch itself, with true curved lines that added a new contour to architecture of the Eastern Han.