54 Khmer Empire and Southeast Asia, 800–1450

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History and Geography

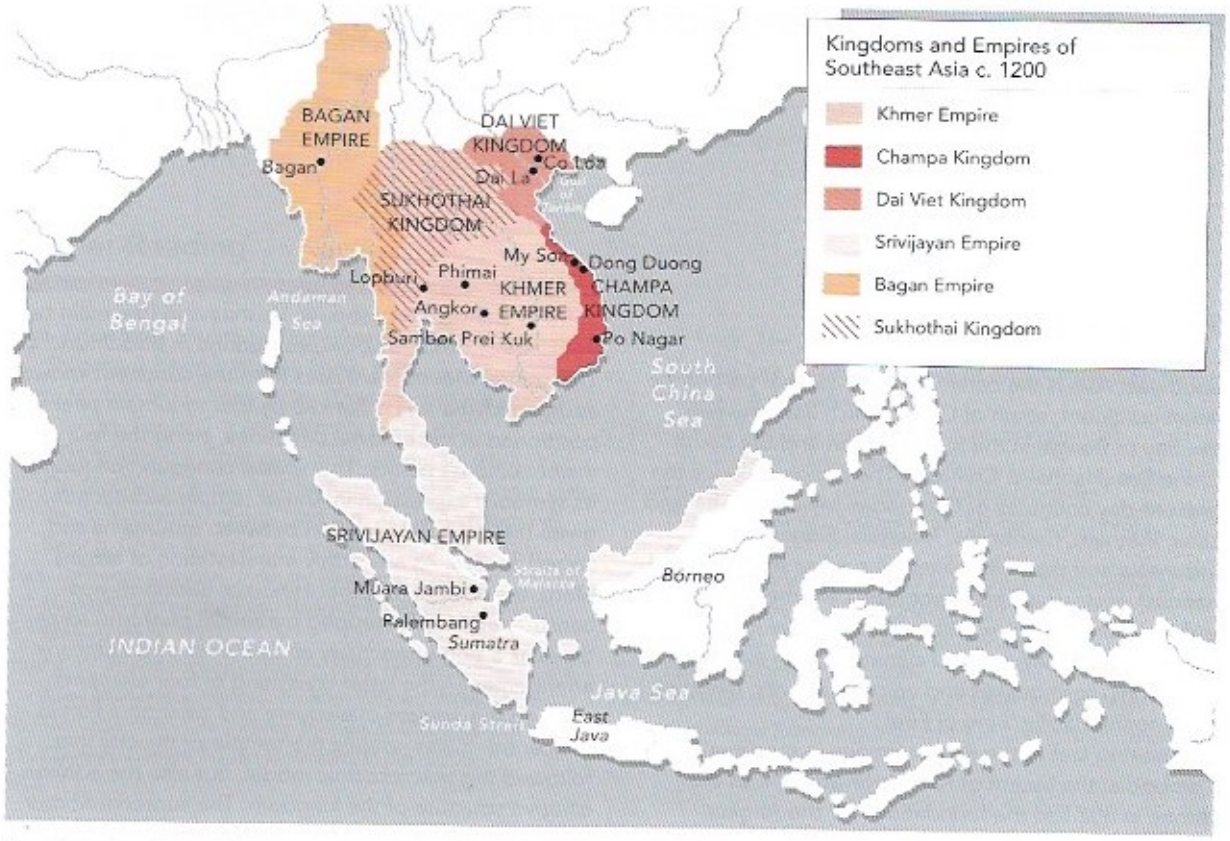
Southeast Asia is the common name for that part of the Asian continent, south of China, which lies between the Bay of Bengal in the Indian Ocean and the South China Sea (Nanhai in Chinese). The region includes the present-day countries of Cambodia, Myanmar, Thailand, Laos, Vietnam, Cambodia, Malaysia, Singapore, Indonesia and the Philippines (plus other smaller island nations). Historically and geographically their make-up is diverse and complex, although they have long shared a (generally) tropical climate and an exposure to monsoons, earthquakes and volcanic activity, being so close to the Pacific 'Ring of Fire'.

Looking first at the Khmer Empire in medieval Cambodia, the ascent of King Jayavarman II to the throne in 802 laid the foundations for the Angkor Empire: it would reach its apogee four centuries later, before entering a period of decline and ending in 1431. In Cambodia, the name Angkor is derived from the Sanskrit word, *nagara*, meaning 'city'. It became the Middle Khmer name for the huge area enclosing several monuments, reservoirs, causeways, walls and gateways at the site of Angkor near what is now the city of Siem Reap. The original name for the capital, established at this site by King Yashovarman (r. c. 889–910) at the start of his reign, was Yashodharapura. More widely known as Angkor, and then majorly rebuilt as Angkor Thom ('great city') by King Jayavarman VII (r. 1181–1218), it was to remain the capital until the Khmer Empire abandoned the city in the fifteenth century under pressure from neighbouring Thais.

Hinduism was the main religion of the Khmer Empire, followed in popularity by Buddhism. Khmer kingship was perceived as being divinely bestowed, and monarchs drew upon the power of the gods by constructing temples and creating divine abodes in stone to represent heaven on earth. In the Hindu-Buddhist cosmography, the mythical Mount Meru (or Sumeru) stands at the centre of the cosmos and links the divine and human worlds. On its summit dwell the thirty-three gods, presided over by the supreme god: Shiva in Shaivism or Vishnu in Vaishnavism (the main two branches of Hinduism), or else Buddha in Buddhism. The central Mount Meru rises from the continent known as Jambudvipa and is flanked by four mountain peaks positioned in the cardinal directions, along the four major compass points. This spatial configuration found its symbolic expression in Khmer temple architecture, given the strong association between mountains and sacred spaces. As an earthly manifestation of Mount Meru, the temple (whether Hindu or Buddhist) was constructed atop a stepped pyramidal platform, sometimes as a single sanctuary and at times as a quincunx arrangement – the latter consisting of four elements marking the corners of a square and creating a fifth in the centre. It was not just the temple or the city that followed this macrocosmic model, but also the administrative structure of the kingdom. The supreme Khmer king ruled over the kingdom that was divided into four parts corresponding to the four directions.

From the outset of the Khmer Empire, King Jayavarman II established a cult of *devaraja* (meaning 'god king'), a new Shaiva Hindu ritual that united him with Shiva on Mount Mahendra, today known as Phnom Kulen, north of Angkor. A Shiva *linga* (the abstracted representation of the Hindu god Shiva as a phallic symbol) was installed in honour of this union on Mount Mahendra. The *devaraja* ritual that connected the earthly king with the god Shiva was followed by succeeding kings, who all looked upon the mountain as a symbol of fecundity and power.

To the northeast of Cambodia, the Empire of Bagan was established on a dry, riverside plain in central Myanmar (also known historically as Burma), with the Arakanese mountain range cutting across it, as a means to unite the diverse ethnic groups of the region. The absence of tropical rain explains why so many of its monuments have been preserved to date. Like Angkor, Bagan had an economy based on rice production and was linked by river to the maritime trade route to China and elsewhere. Two prominent kings, Anawrahta (r. 1044–77) and Kyanzittha (r. 1084–1112), shaped the history of Bagan as a major



Map 54.1 Kingdoms and Empires of Southeast Asia during the reign of Jayavarman VII (r. 1182–1218 CE)

empire. Again like Angkor, this impressive centre of monumental architecture ended with the advent of attacks from Thai forces.

In the southernmost part of Southeast Asia, the ecosystem of Indonesia, with its large valleys and plains, rich volcanic soil and plenty of rain, provided fertile lands capable of supporting large settlements. Like the other agrarian empires of Southeast Asia, the Srivijayan Empire, based in Sumatra, in what is now the city of Palembang, had an economy based on agricultural, forest and ocean products. A number of Buddhist monasteries and temples were built under the Srivijayan Empire, but besides the few brick foundations found at Muara Jambi, which date from the late seventh to twelfth centuries, nothing has survived.

Contemporary to Srivijaya on Sumatra, Central Java (known as Mataram) on the adjacent island saw the rise of two royal families – the Buddhist Shailendras and the Hindu Sanjayas – who created a temple boom in the Kedu plains of Central Java. Around the tenth century, however, the population shifted to East Java. The cause of the dramatic shift is not known, but it seems likely that it was due to a catastrophic volcanic eruption, given the active volcanic nature of Mount Merapi. Many mountains and volcanoes in Java are regarded as the seats of the gods or powerful ancestors, who look after the welfare of the communities. Streams of water flowing from the mountains are believed to have magical properties, as mountains are considered to be containers of *amrita* (holy water or elixir). This holy water cult continues even today, especially in Bali. The temple dedicated to the mythical serpent, *naga*, at Candi Panataran (Key Buildings, p. 1104, fig. 54.20) in East Java may have functioned as a storeroom for holy water.

Back on the mainland, and from the fourth century onwards, the Mon-Khmer peoples of present-day Thailand absorbed diverse Indic and Chinese influences, like other early states of Southeast Asia. The earliest traces of Buddhist art and architecture in the Chao Phraya River basin indicate a society of growing complexity with references to a lost early kingdom of Dvaravati (sixth to tenth centuries). This kingdom

produced beautiful large carved-stone *dharmacakra* – literally 'wheels of the law', representing the Buddhist spiritual path. Some centuries later, Thai ethnic groups began descending the mountain passes from Yunnan into the Chao Phraya basin, pushing the Mons to the south and west; they remain today an ethnic minority in Thailand. Under the rule of King Jayavaraman VII (r. 1181–c. 1220), much of present-day Thailand including Lopburi, Phimai and what later became Sukhothai was part of the powerful Khmer Empire.

Yet following Jayavarman VII's death, Khmer control weakened over its western territories. No subsequent Angkor ruler was able to sustain central authority in these provincial areas, thus paving the way for the new Sukhothai kingdom in the mid-thirteenth century to overthrow Khmer rule in the lower northern region of present-day Thailand. The name Sukhothai literally means 'dawn of happiness'. It was the first independent Buddhist state founded by Thais, and flourished under King Ramkhamhaeng (r. 1275–1317). However, the power of the Sukhothai kingdom gradually declined and the Ayutthaya kingdom was founded in 1350 at the city of Ayutthaya Boromaracha I (r. 1370–88); King Trailok (r. 1448–88); and King Naresuan (r. 1590–1605), in what is now Phra Nakhon Si Ayutthaya province, which was named after the ancient Indian city of Ayodhya where a leading Hindu deity, King Rama, was believed to have been born.

Meanwhile, the Cham people of southern Vietnam had established the state known as Champa from the second to the thirteenth centuries. The Champa kingdom was not a unified polity but a federation of several regions situated along the coast of central and southern Vietnam. Activity was sporadic, but three principal architectural sites are to be found in Vietnam: My Son in Quang Nam province; Dong Duong, also in Quang Nam province; and Po Nagar in Khanh Hoa province.

Culture and Society

In the Indianized – and generally Hindu-Buddhist – kingdoms of Southeast Asia, the presence of remarkable city planning and temple structures reflected deeper cosmological beliefs, albeit with enough regional nuances to lend a distinct character to the architecture in respective regions. Culturally, a strong correspondence existed between the divine macrocosm and human microcosm. Royal capital cities played the role of symbolic centre of the universe, mimicking the heavenly city of Indra, the king of gods; and the kings of Southeast Asia ruled on earth like gods. And from simple place of worships, temples grew into huge architectural complexes that served as major ceremonial and ritual centres as well as religious institutions. The deification of deceased kings and royal ancestors seems to have been a special feature of Southeast Asian temples.

In this way, the architecture of the Khmer Empire expresses the history and evolution of power in Cambodia. The authority granted by kings to the huge state temples – with *varnas* (occupational divisions) to sustain and control them – was directed hierarchically downwards through smaller regional temples down to the personal sanctuaries of village leaders. Temples controlled the land, human agricultural labour, and the produce that was grown. At the high point of the Khmer era, there were up to 1,200 local temples and cults linked to the regional temples and ultimately to the king's state temple in the royal capital of Angkor. In the deeply hierarchical Khmer society, the palace of the ruler was situated near the state temple, surrounded by monasteries for the Brahmin priests and houses for the court members. Beyond them were the houses and rice fields where the artisans and peasants lived and worked. Various sorts of slavery existed in Angkor that would have been instrumental in the construction of the Khmer temple complexes there.

Water management played a key role in Cambodian administration. The construction of hydraulic networks into previously uncultivated agricultural land produced taxable rice surpluses that were central to the prosperity of Khmer kings. Hence the Khmer Empire gradually changed the course of the Siem Reap River during the Angkorian period. The major reservoirs (*barays*) such as Indratataka (877–89) and Jayatataka (or North Baray, 1182–1218), as built by the Khmers in Angkor, were linked to an entire – and impressive – network of smaller reservoirs, moats and canals that distributed and stored the water from the Phnom Kulen streams and made rice cultivation possible. The Khmer Empire also built a road network and no less than 102 hospitals to cater for its widespread population.

Like Angkor, the Bagan Empire in Myanmar too drew economic and political support through its own network of large temples. Several fortified towns along with associated Buddhist temples and monasteries were duly established on the banks of the Irrawaddy River. An irrigation network and wet rice agriculture in paddy fields were developed around each new population centre. Cultural assimilation begun by King Anawrahta in the mid-eleventh century was continued under King Kyanzittha, who organized the powerful ancestral and

terrestrial spirit deities (*nats*) believed in by disparate populations, into the royal group of thirty-seven, protected by Indra, a Hindu god, also known as Thagyamin or Sakka.

In Indonesia, the administrative model of the Central Javanese period appears to have evolved from the old independent chiefdoms and remained limited in scope. The local ruler (*raka* or *raja*) was the only level of administration between the supreme king (*maharaja*) and the villages, unlike the hierarchical structure of the Khmer kingship. With the aforementioned shift of population into East Java in the tenth century, the rice economy of Central Java gave way to a spice growing economy of East Java. As a result, the kings in the successive Singasari (r. 1222–93) and Majapahit (r. 1293–1447) lineages of East Java became directly involved in international trade in these produces.

Javanese kingship was a 'ritual sovereignty' marked by temple complexes under the patronage of monks and priests, who endowed the king with sacred powers and reinforced an aura of divine majesty. Two typically Hindu ceremonies of royal consecration (*abhiseka*) and funerary rites (*shraddha*) occupied an important place in Javanese society. The elaborate funerary rites were performed for the benefit of the deceased king whose soul would be deified with the god he favoured, most often Shiva and/or Buddha. Thus, many East Javanese *candis* (the Indonesian term for Hindu or Buddhist temples) were erected to the memory and for the worship of the deceased king in his deified form.

In Thailand, the newly independent Sukhothai kingdom from the mid-thirteenth century encompassed the cities of Sukhothai (the political and administrative capital), Si Satchanalai (the spiritual centre) and Kamphaeng Phet (the military frontier). Under royal patronage, Buddhism flourished and many impressive monasteries were constructed in unique Sukhothai style. With the emergence of the Ayutthaya kingdom from the mid-fourteenth century, its capital city of Ayutthaya Boromaracha I (r. 1370–88); King Trailok (r. 1448–88); King Naresuan (r. 1590–1605) flourished for the next four centuries as a cosmopolitan urban area that exchanged ambassadors with the French court in Versailles, the Mughal court in Delhi as well as the imperial courts of China and Japan. The city was burnt to the ground during an attack by Burmese troops in 1767. It was never rebuilt in the same location, and this once-important centre of global diplomacy and commerce remains today simply as an extensive archaeological site.

Architecture

Already in the mid-seventh century, buildings constructed in durable materials began to appear throughout Southeast Asian regions, usually of simple forms. By a century later there had been a spectacular development in architecture, embodying spatially the conceptual elements of Hindu-Buddhist cosmology. It was the Khmer Empire that first created the model of the royal 'temple-mountain' – soon to become popular across all of Southeast Asia – and then developed this in earnest from the early ninth century. The model's *shikhara*-like superstructure, with multiple curved roofs and spires, revealed a strong Indian architectural influence (see Chapter 51). Yet even though Indian cultural and religious elements played an important part in the development of the Hindu-Buddhist architecture of Southeast Asian regions, different local elements were adopted and absorbed in each of them to produce uniquely indigenous architecture.

ANGKOR EMPIRE, CAMBODIA

The earliest temples, dating from the pre-Angkorian period, such as the Hindu temples at Sambor Prei Kuk (616–35) in Kompong Thom province, were simple brick constructions of a single square or octagonal tower or combination of towers, erected upon an unadorned platform.

With the beginning of the Angkor period at the start of the ninth century, Khmer architecture progressed from these modest brick temples to elaborate stone structures. Three architectural models developed in particular during the Angkorian period: the single tower sanctuary; the ensemble of towers on a common terrace as seen at Preah Ko (877–89); and the temple-mountain, which was to remain popular throughout the Angkor period. This comprised a single sanctuary atop a large stepped pyramidal structure, with its first real manifestation being at Bakong Temple (877–89), in the Khmer capital. Sometimes the central sanctuary was accompanied by smaller sanctuaries oriented in the cardinal directions, and displaying the quincunx arrangement, as seen at Bakheng Temple (889–915; Key Buildings, p. 1097, fig. 54.11) and most famously at Angkor Wat (1113–50; Key Buildings, p. 1100, figs 54.14, 54.15), originally a Hindu temple but then Buddhist. In these complexes, the sanctuary (*prasat*) was often preceded by a vestibule and surmounted by a richly carved corn-cob-like tall superstructure, known as a *prang*. The *prasat* and *prang* remained the central architectural unit of the Khmer temples throughout the Angkor period.

Each of the Khmer Empire kings after coming to power undertook three kinds of architectural projects: public works such as reservoirs, roads, hospitals and shelters for pilgrims; ancestral temples dedicated to the monarch's male and female forebears; and a state temple whose purpose was to honour the royal deity – mostly Shiva, with whom the king's inner self was strongly associated. For example, the *linga* installed at Bakong by King Indravarman I bore the name Indresvara, and the *linga* at Bakheng, built by King Yashodhavarman, bore the name Yashodhesvara.

The building materials used in the Khmer kings' architectural projects included wood, brick, stone and laterite (a local volcanic material), as well as terracotta roofing tiles. Domestic and royal buildings such as palaces were constructed in wood and brick; a mixture of vegetable resin and brick dust was employed instead of lime mortar for the brickwork. Stone and laterite were used exclusively for the temples, both being quarried at Phnom Kulen. Laterite has a honeycomb-like texture and was utilized for the foundations and cores of the temples, since it is not only a strong material but also has excellent drainage properties due to its low capillarity. It is dark yellowish in colour, in contrast to the grey-green sandstone used in many Khmer temples. There is often a layer of sand underneath Angkorian temple structures, this being an effective solution devised by the Khmers to a practical problem: the underground water table is quite high in central Cambodia, and wet sand can support a very heavy load.

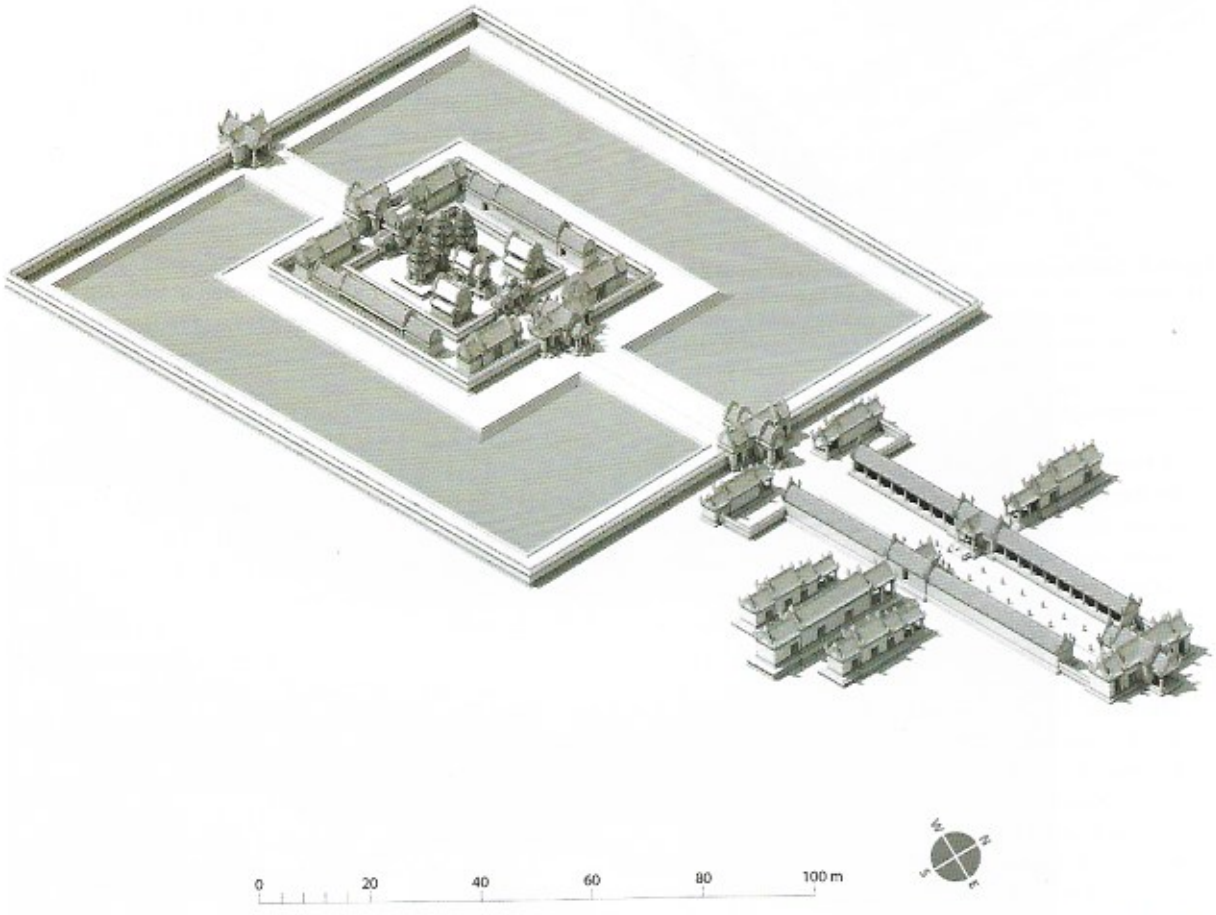


Fig 54.1 Reconstruction drawing of Banteay Srei Temple, Angkor Archaeological Park (formerly Angkor/Yashodharapura), near Siem Reap, Cambodia (late 10th century). This isometric shows the temple's concentric layout and its hierarchical organization of space. The most important area, surrounded by moats, was possibly reserved for the elite, with the causeway and adjacent buildings to the east for ordinary people. The central sanctuary was probably accessible by a very few privileged individuals.

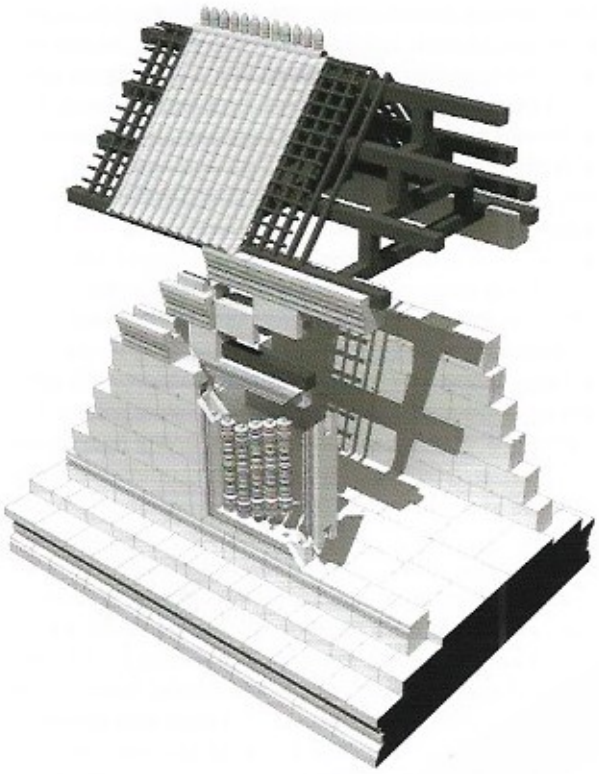


Fig 54.2 Cutaway drawing showing the construction of Banteay Srei Temple. Wooden members can be seen inserted into stone window surrounds, and mortise-and-tenon joints used for the sandstone window balusters. Such techniques were probably used due to uncertainty, or ignorance, about the structural properties of sandstone and laterite. For the roof, traditional construction was employed through timber rafters and roof tiles.

In terms of architectural style, the buildings erected under the Khmer Empire can be classified according to three periods – early classical Angkorian (ninth to tenth centuries), middle classical Angkorian (tenth to twelfth centuries) and high classical Angkorian (twelfth to fourteenth centuries) – while the names of key temples are also used to denote the architectural style that characterizes them.

The early classical period began when the Angkor Empire was in its nascent stage, with King Jayavarman II (r. 802–35) building several temples on Phnom Kulen, prior to establishing his capital at Hariharalaya beside the fertile lake of Tonle Sap, at present-day Roluos. The city's name came from the Hindu god, Harihara, a fusion of Shiva and Vishnu, to whom it was dedicated. Brick was used as the main building material for these early temples. When King Yashovarman I (r. 889–915) came to power, he moved the capital north of Tonle Sap by erecting the city of Yashodharapura (subsequently better known as Angkor). He was also responsible for the construction of the Yashodharatatka reservoir (or East Baray, 889–915), which measured approximately 7.5 by 1.8 kilometres (5 by 1 miles) in area, as well as Bakheng Temple and also Lolei Temple (893). The architectural evolution of the temple-mountain model continued in this early period but is rather difficult to follow. Pyramidal platforms in a limited form had been consistently employed by the Khmer architects from even as early as the first half of the eighth century, as seen in Angkor at Ak Yum Temple, although these could not be called temple-mountains as such. Once established, however, the temple-mountain model persisted until the last monument of the Angkorian period, Mangalaratha Temple, right at the end of the thirteenth century. No standard system of proportion was employed in the early versions of the temple-mountain model. Instead, their proportions were governed by the master builder's grasp of perspective techniques.

During the middle classical Angkorian period, the Khmer capital was moved briefly to Lingapura or Koh Ker Temple (921–44), now in Preah Vihar province, in 928 under King Jayavarman IV: however, after he died in 941, it then returned to Angkor (Yashodharapura) three years later. The temple-mountain continued to be built at Koh Ker with enlarged proportions. Soon after, in Angkor, King Rajendravarman (r. 944–68) built the temples of East Mebon (952) and Pre Rup (961), both of them quincunx-form temple-mountains dedicated to Shiva – as well as the Banteay Srei Temple (Key Buildings, p. 1098, figs 54.1, 54.12), which was completed under his son, King Jayavarman V, towards the end of the tenth century. Architecturally, as demonstrated by Banteay Srei, the temples started following a concentric layout, punctuated at the cardinal points by elaborate entrance gateways (*gopuras*). During this period, galleries started to appear in the outer enclosure of the temple-mountain model. Even though stone was now used to build the Khmer temples, their structural features still imitated those of wooden construction technology. Indeed, concealed timbers were widely used within window surrounds and mortise-and-tenon joints were used for elements such as sandstone window balusters (fig. 54.2).

The high classical Angkorian period was dominated by the erection of Angkor Wat (Key Buildings, p. 1100, figs 54.14, 54.15) and then the major rebuilding of the Khmer capital in the shape of Angkor Thom (see KING JAYAVARMAN VII AND THE CITY OF ANGKOR THOM, p. 1089). Temples during this period became grander with their extensive landscaping, several concentric enclosures, extended galleries and abundant

KING JAYAVARMAN VII AND THE CITY OF ANGKOR THOM

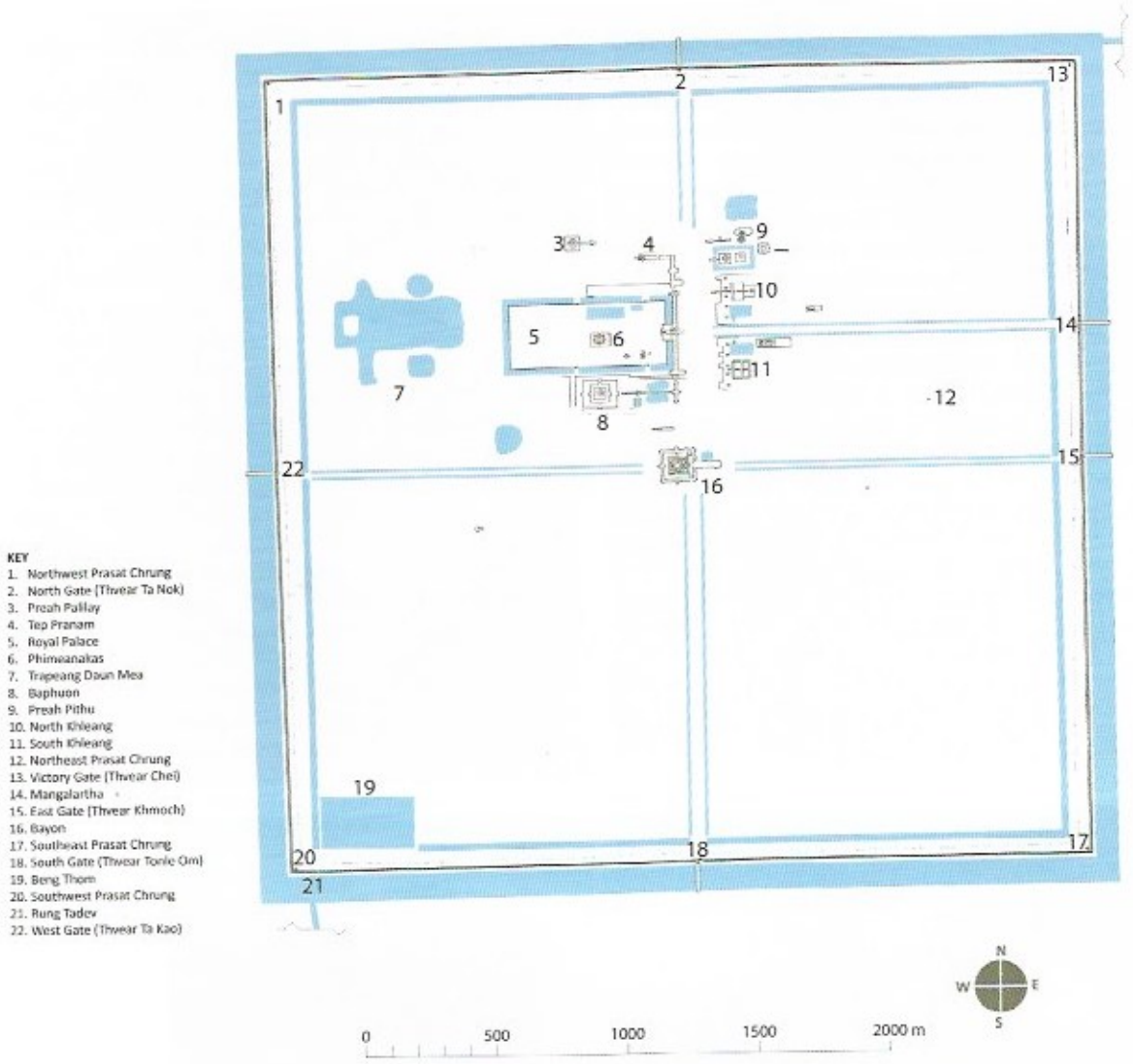
Jayavarman VII (r. 1181–1218) not only expanded Khmer territory, but also embarked upon an empire-wide building programme that dwarfed those of his predecessors. When construction began on his new city of Angkor Thom (map 54.2, fig. 54.3) in 1182, after destruction by Vietnamese Champa forces, it was undoubtedly a delicate undertaking, given the pre-existing buildings such as Baphuon Temple (Key Buildings, p. 1099), Phimeanakas (King Suryavarman I's state temple), and the extensive royal palace. However, the construction of Angkor Thom demonstrated the remarkable impact that symbolism had on Khmer city planning, enabling the ruler to draw upon the divine source of royal power to protect people and promote the prosperity of his kingdom.

Spread over 3.3 square kilometres (1.3 square miles), Angkor Thom – translating as 'great city' – is surrounded by a high wall and wide moat. Impressive causeways provided access to the city through five monumental gateways, with the causeways bordered by rows of giants, each pulling on a *naga* (snake being). The five gateways have a tower-like superstructure displaying giant faces on their exteriors, and Indra mounted on three-headed elephants in the corners. Inscriptions mention that the new capital is the city of Indra (identified with King Jayavarman VII) and the thirty-three gods (identified with the princes and provincial leaders).

Angkor Thom is associated with one of the widely accepted Hindu creation myths: the churning of the ocean of milk at the beginning of time, by gods (*devas*) and demons (*asuras*), to extract the elixir of immortality – the *amrita*. Mount Mandara served as the churning pivot and *naga* as the rope. In this interpretation, the Bayon Temple (Key Buildings, p. 1102, figs 54.4, 54.17) at the centre of the city symbolized Mount Mandara, the churning pivot.

The building campaign endured to the end of Jayavarman VII's reign. When work reached its final stage, he left his earlier Jayashri ('City of Victory') to take up residence in the Angkor Thom palace. All that remains are the outer wall and royal pools, but the massive royal plaza in front of the palace speaks to the grandeur of Jayavarman VII's court, as does its two high terraces. The 300-metre-long (980-foot) elephant terrace has several projections housing the huge elephant reliefs on its supporting walls. The second was the Leper King terrace, named after a statue of Yama (god of death) found there. Scholars think that this terrace was used for royal cremation ceremonies. Parades, festivities, military processions and public ceremonies would have taken place in the vast public square (as do Khmer New Year celebrations today, in April).

Fig 54.3 Southern causeway with monumental city gate at Angkor Thom, Angkor Archaeological Park. The two rows of figures on either side of the approach road-bridge to the city are believed to be representations of gods (*devas*) and demons (*asuras*), and were differentiated by smiling or angry faces; their headwear also differs in style accordingly.



Map 54.2 City plan of Angkor Thom, Angkor Archaeological Park, near Siem Reap, Cambodia (1182–1218). Commissioned by King Jayavarman VII, Angkor Thom represented a comprehensive rebuilding of the capital city after military destruction. It was spread over 3.3 square kilometres and surrounded by high walls and bordered by a wide moat. Causeways over the moat provided access through five monumental gates in the cardinal directions.

sculptural decorations. However, construction methods remained unsophisticated. In spite of the incorporation of long galleries, aisles and arcades, the corbel vaulting technique remained unmodified. The widest span using this method, of a mere 3.5 metres (11 feet), was achieved at the entrance hall on the eastern side of Preah Khan temple (1191; fig. 54.5), but it ultimately collapsed. To overcome the restriction of only being able to span smaller rooms, and yet also create the impression of a grand scale, several rooms were grouped together and then connected with long and narrow galleries. The high vaulted roof of the galleries at Angkor Wat cleverly conceals the foundations of the upper storey.

In his efforts to reorganize the entire realm, King Jayavarman VII pursued ambitious architectural undertakings, sometimes without much care. Following all the earlier Khmer kings, he constructed a countrywide infrastructure of roads and canals as public works along with hospitals and shelters. He then built ancestral temples honouring his mother at Ta Prohm (1186) and his father at Preah Khan, before embarking upon Bayon Temple

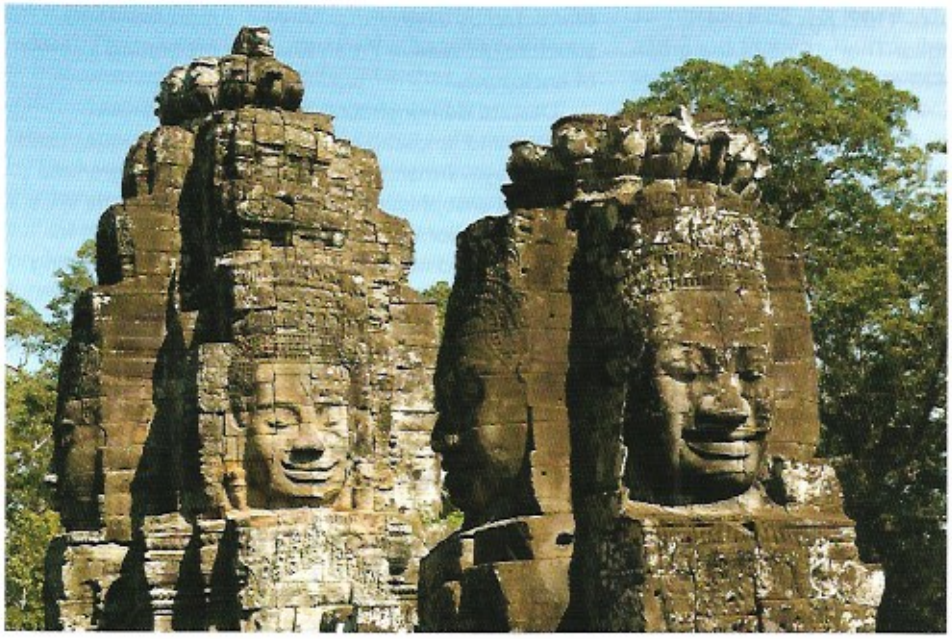


Fig 54.4 Bayon Temple face-towers, Angkor Thom (1182–1218). The Bayon Temple is renowned for its large number of serene faces of the Buddha and various *bodhisattvas* sculpted on its towers – an architectural innovation of the king Jayavarman VII and looking remarkably similar to him. Originally there were 49 towers, decorated with large carved faces towards the four cardinal directions.

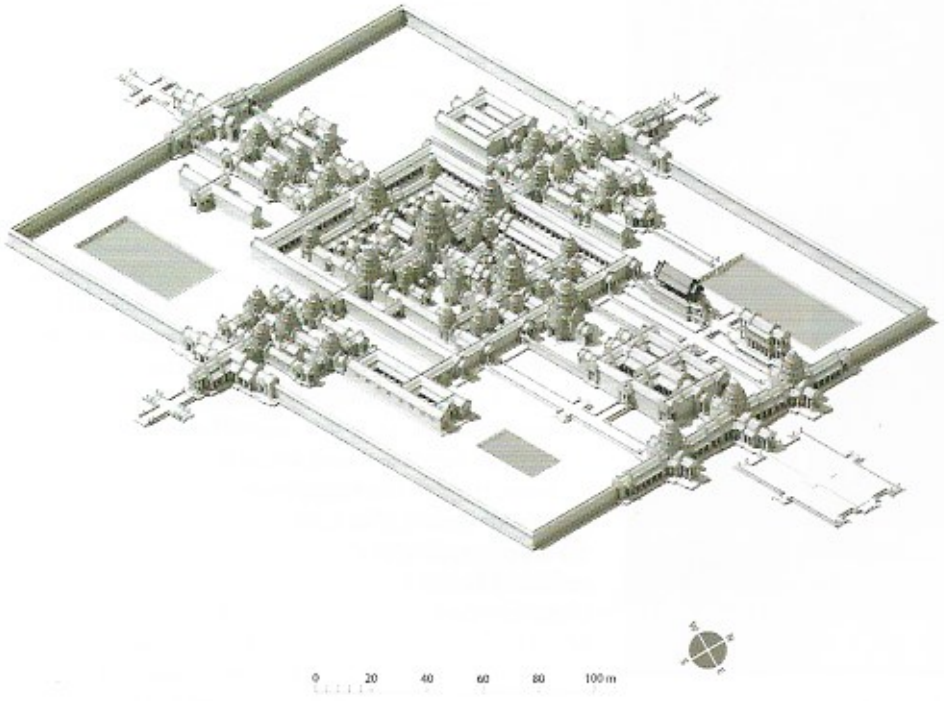


Fig 54.5 Reconstruction drawing of Preah Khan Temple, Angkor Archaeological Park (formerly Angkor/ Yashodharapura), near Siem Reap (late 10th century). As another commission by King Jayavarman VII, an avowed Buddhist, this temple was simultaneously dedicated to the *bodhisattva*, Avalokiteshvara, and the king's father, Dharanindravarman. Except for the Bayon state temple, all of Jayavarman VII's temples had layouts similar to Preah Khan, with concentric enclosures, long corridors and open pillared halls.

(1182–1218; Key Buildings, p. 1102, figs 54.4, 54.17), his own state temple in Angkor Thom. One of the great architectural innovations of Khmer builders during this high classical Angkorian period was the towers bearing the faces of the supreme Buddhist deity, as could be seen in the temple complexes at Ta Prohm, Preah Khan, Bayon and – both from 1182 to 1218 – at Banteay Kdei and Banteay Chhmar. The architectural development of these face-towers can be understood based on the design of the Buddha image bearing no praying figures at all (phase I), then including some praying figures as a necklace (phase II), and then including praying figures as necklace and tiara (phase III) around the face. Alongside these face-towers, another innovation was a high outer gallery carved with reliefs recording King Jayavarman VII's military campaigns, as well as historical events and many aspects of everyday Khmer life, as found at Bayon and Banteay Chhmar. With the exception of the Bayon state temple, all of the other temples of erected by Jayavarman VII had a more horizontal structure, as seen in Preah Khan, incorporating a series of enclosures.

Despite demonstrating great mastery in relief carvings and landscaping, the building techniques used in King Jayavarman VII's vast construction programme remained unsophisticated when compared to the skills used for Angkor Wat. The sandstone construction for his temples did not follow the technique of alternating vertical joints, nor was it bonded between the courses. Mostly it resembled the earlier wooden construction technique whereby the walls were reinforced with concealed timber beams. Therefore once the wood rotted, the stone blocks fell. Also, the corbelled vaulting technique was never modified to produce a true arch, in spite of repeated efforts to create larger gallery spaces.

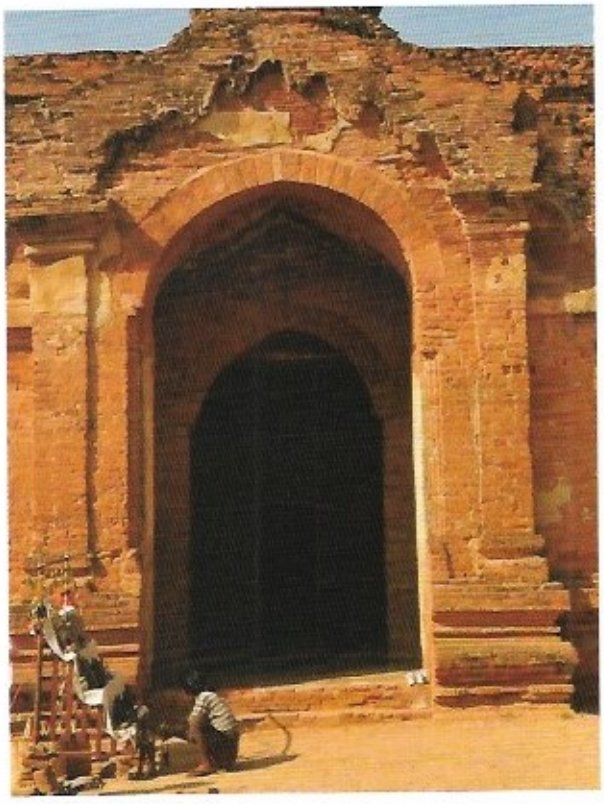


Fig 54.6 Typical brick arch in Bagan, Myanmar (formerly Burma). This photograph highlights the use of shaped voussoir bricks. Prior to the spread of Islam, Bagan was the only place in Southeast Asia where true arches, or true vaults, were found. Using one-brick-thick arches, Bagan's vaults relied on clay mixed with organic additives (tree resins, animal glues) as binding agents.

BAGAN EMPIRE, MYANMAR

The ancient Buddhist city of Bagan, surrounded by moats and walls, is today the largest and most significant historical site in Myanmar, with more than a thousand temples, monasteries, stupas (mound-like structures containing Buddhist relics) and ordination halls. Nothing remains of its original secular or domestic architecture, which had been made from wood. Spread over 30 square kilometres (12 square miles) on the east bank of the Irrawady River, the temples of Bagan became prominent from the reign of King Anawrahta (r. 1044–77). He was responsible for developing the most notable innovation in all of *zedi* architecture (i.e. Burmese temples, stupas or pagodas), by rejecting convexity in favour of concavity in their design. This set the prototype for the next 900 years.

The early Bagan Buddhist temples are usually single storey, but the later ones have two storeys or a series of pyramidal tiers surmounting the base. Bagan temples are of two distinct types: the first has an open central sanctuary with a freestanding Buddha figure inside and a single entrance; while the second has a solid core or a sanctuary, which is then surrounded by a corridor and accessed through doorways oriented according to the cardinal directions. The solid central core or sanctuary of the second type is of a cruciform plan, and houses four statues of Buddha that are again aligned with the points of the compass. All of the Bagan structures were made of brick plastered with stucco, with a few exceptions where sandstone was used, such as at Nanpaya Temple (1044–77), where the interior is of brick but the exterior is faced with stone, some of it carved.

Bricks were of regular shape and relatively thin during the Bagan period, but nonetheless much larger than standard Western bricks. Indeed, the average Baganese

brick measured 36 by 18 by 6 centimetres (14 by 7 by 2⅜ inches). These bricks were used by the Bagan's builders in the construction of many different arches, even in difficult features such as sloping vaults over staircases. Interior spaces in most Bagan structures were covered by brick vaults or by arches of wide proportions, with the architects understanding the structural requirements sufficiently and thus using specially cut wedge-shaped bricks, known as voussoirs, to create these rounded forms (fig. 54.6). Such a type of construction highlights the keystone, the central brick of the arch, and the springer or lowermost voussoir that connects the lowest curved point of an arch with its vertical support beneath. Prior to the spread of Islam in the region, this was a unique feature in Southeast Asian architecture, whereby the standard construction method relied upon the interplay of walls and beams, columns and lintels, or corbelled arches and vaults as found for instance in Angkor Wat. Originally all of the Bagan stupas and temple exteriors would have been covered in protective plaster, whitewashed with a lime-based coating and embellished with brightly coloured stucco decorations.

JAVA AND SUMATRA, INDONESIA

The historical sites of Javanese architecture from the eighth to the fourteenth centuries are essentially religious in nature, either Buddhist or Hindu, and include temple buildings and temple precincts known as *candis* (see CENTRAL AND EAST JAVANESE *CANDIS*, p. 1094), ritual bathing places (*petirtaan*), hermitages (*pertapaan*) and gateways (*gopura*). Javanese temples, too, incorporated the concept of invoking Mount Meru, much like their Angkorian counterparts, but the way this was implemented differed between the early classical and late classical periods on the island. Along with Indian concepts, new ideas and styles emerged in architecture that stemmed from indigenous Javanese beliefs.

The earliest temples on the island of Java are to be found on the Dieng Plateau, near Wonosobo in Central Java, which were constructed between the seventh and ninth centuries. The basic model of all the subsequent *candis* is a vertical building comprising a base, a central part and a roof. The central part contained a *cella* (inner chamber), which sometimes housed multiple niches. The basic square plan of Javanese *candi* later evolved into a staggered square plan, as in the case of Candi Borobudur (Key Buildings, p. 1096, fig. 54.9), or a cruciform plan as seen at Candi Sewu or Candi Kalashan – all of them Buddhist temples built in the eighth or ninth centuries by the Shailendra kings. Central Java saw the establishment of huge temple complexes such as Candi Loro Jonggrang (832–56; Key Buildings, p. 1096, fig. 54.10) and Candi Plaosan, both at Prambanan, where the arrangement of the different buildings in relation to each other was used as a metaphor for the idealized order of the kingdom. Grey Andesite volcanic stone was used for the construction of most of the *candis* in this early classical period on Java. The use of solid stone walls, corbelled arches and columns that bear no load are some of the key features of Central Javanese architecture.

While adopting the traits of the earlier temples, the late classical period in East Java (929–1500) also produced new styles in architecture. Huge dynastic temple complexes that had been built by the Sanjaya and Shailendra kings of Central Java now gave way to modest-sized temples. Rather than facing in the cardinal directions, it was the surrounding topography that ruled their layout: hence the temple buildings faced towards the mountains so that visitors entering them would see the mountains on a linear visual axis. This orientation should be read in the context of the local mountains been associated with ancestor worship. Besides volcanic stone, brick was used in many Majapahit temples in East Java, especially those of the Majapahit Empire's capital city of Trowulan in the fourteenth to fifteenth centuries. Instead of the concentric layouts used in earlier Central Javanese temples, those of East Java had linear layouts or else were terraced. Candi Panataran (Key Buildings, p. 1104, fig. 54.20) represents the most elaborate form of a linear and terraced scheme. As well as offering a setting for the worship of gods, temples also served as commemorative monuments for kings.

The building methods employed in Javanese temple construction included a masonry technique known as double facing, whereby the walls have two independent, finer external surfaces, while the space between them is then filled with rubble and mud. Otherwise, given the abundance of timber throughout Indonesia, it was the major construction material for domestic architecture. Roof members were thus commonly timber, but never used in tension in Javanese architecture. This simple technique, which avoids the buckling effect usually associated with roof structures, was taken differently and even more expressively on another Indonesian island, in western Sumatra, in the traditional wooden houses of the Minangkabau people – one of 140 ethnic groups in Indonesia – that were known as 'big houses' (*rumah gadang*). This indigenous dwelling type consists of a longhouse that is built up on stilts, and is large enough to accommodate an entire extended family or clan (fig. 54.7). Its distinctive design consists of a saddle-backed roof designed to avoid the buckling effect, which is topped by a

CENTRAL AND EAST JAVANESE *CANDIS*

Java is particularly notable for its temple precincts, known as *candis*. In both Central Java and East Java, these *candis* are made up of three parts: a base or foot; a body containing the *cella* (inner chamber); and a roof. While the Central Javanese temples mostly have a somewhat squat, bulky form with emphasis on horizontal mouldings for the body, East Javanese temples display a strong vertical slender body. The vast roofs, or *shikharas*, of Central Javanese temples are made up of smaller bell-shaped stupas, while East Javanese *candis* are more modest in size. The layout of the Central Javanese temple complexes tended to be symmetrical, with their principal building situated in the centre, aligned in the cardinal directions. However, there appears to have been a move away from the centrally focused orientation in the temples of East Java. There the most sacred building was placed at the rearmost end of the complex, furthest from the entrance, as seen at Candi Panataran (twelfth and fourteenth centuries; Key Buildings, p. 1104, fig. 54.20). And while the ritual processions held in Central Javanese *candis* circulated clockwise, East Javanese temples often favour movement in the anti-clockwise direction.

The motif of demonic *kala* heads above the entrances of the temples was developed in Central Java and then adopted in East Javanese *candis*, where the sculptures became fiercer with fangs, protruding eyes and threatening lower jaws. The tradition of narrative relief carvings continued in East Java with a development of a more flattened style with stylized, stiff figures reminiscent of the island's famous *wayang* shadow puppetry. Andesite stone remained the key building material in both regions, but brick temples dominated the later Majapahit period (fourteenth and fifteenth centuries).

East Javanese *candis* can be classified into two types. The first type is a single temple building, usually slender in form, as represented by Candi Jawi and Candi Kidal (Key Buildings, p. 1102, fig. 54.18), both from the thirteenth-century Singasari period. Contemporary to these but less typical, with a squat appearance and unusually featuring skulls among its decorative motifs, is Candi Singosari. The second type is the terraced structure seen in East Java at Candi Panataran from the Majapahit period, although it lacks the sheer magnitude of the earlier, and more impressive Central Javanese precinct of Candi Loro Jonggrang (832–56; Key Buildings, p. 1096, fig. 54.10) at Prambanan.

Fig 54.7 Traditional Minangkabau house in western Sumatra, Indonesia. Called 'big houses' (*rumah gadang*), this stunning traditional dwelling type is built on stilts, and its construction techniques, internal/external decoration, and multiple functions – residence, hall for family meetings, ceremonial space – reflects Minangkabau culture and values. The woman of the family owns it, with ownership passed from mother to daughter.

number of elegantly curved and upswept gables (*gonjong*) that are decorated with buffalo horns, as symbols of fertility. The wooden walls, pillars and ceilings of the *rumah gadang* house type are then usually decorated with interwoven flower patterns in black, white and red.

THAILAND

The site of Nakhon Pathom in central Thailand is important for the early history of Dvaravati kingdom as it houses many archaeological ruins, which are constructed in laterite, brick and stucco. The later Angkorian style of architecture can be found in central, eastern and northeastern Thailand from the eleventh to the thirteenth century, especially at the town of Lopburi, after those areas had fallen into the Khmer Empire, until the rise of the independent Thai kingdoms. Temples of this period in Thailand, however, usually only have a low platform for their base, unlike the far more monumental Angkorian mountain-temple model.

Stone played a rather limited role in Thai construction until being introduced by the Khmers, when it began to take the place of traditional brickwork or rubble bonded together with vegetable glue. The Buddhist temple of Phimai, built by King Jayavarman VI (c. 1080–1107), is one of the best examples of Khmer Empire architecture of this period found in Thailand, and indeed it provided a prototype for the corn-cob-shaped *prangs* later used at Angkor Wat (1113–50; Key Buildings, p. 1100, figs 54.14, 54.15).

With the establishment of the Sukhothai kingdom, and the end of Cambodian dominance, a number of Thai temples were erected. The major surviving ruins of this kingdom have now been grouped together in Sukhothai Historical Park, including Buddhist, Hindu and spirit shrines, reservoirs, and the various artefacts in Ramkhamhaeng National Museum. When built, the Sukhothai temples integrated groups of religious structures – constructed using brick, laterite and stucco – that were intended to serve the royal ritual and social needs of Theravada Buddhism. Design inspiration for Sukhothai architecture came from various cultural sources, with the earliest temple sites of Sukhothai attesting to Sri Lankan or Khmer influences, yet later become distinctively Thai in nature.

Most typically, a Sukhothai temple complex was laid out on a rectangular plan that started with an ordination hall (*ubosot*) at the east for the monks, then an assembly hall (*vihara*) to house the Buddha images and murals, and a main memorial tower in the form of a stupa (*chedi*) or a *prang*. Sometimes a moat was constructed around the temple or a pond placed near to the entrance. There could be many stupas within a temple complex, but the main stupa was always positioned west of the assembly hall. Other structures included a scripture pavilion, study hall, bell-tower, dining hall, library and other facilities for the monks. Four types of *chedis* or stupas are now on show at the Sukhothai site. The bell-shaped form was probably the earliest style and inspired by Sri Lankan stupas (*dagobas*). A little later, the square bases of these bell-shaped stupas were surrounded by sculpted elephants with only their front quarters visible, as seen at the early-fifteenth-century

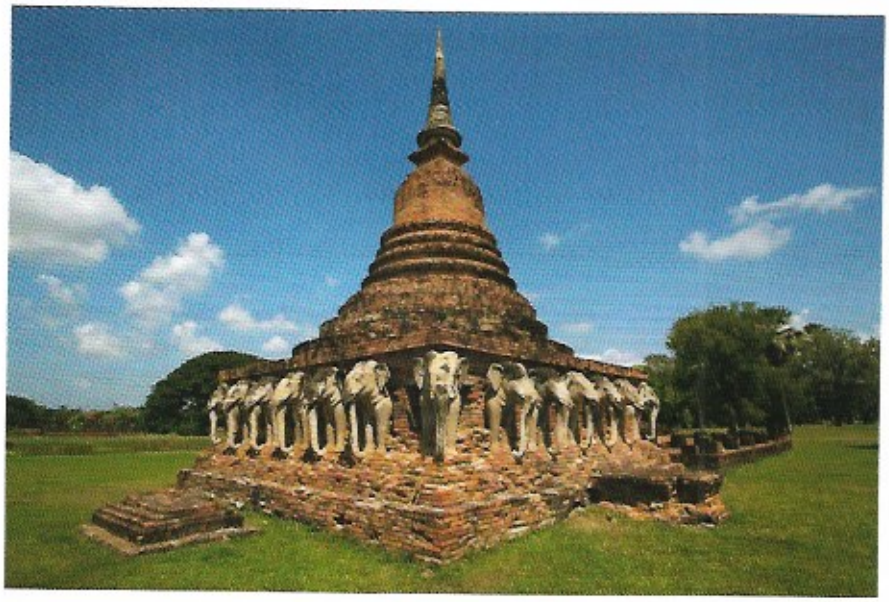


Fig 54.8 Wat Sorasak, Sukhothai, Thailand (1412). The main structure of this Thai Buddhist temple is a bell-shaped stupa with twenty-four sculpted elephants, in stone, arranged around its square brick base. The idea of featuring elephants was of Sri Lankan Theravada Buddhist inspiration.

brick temple of Wat Sorasak (fig. 54.8); again these are inspired by Sri Lankan architecture, such as the latter's fourteenth-century temples of Lankatilaka and Gadaladeniya. The broad square base then gave way to one or more receding levels to include a stupa that had four tall niches, oriented in the cardinal directions; finally, a tall slender stupa form, described as a 'lotus-bud', was invented by temple builders of the Sukhothai and Ayutthaya kingdoms. Along with the lotus-bud stupas, the Thais also experimented with corn-cob-shaped *prangs* with false doors, as derived from Khmer temple towers.

VIETNAM

In terms of monumental architecture, the Champa kingdom could boast two major and very early Hindu temple complexes that were then added to over the intervening centuries. The first, My Son in the former capital city of Simhapura in Quang Nam province, located in a deep valley surrounded by high mountain ranges, was largely built under King Bhadravarman (r. 380–413) and includes several temples dedicated to Shiva by a male clan named Pinang (meaning 'areca nut') in the Cham language. The other, Po Nagar in Khanh Hoa province, located on a riverside, was dedicated to the goddess Bhagavati by a female clan named Li-u (meaning 'coconut'). Po Nagar's main goddess temple was inaugurated by King Satyavarman (r. 773–98), and continued afterwards. Alongside these two Hindu sites, the ninth-century Buddhist temple complex of Dong Duong in Vietnam's Quang Nam province, was built in brick and exhibited corbelled technique similar to that of the Khmer Empire and Javanese style. However, compositionally, the Chams created tall structures with comparatively large vaulted internal spaces compared to Angkorian architecture. Bricks of different lengths and thicknesses were used for a variety of different purposes and were rubbed together until they fitted properly. In many cases, the exterior surfaces of the bricks were sculpted, but this was only carried out after all the bricks had been laid and the building completed. Motifs of female breasts were frequently carved onto Champa temples and pedestals, again as signs of fertility. The main characteristics of Champa architecture are the flat foundation of the main sanctuary or *kalan*, a square *cella*, a three-tiered pyramid-shaped roof for the main sanctuary, and a boat-shaped roof for the treasury buildings.

Key Buildings

Candi Borobudur, Magelang, Central Java, Indonesia (c. 780–830)

Candi Borobudur (fig. 54.9) is built on a natural hill that rises some 15 metres (50 feet) from the surrounding Kedu Plain. Hilltop *candis* are a common feature in Java, but to use a natural mound as the core of the structure and wrap it totally in the building is a unique technique, thus far only found at Borobudur. Rather than providing an inner space for the deity, this *candi* is a stepped, unroofed pyramid consisting of nine terraces.

The first five square terraces support the three circular terraces, adorned with seventy-two small, latticed stupas, surrounding a large central stupa. The square terraces contain 432 life-size Buddha figures looking out to the north, south, east and west from external niches. The terraced passageways behind them bear superbly carved narrative reliefs. The three rising circular terraces respectively hold thirty-two, twenty-four and sixteen life-size Buddha images in their perforated stupas. Four staircases that are placed at the middle of each elevation give access to the large crowning stupa.

There is no single text to explain this immensely complex monument, but both its structure and decoration replicate the three levels of the Buddhist cosmos. The arrangement of the narrative reliefs based on several Buddhist texts is in ascending thematic order from the world of desire, through the world of consciousness to the ultimate reality, guiding the initiated from the foot of the structure to the topmost central stupa.

Since 1973, Borobudur has been closed to daily religious practice. However, every year, for the festival of Vesak that celebrates the birth, death and enlightenment of Buddha, thousands of Buddhist monks gather at the monument.

Candi Loro Jonggrang, Prambanan district, Central Java (832–56)

Candi Loro Jonggrang, also commonly known as Prambanan temple complex (fig. 54.10), marks a transition from the Central Javanese style to the taller structures of the East Javanese period. The spectacular complex, built by the Sanjaya kings between the years 832 and 856, is composed of 240 *candis* of varying size around the main Shiva temple. The secondary temples of Vishnu and Brahma stand beside the main temple along with smaller

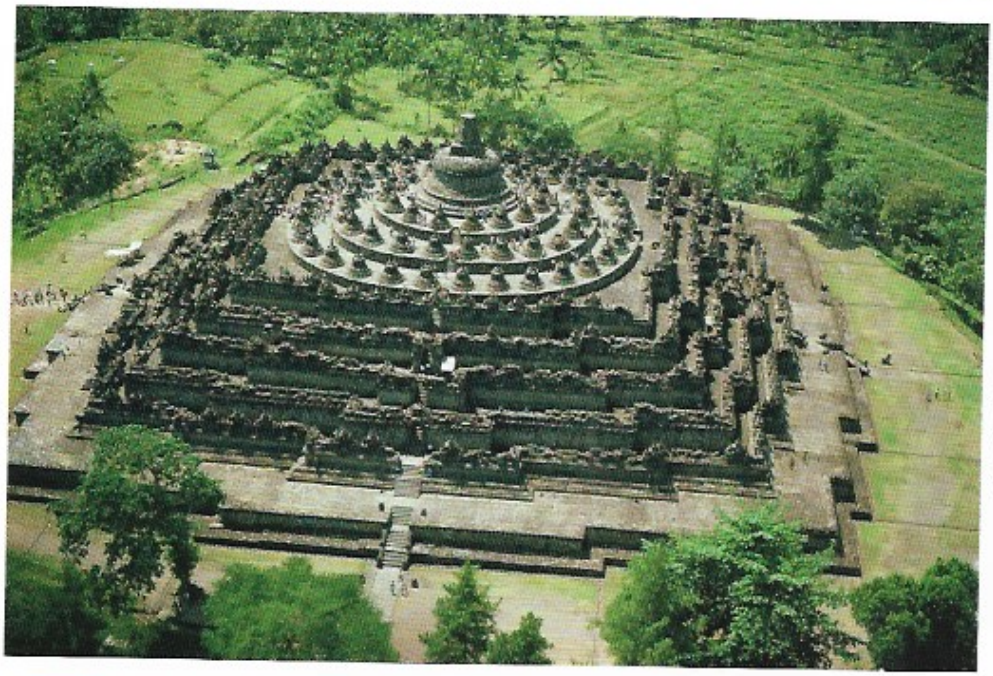


Fig 54.9 Aerial view of Candi Borobudur, Magelang, Central Java, Indonesia (c. 780–830). This stepped temple complex from the Shailendra dynasty has five square terraces on which sit three circular terraces and a central stupa. The life-size Buddha figures placed in the external niches are the monument's key architectural feature. The small stupas on the circular terraces also enclose a life-size Buddha figure.

Fig 54.10 Prambanan Temple complex (Candi Loro Jonggrang), Karangasem, Bokoharjo, Prambanan district, Central Java, Indonesia (832–856). Erected by the Sanjaya kings, and dramatic in silhouette, the Prambanan motif is a peculiar motif used in many of the temples built on the local plain in Java. It comprises a pair of lion or deer, or stylized half-human-and-half-bird figures, placed around a symbolic tree of life.

temples representing their *vahana* (mounts). Beautiful reliefs depicting dancers, based on the *Natyashastra* (an ancient Indian treatise on performing arts), adorn the temple walls. The entire complex with its concentric layout focused on the central temple surrounded by smaller shrines, acting as a royal metaphor for the ruling king, his kingdom and his vassals ruling the provinces. A motif comprising a central tree along with a pair of birds or other animals or semi-divine beings, which appears repeatedly in the stone carvings of this temple, is commonly known as 'Prambanan motif'. The Prambanan temple complex is one of the major archaeological and cultural tourism attractions in Indonesia, where Ramayana ballet is performed for tourists.

Bakheng Temple, Angkor Archaeological Park (formerly Angkor/Yashodharapura), near Siem Reap, Cambodia (889–915)

The Khmer king, Yashovarman I, established a new capital of Yashodharapura on the hill of Bakheng in 889. This

Fig 54.11 Aerial view of Bakheng Temple, Angkor Archaeological Park, Siem Reap (formerly Angkor/ Yashodharapura), near Siem Reap, Cambodia (889–915). The cosmic symbolism of Mount Meru in the stepped temple terraces, along with the quincunx arrangement of shrines on top, can be seen clearly here. Forty-four brick shrines originally surrounded the main temple of Bakheng, which was commissioned by King Yashovarman I; today, only one remains in good condition.

associated Bakheng Temple (fig. 54.11) created a striking microcosmic equivalent of the legendary Mount Meru, which is best appreciated in aerial photographs. The hill of Bakheng represented Mount Meru situated between two rivers, the Siem Reap and Roluos, both flowing from Phnom Kulen, symbolizing surrounding annular seas. The temple comprised a stepped pyramid with a *linga* shrine at the summit, surrounded by four smaller towers representing the lesser peaks associated with Mount Meru.

Each terrace of the Bakheng Temple housed twelve sanctuaries, sixty in total. The temple was designed in such a way that no matter which staircase the visitor climbed to ascend the central shrine, from each of the four towers a view was afforded of thirty-three shrines dedicated to the thirty-three gods who dwelt on the summit of Mount Meru. This illustrates the architectural mastery of transposing cosmological concepts to temple design. The Khmer builders also used visual effects very cleverly. For example, on the stepped pyramid of the temple, the sculptures of lions which flank the bands projecting from the walls become smaller and smaller at each successive stage, adding to the impression of height. The quincunx arrangement of the *prasats* at the top was established at Bakheng and then followed by East Mebon Temple (952), Pre Rup Temple (961) and Ta Keo Temple (968–1001).

Today, thousands of tourists climb to the top of Bakheng Temple to take long photographic shots of Angkor Wat, as the quincunx arrangement of the towers is clearly visible from there.

Banteay Srei, Angkor Archaeological Park (late tenth century)

In addition to the state temple of Pre Rup (961), King Rajendravarman and his son Jayavarman V constructed a beautiful small temple that is known today by its Middle Khmer name of Banteay Srei ('Citadel of Women'), but was originally called Isvarapura ('City of Shiva').

Despite its diminutive size, Banteay Srei is considered one of the jewels of Khmer architecture, with exquisite sculptures carved deep into its hard, pink sandstone (figs 54.1, 54.2, 54.12). The sculptures depict several narratives from two epic Sanksrit texts, the *Ramayana* and the *Mahabharata*, sacred to Hinduism, and dating from the first millennium BCE. Banteay Srei exhibits features of the earlier dynamic Koh Ker Temple style and anticipates the fluidity and refined proportions of later Angkor Wat style. The Khmer name, 'Citadel of Women', refers to the beautiful and distinctive female guardian figures in niches flanking the doors. The false doors and boldly arched tympanum pediments are intricately carved with some of the masterpieces of ancient Khmer art. Many of the Banteay Srei sculptures were looted or removed at the end of the twentieth century, so today what we see at the temple are concrete replicas of them.

Banteay Srei ended a phase of plastered brick temples. Significant among the constructional developments was the introduction of timber beams, previously used as lintels to support the masonry across openings. Beams were set flush in channels cut into the sandstone blocks to avoid an intrusive impact on the aesthetic qualities of the structure.

Fig 54.12 Entrance to the Banteay Srei Temple. This pink sandstone temple is known for its exquisite carvings and life-size sculptures. The distinctive female figures flanking the door are seen here, leading to its nickname, the 'Citadel of Women'. Intricately carved pediments are another important feature of this temple's decorative scheme.

Baphuon, Angkor Archaeological Park (eleventh century)
The construction of Baphuon was initiated by King Suryavarman I (r. 1002–49) and then completed by King Udayadityavarman II (r. 1050–66). Constructed of grey-green sandstone, it was in fact the last design on the Shaiva temple-mountain model to be erected in the vicinity of the Khmer capital city of Angkor. In fact, it is situated in the royal plaza of the Angkor Thom city, near to Angkor Wat. Baphuon's main sanctuary rises above three stepped and receding terraces. Moving up the monument, each successive terrace is taller than the one below it, helping to magnify the elevation. The builders further increased this illusion of height by also reducing the width of the staircase at each level, from bottom to top. Unfortunately, this huge emphasis on height, created in weak soil, severely destabilized the building, and false staircases had to be added to the third level to act as buttresses. After almost fifty years, archaeological restoration is complete and since 2011 it has been open to the public.

Shwesandaw Pagoda, Bagan, Myanmar (1044–77)
The Shwesandaw Pagoda once marked the very centre of the old capital of the Bagan Empire in Myanmar. Built by King Anawrahta, it was surrounded by four other pagodas, placed at a distance at the four main points of the compass to protect the old city. Known as the 'Pagoda of the Hair Relic', it was erected to house a sacred relic taken from the Mon territory of Thaton. It was the first pyramidal stupa of Bagan, with tall and steep terraces that have medial staircases. The octagonal base on the top of the terraces houses a concave-shaped stupa. The most notable innovation in stupa design that was introduced by Anawrahta was the rejection of convex in favour of concave forms. Beautiful glazed green and blue terracotta tiles are mounted on the terraces, displaying Buddhist stories. The model of King Anawrahta's Shwesandaw Pagoda set a precedent for the monumental architecture of Bagan. Earlier visitors were allowed to climb the staircases of the pagoda, often to take sunset photographs, but since March 2016 Myanmar's Ministry of Culture has banned this to avoid strain on the ancient structure.

Ananda Temple, Bagan (1105)
Though Ananda (fig. 54.13) is only a single-storey building, the external elevation produces an illusion that there were two storeys because the inner corridor is so tall that it accommodates two sets of windows, one above the other. Its large cruciform plan contains several structures at different levels. Covered with several types of vaults, these structures express the hierarchy of interior spaces. The temple follows the second type of Bagan architecture, comprising four

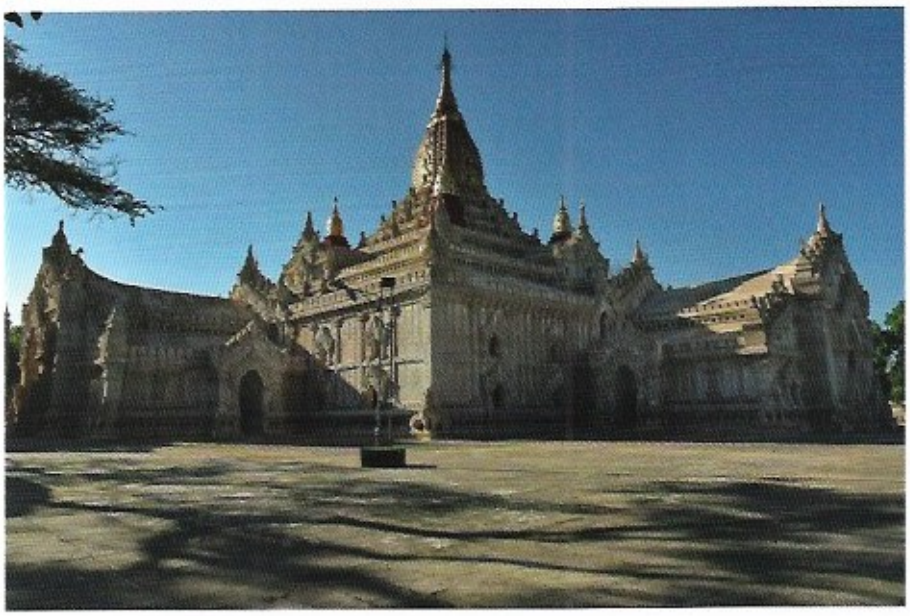


Fig 54.13 Ananda Temple, Bagan, Mandalay region, Myanmar (1105). Even though this imposing Buddhist temple, erected by the Bagan Empire king, Kyanzittha, is only single storey in height, the scale of the external elevation produces the illusion of a two-storey structure. Repeated sets of two windows above one another on the main block add to the effect.

large entrance halls under high barrel (or tunnel) vaults, flanked by low aisles covered by half-barrel vaults and connected by still lower barrel-vaulted passages. Further inside, the second vaulted arrangement allows access to the highest barrel-vaulted shrines. Deep openings placed at two levels through the massive walls allow a diffused and pervasive light, giving an extraordinary experience of a porous, illuminated interior in a vast construction of solid brick. From porch to shrine through the two concentric corridors, the gradual ascension of the vaults reflects the sense of progression towards the centre. This, too, set a new model for all Bagan structures, irrespective of size. Today a fifteen-day-long harvest festival takes place at Ananda Temple, as a curious mix of ancient Buddhist prayer rituals and vibrant entertainment.

Angkor Wat, Angkor Archaeological Park (1113–50)
After centuries of state-sponsored Hindu Shaivism, it was the Khmer king, Suryavarman II, who built the Vishnu temple of Angkor Wat (figs 54.14, 54.15). Instead of the earlier complex engineering of multiple terraces as seen at Bakong Temple (877–89) or Bakheng Temple (889–915; Key Buildings, p. 1097, fig. 54.11), the architecture of Angkor Wat followed a concentric arrangement of several enclosures, long galleries and towering gateways. The sheer scale – covering 80 hectares (200 acres) – and complexity of this monument surpasses all expectations as one walks through its beautifully carved galleries and entrance gateways towards the inner structure. The temple complex consists of an outer enclosure surrounded by a wide moat, followed by three concentric rectangular enclosures, all having a central gateway on each side and four corner towers. Its principal temple is called *bakan*, which stands like a mountain at the centre of the four innermost courtyards.

In Hindu cosmology, there are four major eons of time, which succeed each other in one great time-cycle. These periods begin with the Krita or Satya Yuga (the golden age or the most remote period of demigods) and proceed through the Treta Yuga and Dvapara Yuga before reaching the present, Kali Yuga. The four galleries of Angkor Wat are situated in the concept of these four Indic *yugas*: the creation myth of a churning of ocean depicted on the eastern wall marks the beginning of time, Krita Yuga, and the king's historical parade depicted on the southern wall conveys the present day.

The entire temple follows the movements of the sun and the seasons. The central sanctuary follows the quincunx arrangement, and on the morning of the spring equinox, around 20 March each year, visitors witness the temple's solar alignment when the sun rises exactly over the top of the central tower to celebrate the Khmer New Year. Angkor Wat is a brilliant synthesis of astronomy and architecture.

Angkor Wat was transformed from a Hindu temple into a Buddhist monastery during the Thai occupation of Angkor in the sixteenth century and continued to remain a sacred site. Now it is one of the best known and most admired buildings anywhere in the world.

Fig 54.14 Angkor Wat, Angkor Archaeological Park (1113–50). This celebrated temple complex was erected by King Suryavarman II. Its central tower, known as *bakan*, is seen here along with the four other flanking towers. The richly carved, corn-cob-like superstructure of these towers, or *prangs*, remained the central architectural feature of Khmer Empire temples throughout the Angkor period.

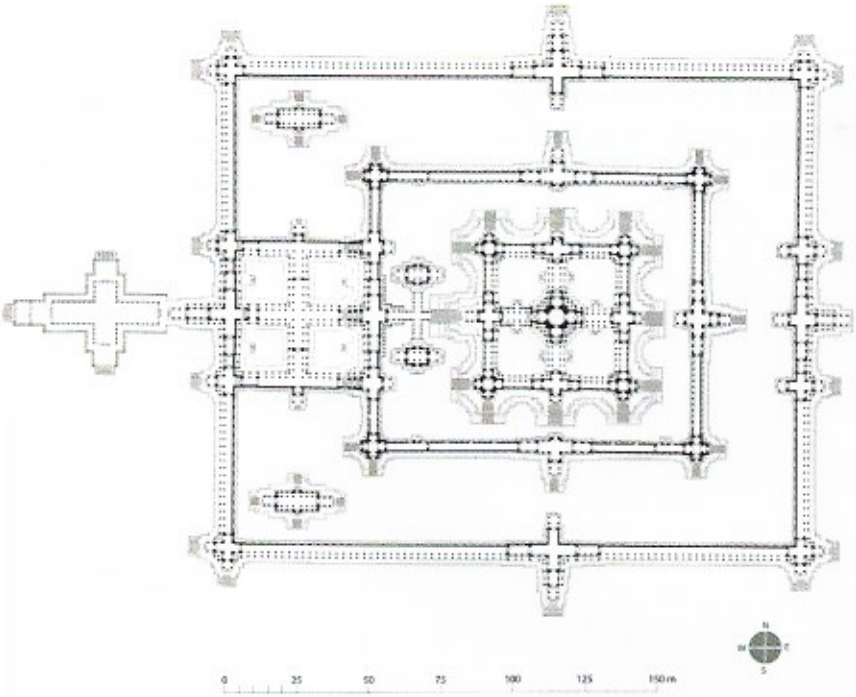


Fig 54.15 Plan of Angkor Wat. This reconstructed plan demonstrates the concentric arrangement of the temples and other elements within the complex. The iconographic imagery on each of its four sides is rooted in Hindu cosmology's four eons of time, working in strict progression from the start of time through to the present day.

Neak Pean Temple, Angkor Archaeological Park (1182–1218)

Neak Pean is an island temple (fig. 54.16) built in the middle of (and at the same time as) the Jayatatak reservoir, also known as the North Baray, like the temples set into Angkor's other *barays*. When King Jayavaman VII (a keen Buddhist in contrast the usual Hindu monarchs) came to power, the Angkorian Empire was devastated by the war against the Chams of present-day Vietnam, and he initially resided close to Angkor in a temporary city of Jayashri ('City of Victory'), which is associated with a northern *baray* or Jayatatka. Neak Pean Temple is hence built in the middle of this *baray*. The elegant design comprises five pools; in the middle of the central pool stands the temple itself, in the form of a lotus flower surrounded by two serpents with intertwining tails. The whole complex represents the paradisiac mountain lake of Indic mythology. The lake was said to exist in the Himalayas and its healing waters were believed to have the power to wash away sins. It would appear that alongside the hospitals constructed to deal with physical health, the Khmer king took a keen interest in the moral health of his people as well.

Due to structural damage, the temple is now permanently closed to tourists.

Bayon Temple, Angkor Archaeological Park (1182–1218)

The major architectural innovation under King Jayavarman VII was the construction of towers bearing the huge faces of a Buddhist deity – his preferred faith – as is evident in his state temple of the Bayon (figs 54.4, 54.17). Built on a rectangular base, the temple is constructed on three main levels, each taller than the one below. The central sanctuary has a radial ground plan, consisting of a central tower surrounded by eight tangential towers forming triangular interstices. The group of buildings stands on a circular base in the form of a stylized lotus flower. Unlike the mythological carved reliefs of Angkor Wat (Key Buildings, p. 1100, fig. 54.14), those on the high outer galleries of the Bayon Temple depict the real battles and military campaigns of the king, along with scenes of everyday Khmer life and society. Around 200 face-towers that are placed over its high galleries and sanctuaries, looking in all directions, possibly reflect the assembly of local, territorial and provincial deities across all Jayavarman VII's kingdom.

Candi Kidal, Tumpung district, East Java, Indonesia (thirteenth century)

Often considered to be the prototype of the East Javanese tower temples, this *candi* figured prominently during the thirteenth-century Singasari period on that Indonesian island. Built of volcanic Andesite, the temple commemorates King Anushapati (r. 1227–48) and was completed for his *shraddha* ceremony, through which he was enshrined as the Hindu god, Shiva. The decoration of the base and the body of Candi Kidal is bold, simple and harmonious (fig. 54.18). A magnificent monster head, or *kala*, crowns the entrance to the temple, while narrative reliefs on the external walls of the main sanctuary recount tales of the efforts of Garuda, the bird-like creature that was Vishnu's mount, to free his enslaved mother. The solid form and slender proportions of the

Fig 54.16 Neak Pean Temple, Jayashri, Angkor Archaeological Park (1182–1218). King Jayavarman VII's small temple of Neak Pean (meaning 'entwined snakes') forms an artificial island surrounded by ponds. On its far right, intertwining tails of two snakes can be seen. In inscriptional records of the period, the waters of these ponds could cleanse the sins of those performing ritual ablutions.

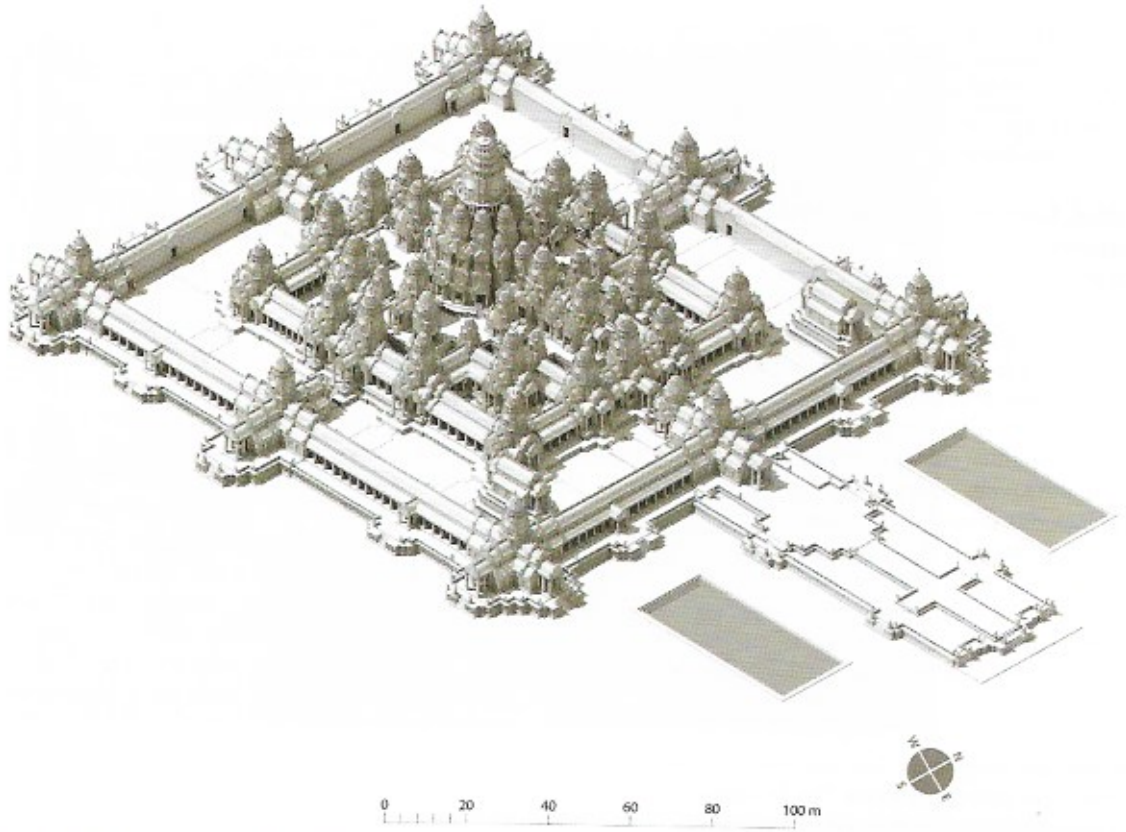


Fig 54.17 Reconstruction drawing of Bayon Temple, Angkor Archaeological Park (1182–1218). This isometric of the Bayon Temple shows the hundreds of face-towers of Buddha and assorted *bodhisattvas*, a consequence of it having been commissioned by the staunchly Buddhist Khmer king, Jayavarman VII. The design is also unusual as the only temple of the period with a circular central sanctuary.

Fig 54.18 Candi Kidal, Rejokidal, Tumpung district, East Java, Indonesia (13th century). This temple precinct, or *candi*, is considered the prototype for East Javanese tower temples. A massive *kala* (demon monster) head with fangs can be seen above the entrance of the temple, as a development of artistic tradition: the earlier *kala* heads of Central Javanese temples were never depicted so fiercely.

temple structures mark it as different from the earlier Central Javanese *candis*. Today situated in the village of Rejokidal, some 20 kilometres (12.5 miles) east of Malang, its well-preserved stonework details offer a memorable picture within its lush tropical setting.

Wat Mahathat, Sukhothai, Thailand (thirteenth to fourteenth centuries)

Probably built before the mid-fourteenth century, Wat Mahathat – meaning 'Temple of the Great Relic' – displays the merging of selected influences overlaid with Thai aesthetics (fig. 54.19). The tall and slender lotus-bud stupa seen at Wat Mahathat is a creation of the Sukhothai kingdom. This, the largest Sukhothai temple, was the spiritual centre of the kingdom, and was conceived on the Khmer cosmic 'Mount Meru' model. The temple includes several ponds, assembly halls and an ordination hall along with 200 small stupas.

A classic lotus-bud stupa, surrounded by eight smaller structures, stands on a shared base at the temple's heart. The arrangement of the group is similar to the Bayon Temple in the Khmer capital of Angkor (1182–1218; Key Buildings, p. 1102, figs 54.4, 54.17). Wat Mahathat's vast base, constructed out of laterite, brick and stucco, is defined by tiers and mouldings. Two staircases provide access to the upper part of the stupa. The Sri Lankan-inspired stucco decoration on the base of the stupa displays beautiful Buddha images. The slender body of the lotus-bud stupa consists of two parts: a series of narrow, horizontal levels recessed to follow the profile of the curve and a tall upper section with multiple vertical recesses ascending in zigzags to the conical tip on the top. This recessing and zigzagging, known as redentation, creates an impression of structural complexity without actually adding structural elements or reducing structural strength.

Wat Mahathat is one of the most important cultural or architectural heritage sites in the Sukhothai province of Thailand.

Candi Panataran, near Blitar, East Java (twelfth century, enlarged fourteenth century)

The state temple, Candi Panataran (fig. 54.20), is the most extensive temple complex anywhere in East Java. Located near to Blitar, on the slopes of Mount Kelud, it gives some idea of the religious life of the Majapahit dynasty. First consecrated in 1197, it was enlarged by King Jayanagara in 1309–18, and again by King Rajasanagara in 1350–89.

The entire precinct is divided into three terraced courtyards. The first courtyard has a slender temple with an inscribed date, known as the 'dated temple'. The second courtyard houses a Naga temple and a few other structures. The third courtyard contains the main temple that ascends in three large terraces bearing reliefs from the sacred Hindu texts Ramayana and Krishnayana.

The characteristic feature of this temple is the *pendopo* terrace, or pavilion, a structure within the temple complex, with a stone base, decorated in relief on the outer side and covered by a wooden or thatch

Fig 54.19 Wat Mahathat, Sukhothai, Thailand (13th–14th centuries). Wat Mahathat, or the 'Temple of the Great Relic', stands at the heart of Sukhothai as its largest temple. It originally included five ponds, ten assembly halls, an ordination hall and 200 stupas. The classic Thai lotus-bud stupa is seen here on the right, with seated Buddha in the foreground.

Fig 54.20 Candi Panataran, near Blitar, East Java, Indonesia (consecrated 1197, enlarged 1309–18 and 1350–89). This view is from the central temple looking back towards the entrance of the Panataran complex. The slender tower-like temple in the middle was part of the first courtyard. A raised open terrace-like platform, called *pendopo*, is shown behind the tower, and originally was the characteristic feature of this complex.

roof supported by wooden columns. Many temple reliefs of East Java attest to the existence of these *pendopos* at this time. Panataran is the only East Javanese site where the full extent of the temple complex is revealed today, and is easily accessible from the town of Blitar.

My Son Temple, Quang Nam Province, Vietnam (second to thirteenth centuries)

This monumental Vietnamese temple complex is scattered over an area of 10 hectares (25 acres) surrounded by hills. From the fourth century, the valley of My Son was a religious site for the royal ceremonies of the ruling dynasties, with the capital based in Tra Kieu (the former city of Simhapura). Some seventy temples have been found in the valley of My Son, which are classified into fourteen groups named from 'A' to 'N'. Most of the early temples up to the seventh century were built in wood as open sanctums with sculpted pedestals displaying richly decorated narrative reliefs. Brick and sandstone towers began to appear from the seventh century onwards, with the strengthening of the Champa kingdom, but bricks remained the most common material. The main characteristics of Champa architecture were the flat foundations of the main sanctuary, the square inner chamber and a three-stage pyramid roof. The pyramidal form remained standard for the roofs of sanctuaries, alongside boat-shaped roofs for treasury buildings. In many cases the exteriors of the My Son temples were sculpted, but this was carried out only after all of the bricks had been laid. Corbelling techniques were used for the construction similar to those in Khmer and Javanese temples. A very peculiar motif of female breasts appears frequently in the Cham temples and pedestals through several centuries, and is visible at Tra Kieu.

Unfortunately for both visitors and world heritage, much of what still remained of My Son in the twentieth century was bombed out by American warplanes during the 1960/70s Vietnam War. The temples, which had been lovingly restored by French archaeologists and local people, were quickly and brutally devastated.

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