

## Chapter 5

### I. ANCIENT ROME: GOVERNING THROUGH ARCHITECTURE

The Roman Empire adopted a comprehensive approach to urban architecture, building hundreds of cities throughout the Mediterranean.

#### A. *Roma Caput Mundi*: A Regime of Architecture

1. Rome considered itself *caput mundi*, "head of the world."
  - a. It commanded a vast international empire, secured through a system of rational military administration and civil law unknown to other ancient powers.
  - b. Roman generals settled conquered lands, using architectural projects to impose the power of the empire.
  - c. They created grand colonnaded enclosures, adding to them a new architectural repertoire of soaring vaulted interiors. The precise assembly of exceptionally large and complicated structures made from standard units extended the strict discipline of the Roman army to civil architecture. Using arches, vaults, and the new technology of concrete construction, Roman engineers devised unprecedented structures that defied gravity and adapted to the irregularities of terrain.
  - d. Throughout the empire their architects built a new type of city, in which public space and public architecture provided a formal envelope for daily existence.
  - e. The Romans offered conquered peoples an improved quality of life.
  - f. Multistoried aqueducts, such as Trajan's Aqueduct in Segovia, Spain, still testify to Rome's pragmatic imposition of design over nature.
2. History of Rome
  - a. Rome was an unlikely spot to found a great empire.
    - i. Set 30 km (18 miles) upstream from the mouth of the Tiber River, the city's fabled seven hills overlooked malarial marshlands.
    - ii. The site's only advantage lay in its location far enough away from the sea to escape coastal invasions, yet close enough to reap the benefits of maritime trade.
  - b. Rome went through a process of *synoikismos*, in which villages joined together under a single legal code.
  - c. During its first two centuries Rome borrowed legal codes, religious practices, and architecture from the more developed Etruscan culture to the north.
    - i. Etruscan architects brought with them the technology of arches and vaults.
    - ii. On the temple mount of the Capitoline Hill, the Romans installed their major cult building, an imitation of the Italo-Etruscan temple dedicated to Jupiter Optimus Maximus.
  - d. In 501 BCE, the Roman Republic replaced the monarchy with a representational form of government that lasted nearly five centuries.
    - i. The executive authority belonged to the Senate (patrician landowners), who negotiated their policies with the Plebians, who elected representatives from the lower classes.
    - ii. The political space of the Roman Forum took shape in the valley bounded by four of the seven hills.
    - iii. Unlike the open and casual space of the Athenian agora, the Roman Forum developed into a tightly enclosed space that was only one third of the agora's area.
3. Roman conquest began with the neighboring Etruscans and Greek settlements in Italy; during the 3rd and 2nd centuries BCE, Rome conquered Carthage

(modern day Tunis) and Macedonia, leading to sovereignty over the Mediterranean.

4. A long period of internal strife concluded with the return to monarchy: Augustus became the first emperor when Julius Caesar was assassinated in 44 BCE.
  - a. He created a parallel government of appointed officials who could override the will of the Senate.
  - b. He organized the Praetorian Guard for his personal protection.
  - c. Augustus initiated a series of projects for shaped public spaces and grand monuments that boosted the authority of the state.
5. The Roman army founded hundreds of cities under both the Republic and the emperors.
6. They learned orthogonal urban design from the Greeks and the Etruscans.
  - a. Topography permitting, they founded their cities on a cross-axis of streets.
  - b. They used a standard set of monumental public buildings and spaces that became tangible propaganda for the *Pax Romana*, or "Roman peace."
7. The Romans held on to power through the provision of excellent infrastructure: paved roads, vaulted sewers, bridges, and aqueducts.
8. Romans relied on architecture and urbanism to control space and behavior.

#### B. Pompeii

1. Rome acquired the small city of Pompeii as a colony in 80 BCE. The city has some of the best preserved examples of Roman architecture.
  - a. The Forum of Pompeii
  - b. The temple of Jupiter at the north end of the forum
  - c. The Basilica of Pompeii
  - d. The market, or *macellum*, featuring a round columnar pavilion in the center

#### C. Theaters and Baths. Roman Leisure Society

1. Theaters and baths came to dominate Roman cityscapes during the 1st century BCE.
2. Unlike the Greeks, who inserted their theaters into the contours of sloping sites, the Romans built free-standing monuments using arches and concrete vaults.
  - a. The Theater of Pompey, built in 62 BCE
  - b. Circus Maximus
3. The state sponsored a constant array of spectacles and games during the year's 159 holidays.
4. The Romans invented a new form of theater, the amphitheater.
  - a. The Colosseum was Rome's greatest place of spectacle and the empire's largest building
5. The baths were equally grand. They included:
  - a. Grassy arcaded court for outdoor exercise
  - b. Swimming pool
  - c. Steam room
  - d. A *frigidarium*, or a cold-water room
6. Baths were divided into women's and men's sections.
7. They were conceived as cultural centers, filled with prized works of art and libraries.

- B. *Domus and Insula*: Roman Domestic Architecture
1. The Roman house, or *domus*, looked inward, tightly organized around colonnaded courts:
    - a. Street façade often had shops to either side of the entry
    - b. Interior atrium
    - c. Owners office
    - d. Rear court (kitchens, dining rooms, baths, and privies)
  2. Wealthy Romans built luxurious villas outside the city.
  3. While Roman colonial cities conformed to rigid order, the mother city remained chaotic.
    - a. The city lacked the cross streets of *cardo* and *decumanus* and lacked the gridded patterns of *castrum* towns.
    - b. Rome developed without a plan, randomly following a pinwheel pattern set by its topographical irregularities.
- C. Rome of the Emperors: From Brick to Marble
1. The urban renewal of Rome began as a means of spreading the wealth acquired through conquest. Explicit use of architectural patronage began with L. Cornelius Sulla, a successful general, and continued through the emperor Domitian. Projects included:
    - a. The Tabularium (L. Cornelius Sulla)
    - b. Building Rome's first permanent theater (Gnaeus Pompey)
    - c. Rebuilding the basilicas on the long sides of the Roman Forum (Julius Caesar)
    - d. Extending the *pomerium* boundary to more than twice the city's area (Augustus)
    - e. The *Domus Aurea*, or "Golden House" (Nero), and the imperial residence on the Palatine Hill (Domitian);
      - i. Both the *Domus Aurea* and the Flavian imperial palace complex showed signs of a major architectural shift to the mature Roman vaulted style: Imperial architecture went beyond exterior form to become the art of interior space.
      - ii. Curves, countercurves, and elliptical forms contribute to spatial complexity.
      - iii. Manipulation of water and light for dramatic effect
- D. The Grand Projects of Trajan and Hadrian
1. The Spanish-born general, Trajan (r. 98–117), the first non-Roman emperor, brought imperial projects to a colossal scale. Massive infrastructural works:
    - a. Hexagonal port basin at Ostia
    - b. Via Traiana highway to Benevento
    - c. Granite aqueduct of Segovia
    - d. Alcantara bridge
    - e. Baths of Trajan
    - f. New forum combined with a four-level market complex
  2. Hadrian (r. 117–138), also born in Spain, brought the Roman vaulted style to a new level of sophistication.
    - a. At the northern frontier between England and Scotland, he built a 130 km (78 mile) wall.
    - b. During his twenty-year reign, Emperor Hadrian expanded his villa near Tivoli into a vast estate as large and as complex as an entire city, with basilicas, theaters, baths, and terraced gardens.
    - c. Hadrian razed Palestine, renamed it Jerusalem Aelia Capitolina, and rebuilt it with Roman colonnaded buildings.
    - d. He donated several buildings to Athens.

3. Projects in Rome were almost exclusively religious buildings.
4. Greatest architectural legacy is the domed temple of the Pantheon: the Pantheon embodied the ideal of sacred governance.
  - a. The exterior is conventional: a temple front set within a colonnaded *temenos*.
  - b. Once past the colossal bronze doors, the hemispherical hall, 43 m (137 ft, 150 Roman ft) both in height and diameter, comprised a world unto itself.
  - c. It is a complex structure, unparalleled in vaulted concrete technology. All structural considerations went toward the support of its 5,000-ton dome.
  - d. The oculus works as a compression ring to lock the structure.
  - e. The section of the dome thickens as it descends, and the aggregates of the concrete get heavier.
  - f. The radiating lines of force follow the five concentric rings of coffers on the interior ceiling.
  - g. The barrel vaulted entry and opposite it the semi-dome apse, along with the six niches with alternating aedicules that radiate around the central expanse all belonged to this system of hollows under relieving arches.
  - h. Hadrian's Pantheon served as a temple to all the gods.
  - i. Hadrian assembled materials from throughout the realm in his Pantheon, and held them together with the wondrous amalgamating capacity of concrete.

## II. ANCIENT CHINA: THE PIVOT OF THE COSMOS IN MUD AND WOOD

In the architecture of ancient China, the type, or idea, of a building became more important than the built work. Ancient Chinese builders showed little concern for permanence in architecture. Building was understood as a continual process to be repeated in eternal cycles.

- A. The Unification of China behind the Great Wall
  1. While the Romans were consolidating their empire around the Mediterranean, Chinese emperors amassed an even larger territory in Asia.
  2. Nondurable materials such as mud bricks and wood meant that few ancient Chinese buildings survived.
    - a. The only durable structure, the Great Wall along the northern and western frontiers, was an amalgam of several walls.
  3. Dynasties:
    - a. The first records of China as a unified political dominion began with the Hsia dynasty, around the time of Ur, 2200 BCE.
    - b. The Shang dynasty, from 1750 to 1100 BCE.
    - c. The Zhou dynasty ruled sporadically from 1100 to 256 BCE.
  4. During the first millennium the Chinese emperor acquired the semi-divine status of "Son of Heaven," combining political and religious roles in the emperor.
  5. When the Chinese founded a capital city they relied on a set of general rules.
    - a. A quadrangle, with three gates on each side, three sets of triple avenues running straight from the gates, and the palace occupying a large enclave in the center
    - b. A territory was defined as a series of linked squares, at the center of which lay the square capital of the empire.
    - c. Like the Romans, the Chinese attributed profound religious significance to the cardinal directions.
      - i. South was the direction of the Red Phoenix of summer and fire.

- ii. To the east lay the symbolic region of the Blue Dragon, for spring, growth, and the upright tree.
    - iii. The symbol of the White Tiger in the west meant autumn and its harvest, as well as war.
    - iv. From the north came cold winter and marauding hordes bent on destruction.
  - d. In the emperor's palace compound the principal buildings followed a tripartite diagram: a foundation platform, a rectangular timber frame made of interlocking parts, and a decorative roof.
  - e. Architects used modular system that comprised eight different ranks of buildings.
- 6. China underwent significant cultural development after iron replaced bronze as the principal metal in the 7th century BCE, increasing the efficiency of both agriculture and weaponry. New prosperity led to the decentralization of power and a wider diffusion of literacy.
- 7. "Spring and Autumn Period" (722–481 BCE): The two great schools of Chinese philosophy emerged around the figures of Confucius (551–479 BCE?), an administrator from Lu province, and the legendary Lao-Tzu.
- 8. Emperor Shi Huangdi (259–210 BCE), founder of the Qin dynasty, united the seven warring kingdoms into the first true empire of China in 221 BCE.
  - a. Shi Huangdi reapportioned the states of the empire into a system of thirty-six provinces administered through a centralized bureaucracy.
  - b. The population of the empire grew to over fifty million inhabitants.
  - c. The first emperor enforced the use of a universal written language and a universal currency.
  - d. He promoted Chinese unity through a network of straight highways that connected the provinces.
  - e. He then literally outlined the state with the world's greatest public work: the first version of the Great Wall, integrating several partial barriers begun by earlier regimes.
- 9. The Qin Great Wall.
  - a. A series of walls that stretched over 3,500 km (2,100 miles).
  - b. 400,000 laborers to work on the project over the course of ten years.
  - c. The materials changed according to the region, ranging from pounded earth (*pisé*) over wooden palisades, to fired bricks, to stones.
  - d. Parts of the Qin Great Wall rose as high as 6 m (20 ft), stretching 4 m (13 ft) across.
  - e. Guard towers at intervals of roughly 130 m (415 ft) for communication relays.
- 10. The Great Wall that one visits today was rebuilt sixteen centuries later during the Ming dynasty.
  - a. The single largest structure in the world.
  - b. The eastern sections of the current wall, which in some places have parallel sets of walls, extend for over 500 km (300 miles) without interruption at an average height of 11 m (35 ft).
- 11. Other ambitious Shi Huangdi projects:
  - a. The Qin dynasty's capital of Xianyang.
  - b. His vast funeral complex at Lishan (discovered in 1974), which includes a huge pyramid mound built of rubble and earth.
  - c. To the east of his funerary park Shi Huangdi built a vast underground sepulcher for a terra cotta army of 8,000 life-size foot soldiers, archers, and charioteers.
- 12. Many later historians trained in Confucian doctrines condemned Shi Huangdi for his acts of repression. There are mixed opinions, however, about his regime.

- B. Han Chang'An: Enclosed Urban Type
1. The ruling dynasties of China did not conceive of architecture as public service; instead, the central task of government in the cities remained social control.
  2. After the fall of the Qin dynasty, Gaozu ("the great progenitor," r. 206–195 BCE), restored order to China, founding the Han dynasty.
    - a. Ruled for over four centuries.
    - b. Gaozu refounded Chang'an on the *wangcheng* principles. His city repeated a variation of the grid plan of the old capital city of the Zhou dynasty. Chang'an was the eastern terminus of the Silk Road.
  3. The Han dynasty retained many of the policies of Shi Huangdi, enforcing provincial allegiances through a system of tributes. At the same time, the Han dynasty attempted to reduce the influence of the feudal nobility by increasing their number and thus diminishing their individual status.
    - a. The Han state was subdivided into 1587 prefectures administered by specially trained scholar officials.
    - b. This new class of bureaucrats, which contributed immensely to the stability of the Chinese state, came to power through meritocracy.
  4. During the Han dynasty, Chang'an's population grew to 250,000. Its 22.7 km (13 miles) of walls enclosed about twice the area of Rome.
    - a. Much of the space inside the walls of Chang'an was occupied by walled palace compounds.
    - b. The Weiyang Palace enclave, in the southwest quadrant of Han Chang'an, stretched about 2 km (1.2 miles) per side.
  5. Chinese designers favored rectilinearity and axuality. This led to a horizontal aesthetic and the conscious preference for a uniform range of heights.
  6. The principal religious focus of Chang'an, the Mingtang Temple, stood in the southern suburbs.
  7. The twelve-year revolt of Wang Mang interrupted the Han dynasty control of China. After putting down the rebellion in 25 CE, the Han government relocated their capital to Luoyang, following the precedent of the Zhou dynasty. Han Chang'an faded into oblivion through sacking and neglect. Luoyang became the center of the empire for the next two centuries.
- C. Chinese Domestic Architecture: Growth by Addition
1. The house, humble or princely, had as its focus an inner courtyard isolated by a walled envelope around the compound.
    - a. The Chinese courtyard house, known as *siheyuan* in Beijing.
      - i. Entered through a front gate that set the boundary for peddlers or strangers.
      - ii. An independent roof framed the entry, and a wall behind it blocked the direct view into the interior. One approached the courtyard from the side, conforming to the *Fengshui* preference for indirect access.
      - iii. Chinese houses resembled the Roman *domus*, with a succession of courts, but differed greatly in conception: they consisted of many units added around a void, while the Roman house was a single whole from which the voids were extracted.
  2. Using materials including rammed earth, mud brick, and timber, the life expectancy of Chinese buildings, public or private, rarely exceeded a generation.
  3. The architectural plans rarely varied: a long and shallow rectangle divided into *jian* bays, with pillars to support a superstructure of ceiling beams and a truss roof.
  4. All basic Chinese roof types were already present in the Han period:
    - a. Gable roof with or without overhangs
    - b. Hipped roof of four slopes

- c. Roof known as “nine spines”
- 5. The Chinese built in earth and wood out of choice, not necessity: Building and rebuilding, always repeating the same type of structure, served as an allegory of the life cycle of each generation.

### III. ANCIENT MEXICO: PYRAMIDS AND SACRIFICE

During the same period of urban expansion in Han Dynasty China and the Roman Empire, several cities in ancient Mexico rivaled their complexity and formal order. Ancient societies in the Western Hemisphere produced grid patterns, as well as pyramids and axial streets.

#### A. Early Mesoamerican Cultures: The Space of Ceremonies

The cultures of Ancient Mexico, though less technologically advanced than the Romans or the Chinese, tended to build more imposing monumental spaces.

1. Cities such as Monte Albán and Teotihuacan produced towering pyramids and carefully composed platform enclosures.
2. Three areas of ancient Mexico attained high architectural expression during the period from 200 BCE to 300 CE:
  - a. The Teotihuacanos in the Valley of Mexico
  - b. The Zapotec culture centered at Monte Albán in the Valley of Oaxaca
  - c. The early Mayan culture in the Guatemalan rain forests
3. All of these cultures, despite their differing languages, honored their ritual and artistic origins from the earlier culture of the Olmec:
  - a. The first surviving monumental Olmec center, now called San Lorenzo, dates to around 1500 BCE with a gigantic earthwork: an artificial, 1 km (0.5 miles) long plateau built of clay and rubble. This platform served as a ceremonial center for the dozens of neighboring towns and villages subjected to the Olmec kings.
  - b. La Venta, 90 km (55 miles) east of San Lorenzo, grew to prominence around 900 BCE as a second ritual city ruled by Olmec kings. The major artifacts fit a clear geometric pattern, dominated by a radially composed pyramid, which sat on a square base.
  - c. The Zapotecs, about 300 km (180 miles) to the south, at Monte Albán, elaborated the Olmec system of order, framing a grand elevated plaza with stepped platforms. Zapotec designers created monumental terraces and elaborate tombs beginning in the 5th century BCE. Their culture continued for nearly a millennium.
4. All of their temples focused on an immense internal plaza, a near perfect rectangle.
5. The monumental buildings of ancient Mexico embodied the cyclical nature of political power. Rather than constantly rebuilding their structures as the Chinese did, they added successive layers over them.
6. The ancient cities of Mesoamerica used the altars and the ball courts as places of tribute to display a hierarchical authority based on military and cultural primacy.

#### B. Teotihuacan: City of the Gods

1. Teotihuacan was the largest ancient city in Mexico and its prime ritual center.
  - a. Located in the high, semi-arid Valley of Mexico, it became the region's pilgrimage center, and premier market town.

- b. From about 100 BCE to 200 CE Teotihuacan produced its two great pyramids, hundreds of platform temples, and 2,000 palaces.
  - c. The city's grid spread about 30 sq km (18 sq miles), exceeding both Rome and Chang'an in area.
- 2. The central axis of Teotihuacan is a sunken, 50 m (160 ft) wide avenue, now called *Miccaotli*, or "Avenue of the Dead." Over 6 km (3.5 miles) in length, it surpassed the axial thoroughfares of all other preindustrial cultures.
  - a. The Teotihuacanos planned the great axis to connect the temple district of the two pyramids, which dated from the 1st century BCE, to the crossroad.
  - b. The Great Compound at the crossroad served as a marketplace and administrative center, where pilgrims from areas such as Monte Albán and the Mayan country came to trade.
  - c. The Pyramids marked the *axis mundi*, the cosmic center of a community's known world.
- 3. The central crossroad divided Teotihuacan into four distinct quarters.
  - a. These were then broken into what the Spanish later called *barrios*, or neighborhoods, each specializing in a dominant craft or activity.
  - b. The blocks of Teotihuacan were organized as self-contained enclosures. They resembled palaces but contained apartments for as many as 100 inhabitants per block.
  - c. Both the commoners and the wealthy classes lived in these apartment blocks, single-story structures built with stone posts, wooden beams, and mud-brick walls.
  - d. The more than 2,000 apartment blocks in Teotihuacan ranged in size from 400 to 7,000 sq m (appx. 1,300–22,000 sq ft). This exceptional collective dwelling type had no precedent outside of Mesoamerica. Many scholars assume it served a communitarian social order run by a theocratic priesthood.
- 4. The scale and position of the two great pyramids conveyed the religious primacy of Teotihuacan.
  - a. Platform temples covered both sides of the procession route.
  - b. The pilgrims walking along the gently rising processional avenue encountered a series of six mysterious "locks," stepped barriers.
  - c. The final "lock" corresponded to the city's oldest and largest monument, the Pyramid of the Sun.
  - d. Begun in the 2nd century BCE, it covered a cave that extends 100 m under its mass—a natural phenomenon revered as the origin of the world.
  - e. The pyramid faced 15 degrees north of west, coinciding with the setting sun on June 21, the day of its zenith passage.
  - f. Its coordinates informed the orientation of the rest of the city's orthogonal blocks.
- 5. The builders of the Pyramid of the Sun used construction techniques similar to those of the ziggurats in Mesopotamia.
  - a. They stacked it in four stages with horizontal layers of clay.
  - b. They clad it with rough-hewn stones.
- 6. For the Moon Pyramid at the end of the axis, they employed a new technique of construction, building a core with vertical tufa piers, the shafts between them filled with rubble. They buttressed this core with fin walls, which determined the slope of the main terraces.
- 7. The base of the Moon Pyramid marked the climax of the ceremonial landscape of Teotihuacan.
  - a. The powerful members of the priesthoods made their sacrifices here in a linked series of platform temples enclosing a square plaza with the same dimensions as the base of the Moon Pyramid.
  - b. Next to the bottom of the stair stood a special temple surrounded by a low parapet and entered from a single breach on the west.