

LOCAL AND UNIVERSAL PRINCIPLES OF CULTURAL HERITAGE AT CANDI BOROBUDUR AND WAT PHRA MAHATHAT WORAMAHAWIHAN

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ABSTRACT

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This study explores the preservation of cultural heritage through a qualitative comparative case study of two iconic Buddhist temples: Candi Borobudur in Indonesia and Wat Phra Mahathat Woramahawihan in Thailand. Although both temples have reflected Buddhist traditions originating in India and serve similar religious functions, each temple reflects distinct architectural forms, spatial organization and cultural characteristics shaped by local contexts. The main research question of this study is how these two temples compare in terms of cultural, historical, and architectural elements, and what these differences reveal about their preservation and cultural significance. Using a qualitative approach, this research examines the overall site plans and key architectural components of both temples, including stupas, overall site plan designs, structural layout and the mudrā represented in Buddha statues. The analysis highlights how processes of acculturation, local adaptation, and foreign cultural influences have shaped the development of each temple. While Borobudur temple demonstrates a monumental mandala-based structure influenced by Javanese cosmology and Indian Buddhist philosophy, Wat Phra Mahathat Woramahawihan reflects Thailand's architectural traditions and regional interpretations of Buddhist symbolism. The study reveals shared histories of acculturation influenced by local and foreign cultures, thereby shedding light on their respective cultural contexts and preservation challenges. By comparing these two heritage sites, this study contributes to a deeper understanding of cultural heritage preservation in Southeast Asia and provides insights into the challenges of maintaining religious monuments while respecting their historical and cultural identities.

Keywords: Cultural heritage; comparative study; Borobudur; Wat Phra Mahathat Woramahawihan

1. INTRODUCTION

The historical relationship between Indonesia and Thailand dates back centuries and is particularly evident through diplomatic interactions between the Indonesian kingdoms of Srivijaya and Majapahit. Buddhist teachings have deeply influenced the cultures of Indonesia and Thailand, permeating daily life and leaving a profound mark on the art and architecture of these nations. In Thailand, approximately 95 percent of the population adheres to Theravāda Buddhism, which was introduced during the reign of King Ashoka. The Candi Borobudur (hereafter, Borobudur) is a temple structure that originated sometime between 268 and 239 BCE, the period of King Ashoka's expansion (Nabila et al., 2022). Wat Phra Mahathat Woramahawihan (hereafter, Phra Mahathat) is a world heritage site located in downtown Nakhon Si Thammarat and is recognized as a testament to this cultural fusion (Arporn, 2021). Constructed during the Srivijaya Kingdom Era, the temple's main stupa, built by King Sri Dhammasokaraja in the early 13th century, represents the epitome of Sri Lanka's influence on Theravāda Buddhism in southern Thailand. The main temple at Phra Mahathat is surrounded by 173 smaller pagodas, and the imposing Chedi Mahathat stupa is revered as the sacred dwelling place of Gautama Buddha (Kirdsiri, 2012). During the Srivijaya Kingdom Era, both Buddhism and the Śailendra dynasty's culture began to extend from Palembang, the capital of the former kingdom, to what was then known as Siam (present-day Thailand). This is recorded in the Kedukan Bukit inscription dated 682 CE (Putra & Yuliati, 2021).

No straightforward evidence about Phra Mahathat's construction exists, aside from a legend, written down long after the events, about the temple's origins. Written records from the reign of King Rama VI of Krung Rattanakosin state that no monks resided in the temple until the southern regent, Phra Chao Barommawongther Chaofa Ukhon Thikamphon Krom Luang Lop Buri Ramesuan, invited monks from Wat Phetcharik to supervise the temple. When Rama VI visited the temple, he gave Phra Mahathat its name. Beyond these documents, we must rely on the following legend: When the Buddha attained parinirvana, his relics were divided among many cities throughout India. His teeth, specifically, were sent to Thontha Buri. The king of other cities asked for a share of the Buddha's teeth, backing his request with the threat of armed force. When the governor of Thontha Buri, King Singharat, realized that the city could not be protected, he asked the prince and princess—Thontha Kuman and Phra Nang Hemchala—to take the Buddha's teeth and escape to Lanka by ship. Their ship met with a storm and was wrecked, casting them both ashore at Hat Sai Kaew, where they buried the Buddha's teeth.

The prince and princess returned to Lanka, leaving the Buddha's relics buried at Hat Sai Kaew, where they were later discovered by Phra Chao Si Thammasokkarat, who built Phra Barommathat Chedi to enshrine the Buddha's teeth in what would become the city of Mueang Nakhon Si Thammarat. It is believed that this original stupa was influenced by the Srivijaya style: a mondop with a five-headed stupa roof, similar to Phra Barommathat Chedi in Chaia district, Surat Thani province, which dates from around Buddhist Era (BE) 13–15. Later, the Srivijaya stupa deteriorated, and the larger present-day Lanka pagoda was built to cover it (c. BE 18). The region of Nakhon Si Thammarat has been influenced strongly by Lanka Buddhism and related artistic and religious practices, which is evident in similarities between, for example, Phra Barommathat Chedi and Chedi Kiriwe Thera in Bolonnaruwa, Sri Lanka, according to Professor Mom Chao Suphattharadit Ditsakun. It was built during the period of Phra Chao Prakrom Phahum Maharat in early BE 18 (Thailand Tourism Directory, 2021).

Both temples have the same roots in India and the Indochinese ancestors of the present-day occupants of Indonesia and Thailand (Figure 1). The Austronesian ethnic group includes the Cham, Mongoloid, and Mon-Khmer ethnic groups. The Cham ethnic group is further comprised of Malay and Javanese ethnic groups. Thai culture has likewise been influenced by Mongoloid and Mon-Khmer cultures from Cambodia. The Indonesian race began to spread in 790 CE, during the Śailendra dynasty and the reign of Jayawarman II, and continued through the reign of Yasovarman. It is believed that the Śailendra dynasty began construction on Borobudur in 889 CE. This region was also influenced by the royal invasion of the Śailendra dynasty into Southeast Asia, specifically Angkor, in Cambodia, which is adjacent to Thailand. In the eighth century, Ras Cham's (Thailand) royal dominance extended to Angkor during the reign of the Champa kingdom. During this time, Thailand embraced Theravāda Buddhism and merged with the Mon ethnic group in these areas (Groslier, 2007). Certainly, Indonesia and Thailand are the result of cultural fusion in various areas, including art and religion.

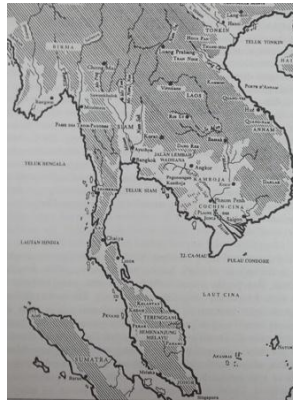


Figure 1: Indochine map (Groslier, 2007)

Borobudur, located in Magelang, Central Java, Indonesia, is one of the world's largest Buddhist temples and boasts the most comprehensive and expansive reliefs in the world. Constructed between 780 and 840 CE during the Śailendra dynasty, Borobudur is dedicated to Mahāyāna Buddhism. The temple's architecture follows a mandala style that reflects Buddhist cosmology and symbolizes the universe. Borobudur is laid out in a square shape, with four entrances that converge at a central circular point; this plan represents the three worldly realms and the realm of nirvana at its center. Borobudur features intricate reliefs depicting the realm of human desire (kāmadhātu) and its consequences, as well as transitional reliefs. Furthermore, the temple contains 328 Buddha statues representing the form realm (rūpadhātu) and 72 stupas that symbolize purity, representing the formless realm (ārūpyadhātu).

Throughout its history, Borobudur has undergone extensive repairs and revitalization. This is one reason why it is fascinating to research. According to Tanudirjo (2013), this temple has a significant history dating back to its initial construction. First, the temple declined in use shortly after the center of the Javanese Kingdom shifted from Central to East Java around the end of the 10th century, possibly due to the continuous eruptions of Mount Merapi and other volcanoes around this area. Second, this temple appears to have been abandoned completely sometime in the sixteenth century, when the influence of Islam became stronger in Central Java (Tanudirjo, 2013). Third, during the 18th and 19th centuries, most of Java was ruled by the Islamic Kingdom, and most of its population had converted to Islam, which left Borobudur largely forgotten. Borobudur was rediscovered in 1814 during Thomas Stamford Raffles's governorship over Java (1811–1818). In the early 1900s, the Dutch government appointed a military officer, Theodoor Van Erp, to lead the restoration of Borobudur. Sixth, real progress was achieved beginning in 1972, when UNESCO agreed to take part in the restoration. With financial support from other countries, UNESCO began an international safeguarding campaign for the temple. Finally, in 1992, the Indonesian government issued Presidential Decree Number 1/1992, which assigned different institutions to manage the five zones of the Borobudur area (Tanudirjo, 2013).

The stunning beauty and grandeur of Buddhist temples throughout Indonesia and Thailand offer valuable insights into the influence of Buddhist beliefs on temple art and architecture, which invite further reflection on the cultural exchange between these two nations. This study represents a collaborative effort between Indonesia and Thailand that aims to create an immersive exhibition inspired by the Van Gogh immersive experience (Mondloch, 2022). The planned exhibition is intended not only to promote cultural preservation but also to expose Borobudur and Phra Mahathat to present and future generations. Given the environmental changes and evolving preferences of younger audiences, a different approach is needed to effectively communicate this cultural heritage (Harari, 2018). This research aims to compare temples with different Buddhist backgrounds—Mahāyāna, and Theravāda—to identify evidence of cultural exchange.

2. MATERIALS AND METHODS

This study adopts a qualitative case study method with Borobudur and Phra Mahathat as its research objects (Creswell & Creswell, 2018). The data for this study comprise written records, photographs, and videos that facilitate the comparative analysis of the temples' site plans, stupas, and Buddha statues. The objective of this comparative study is to examine how a record of cultural exchange has manifested in the Buddhist heritage temples of Borobudur in Indonesia and Phra Mahathat in Thailand.

2.1 Research object

The study objects used in this study are Borobudur (Yogyakarta, Indonesia) and Wat Phra Mahathat Woramahawihan (Nakhon Si Thammarat, Thailand). Given the research objects' locations (Figure 2), two teams were deployed: Team A to Borobudur and Team B to Wat Phra Mahathat Woramahawihan (Thailand).

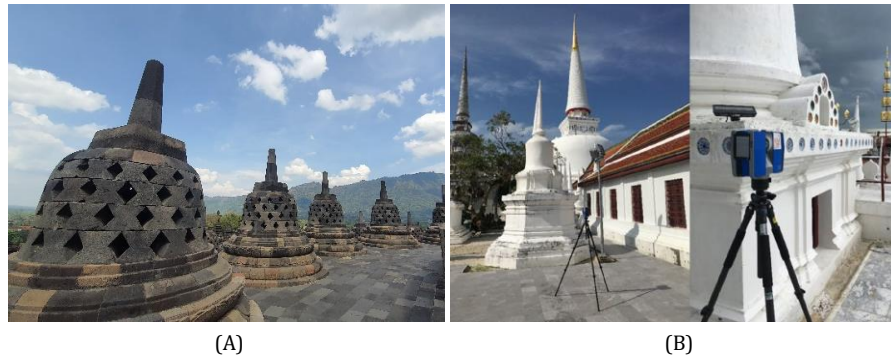


Figure 2: (A) Borobudur temple; (B) Wat Phra Mahathat Woramahawihan temple

2.2 Data collection

The data collected for this study were obtained from a literature review, photographic and video documentation, and interviews with archaeologists. Specifically, the literature review included books, academic journals, and research findings related to Borobudur and Phra Mahathat. Dr. Hari Setyawan, an archaeologist at the Borobudur Conservation Center, was interviewed for his insights into the history and cultural diffusion that influenced the construction of Borobudur and Wat Phra Mahathat Woramahawihan.



Figure 3: Literature collection and interview with an archaeologist at Borobudur Conservation Centre

2.3 Data analysis

Data analysis was conducted using a comparative analysis of the similarities and differences between Borobudur and Phra Mahathat temples (Pickvance, 2001). In this study, we attribute similarities between the two temples to the influence of universal values, while differences are attributed to the influence of local values. The research framework is shown in Figure 4.

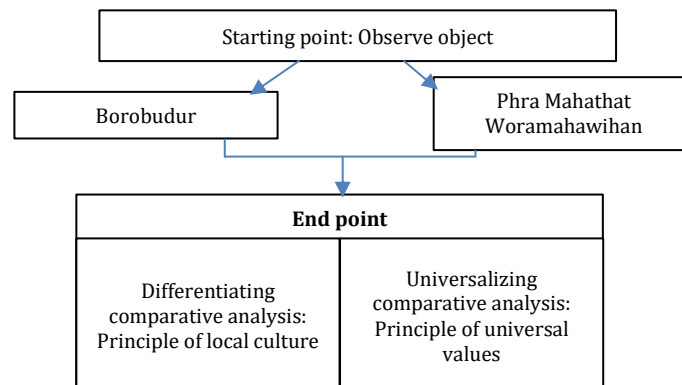


Figure 4: Research framework

3. RESULTS AND DISCUSSION

Both temples are cultural heritage buildings that are highly protected and inscribed on the World Heritage List. The site plans of Borobudur temple and Wat Phra Mahathat Woramahawihan temple are shown in Figure 5 and 6.

3.1 Site plan of Wat Phra Mahathat Woramahawihan

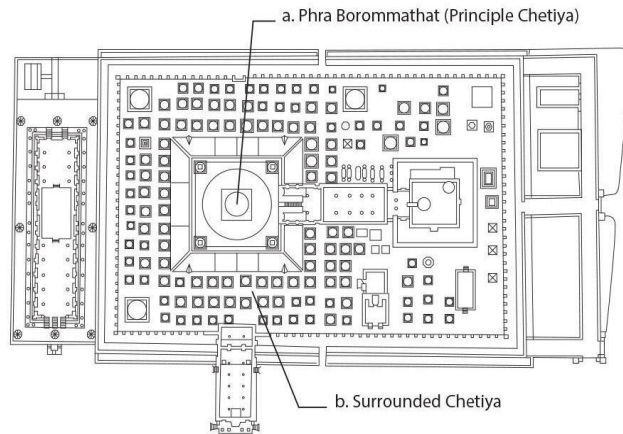


Figure 5: Site plan of Wat Phra Mahathat Woramahawihan Temple

Wat Phra Mahathat Woramahawihan became the principal temple of Nakhon Si Thammarat, the capital of the ancient kingdom of Tambralinga in Thailand's southern peninsula, between the early 13th and mid-14th centuries. The temple's cultural origins can be traced back to Buddhist influences originating from India during the reign of Ashoka, which later expanded into Cambodia and other parts of Southeast Asia (Patnukao et al., 2024). The temple's most prominent structure, the Phra Borommathat Chedi, was constructed in the early 13th century. This enormous bell-shaped stupa houses the Buddha's relics and is therefore a sacred site for Buddhists. The temple is one of the most important centers of Theravāda Buddhism. The Kingdom of Thailand flourished from 1350 to 1767, during which Wat Phra Mahathat Woramahawihan was a vital religious center and sacred site for millions of believers.

The temple occupies 5.14 ha and is constructed in a rectangular layout. It is surrounded by brick walls on all four sides that provide access to the temple. This Buddhist temple has two areas: the first is the buddhavasa, a sacred area reserved for religious activities, and the second is the sanghavasa, where the Buddhist monks reside. The monumental zone and center of the Phra Borommathat Chedi ("The Great Noble Relics Stupa") serves as its buddhavasa. Originally, according to Sinhalese tradition, Phra Borommathat Chedi was located outside the city. Later, during the Ayutthaya period, when no monks were in residence, it was relocated within the city. The two-zone division that remains today was introduced approximately 100 years ago.

The stupa's square base, surrounded by 22 sculpted standing elephants, has a low brick wall that makes it possible for worshippers to ambulate in a clockwise fashion. At its base are four smaller bell-shaped stupas, one in each corner. The stupa's body is likewise bell-shaped, with a square platform and an umbrella-shaped spire comprising 52 rings divided by a row of Buddha figures cast in relief. The spire is 10.89 m tall, adorned with priceless stone, and wrapped in gold leaf weighing about 600 kg. Surrounding the stupa is a massive cloister decorated with tiles and a gallery filled with more Buddha images. The oldest of the images is a standing Sukhothai-style Buddha that dates to the 13th or 14th century. More than 158 minor stupas housing the ashes and bones of the Buddhist devotees and two chapels (Wihan Khian and Wihan Phra Ma) are situated between the main stupa and the cloister, along with the Bodhi Tree, which is enclosed by a small roofed cloister. The main assembly hall, Wihan Luang, is located outside the cloister and has richly decorated ceilings supported by columns that lean inward in the Ayutthaya style (c. 1400–1600). The temple also contains a chapel that enshrines an image of the Buddhist monk Kaccayana and a museum that displays historical objects, including offerings, sacred objects, and images of the Buddha (Kirdsiri, 2012).

There is a gallery full of Buddha images surrounding the main stupa, which is housed in a massive cloister decorated with colorful tiles. The main stupa described above was constructed in accordance with the Theravāda Buddhist tradition and maintains both Buddhist philosophy and its conventional form. The 52 rings of the spire, for example, represent the 52-fold mental factors (Pali: cetasika), while the 22 elephants surrounding the base of the main stupa represent the 22-fold spiritual faculties (Pali: indriya), and the eight

walking Buddhas represent the Noble Eightfold Path (Pali: ariya-atthangika-magga), which leads to the cessation of suffering and is the highest doctrine of the Buddha. Due to the persistence of a unique religious tradition—the lengthy procession of carrying Phra Bot, the Buddhist painted robe, to wrap around the bell-shaped body of the stupa—Phra Mahathat remains a central site of traditional Buddhist practice. One prominent sculpture of Lord Buddha, which dates to the fourteenth century, is housed in the temple.

3.2 Site plan of Borobudur

Located approximately 40 km away from Yogyakarta in Central Java, Borobudur is the world's largest Buddhist monument, constructed between 780 and 830 CE during the Śailendra dynasty. Borobudur's square base, five square terraces, and three circular platforms—crowned by a stupa—are made primarily of volcanic stone (Yazir & Heraty, 1991). Stupas, along with many others, were built by Mahāyāna Buddhists in the year 800, during the reign of King Śailendra. Astronomy once linked belief, agricultural, and navigation systems in the culture of the ancient people of Borobudur (Nabila et al., 2022). Buddhism in Indonesia has seen acculturation with Nusantara culture. Borobudur is composed of three standing stones arranged in a square shape on which three pillars are located. On the lower part of the monument are 2,672 panel reliefs and 504 Buddha arcs (Soekmono, 1976).

Borobudur's main stupa—at the top-center of the temple—is surrounded by three circular rows of 72 perforated stupas, each of which contains a statue of the Buddha sitting cross-legged in a perfect lotus position and making the dharmachakrā mudrā, which symbolizes the turning of the wheel of dharma.

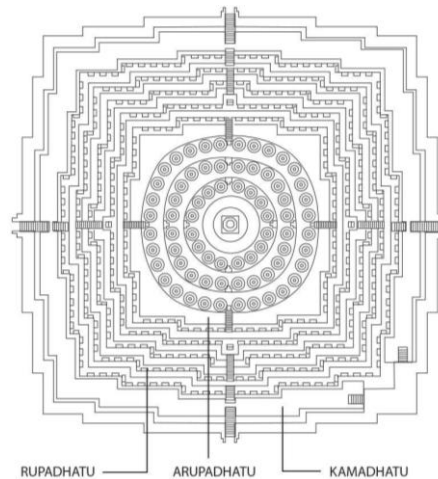


Figure 6: Top view of Candi Borobudur

Borobudur's footprint is 123×123 m, and the structure is 34.5 m tall. The temple is constructed in 10 levels, which symbolize the 10 stages through which one must pass to become a bodhisattva or Buddha. The 10 levels include the six square-shaped and three circular levels as well as the main stupa at the top (Puspitasari et al., 2018).

The name Borobudur comes from the Sanskrit word vihara, which means "temple complex" or "dormitory." In Balinese, budur is related to the term bedubur, which means "above." Accordingly, Borobudur denotes a dormitory or temple complex located on a hill.

Borobudur's first level represents kāmādhātu and symbolizes humans who are still bound by lust. The next four levels represent rūpadhātu and symbolize the human being who has freed himself from lust but remains bound by form. At the kāmādhātu level, Buddha statues are placed open. The next three levels represent ārūpyadhātu and symbolize a human being who has been freed from lust, face, and physical form. Here, the Buddha is placed inside a stupa with holes. The topmost part, the stupa, symbolizes nirvana, or heaven, where the Buddha resides. Structurally, Borobudur is a philosophical symbol of the universe or the world of the cosmos. According to Buddhism, the universe is divided into three elements (Sanskrit: dhātu): kāmādhātu, the element of desire; rūpadhātu, the element of form, likeness, or being; and ārūpyadhātu, the element of formlessness or intangibility.

In 1884, J. W. Ijzerman discovered the temple's hidden base. When partially dismantled, the base revealed reliefs. Several years later (1890–1891), this concealed section was entirely revealed and photographed by Cephass before being covered again. This process entailed the removal and replacement of about $13,000 \text{ m}^3$ of stone. Previously hidden from view, this layer of Borobudur reflects the sphere of desire. The 160 panels depict karma, the doctrine of cause and effect of good and evil, as stated in the Karmawibhangga (Yazir & Heraty, 1991).

3.3 Stupa

3.3.1 Phra Mahathat Woramahawihan stupa

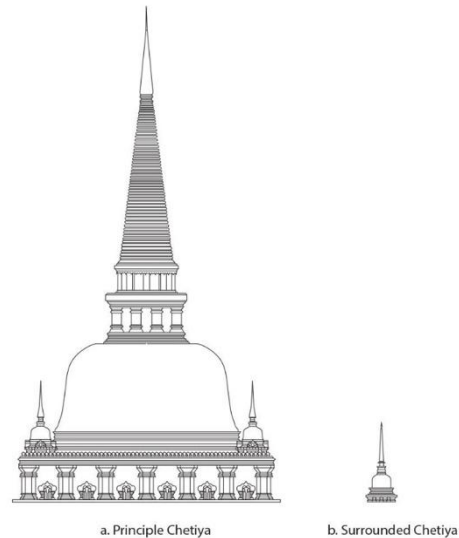


Figure 7: Wat Phra Mahathat Woramahawihan stupa

Phra Borommathat Chedi is a bell-shaped stupa and the first of the temple's religious structures (Figure 7), built in the early 13th century by King Sri Dhammasokaraja (UNESCO, 2012). The main stupa is located in a sizable cloister adorned with vibrant tiles, and it is surrounded by an endless gallery of Buddha pictures. The temple contains five stupas: the main chetiya in the center and four others placed at the temple's four corners. The base, decorated with columns, is the main aspect of the Srivijaya stupa and has a compartment decorated with pieces of elephant sculpture. The end of the column is decorated with a compartment for standing Buddha images. The roof that covers this area is called Phra Ra Biang Tub Kaset. The columns bear the weight of the upper part of the spherical pagoda and were reconstructed during renovation in the Ayutthaya period. The column was decorated and surrounded by Buddha images. The lower part of the spherical pagoda is decorated with metal swans (Kirdsiri, 2012). The stupas at Phra Mahathat represent the deep and enduring devotion to Buddhism among the local inhabitants of the peninsula.

3.3.2 Borobudur stupa

Borobudur's main stupa is located at its top (Figure 8). This section of the temple, arupa, represents nirvana, or heaven, where Buddha resides. Borobudur has 72 stupas arranged in sets of 16, 24, and 32 in the rūpadhātu and ārūpyadhātu areas, each containing identical Buddha statues in the dharmachakra mudrā. These are typically identified as representations of Vairocana, the major Buddha, surrounded by four Dhyani Buddhas (Suebsantiwongse, 2022). The main stupa serves as the peak of the temple and the highest point of all the other terraces. A solid construction with a diameter of 9.90 m and a height of 7 m, the main stupa was built on a foundation with a diameter of nearly 10 m and a lotus throne about 0.5 m thick.



Figure 8: Borobudur main stupa

This stupa has empty interior space, but the walls are fully enclosed, with no visible holes or entrances—perhaps a place to store relics. Soekmono (1976) suggested that the peak of the main stupa of Borobudur seemed to be beheaded. The main stupa at the top of the temple is not only the largest stupa but also the highest and most perfect embodiment of Buddhahood (Suebsantiwongse, 2022).

According to Gifford, this arrangement can be interpreted as the process of disappearance of the Buddha figure, which is part of the visualization of *Buddhanusmurti* (Soekmono, 1976). The large master stupa symbolizes the end of the process, the full realization of reality in its subtlest and most perfect form: the Buddha Body of Truth (*dharmakāya*). At the top of the stupa, there is usually a *chatra*, a three-tiered stick, for example, the one at Bodh Gayā. Beneath the *chatra* is a stick-shaped stone arrangement (*yasti*), below which is the *harmika*, the part between the body and the apex of the stupa. In the main temple, the *harmika* appears in two forms: square and octagon (Figure 9). In circular terrace stupas, the *harmika* parts of Terraces I and II are box-shaped, while in Terrace III stupas, they are octagonal (Gifford, 2011).

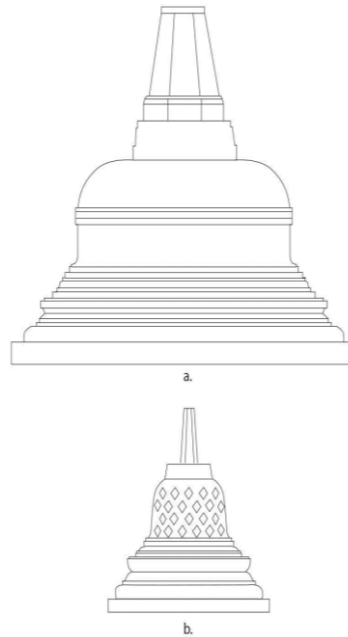


Figure 9: Borobudur temple stupa

3.4 Buddha statue gestures

3.4.1 Wat Phra Mahathat Woramahawihan Buddha statue

Vihara Bodhi Langka is a form of Buddhist architecture typically found in Lanka. The Bodhi Tree, which symbolizes the Buddha's enlightenment, is planted at the center of the building. Mostly Buddha statues are in subduing Mara Buddha gesture.

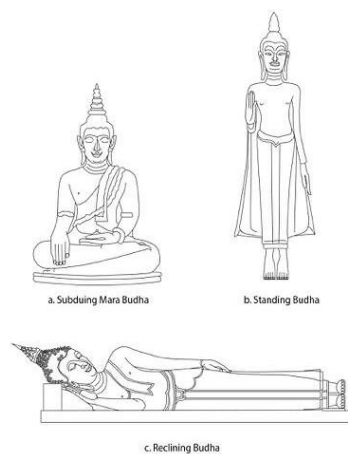


Figure 10: Buddha gesture

Figure 10 shows three important Buddha gestures, in (a) the sprout of the Bodhi Tree from Bodhi Gayā was taken and planted in Lanka, where it became particularly significant after the Bodhi Tree in Bodhi Gayā died (Kirdsiri, 2012). One of the Buddha statues in Bodhi Vihara Court is a reclining Buddha, 12 m in length, located on the west side of the gallery (c). A standing Buddha statue (b) is located at Vihara Dhamma Sala, which was constructed in 1376. This hall, on the east side of the plan, is intended for miscellaneous purposes and preaching. The wall might have been constructed in 1493, along with the gallery. This area is covered by a roof and is open to people who wish to pay respect to the standing Buddha statue in the compartment at the decorated base of the stupa. The hall was constructed for the standing Buddha image of Prince Donda Kumara. Standing Buddha statue located surrounds the principal stupa, “Phra Ra Biang Teen That,” which means the gallery.

3.4.2 Borobudur statue

The Buddha statues at Borobudur take the form of Dhyanī Buddhas, with placements and mudrā based on cardinal directions (Yazir & Heraty, 1991). To the north is the Amoghasiddhi Buddha in abhaya mudrā (gesture of fearlessness), with the palm facing forward as if to ward off danger. To the south is the Ratnasambhava Buddha in varadamudrā (gesture of giving). To the west is the Amitābha Buddha in dhyana mudrā (gesture of meditation). To the east is the Akṣobhya Buddha in bhūmiśparśa mudrā (gesture of earth touching), which represents the Buddha’s summoning of the earth goddess as a witness to his repudiation of Mara. At the center or zenith position is the Vairocana Buddha in dharmacakrā mudrā (gesture of teaching), which symbolizes the motion of turning the wheel of dharma. In Borobudur, this mudrā is depicted using the vitarkamudrā (gesture of discussion). The sixth mudrā reflects the turning of the Wheel of Law. Dharmacakrā mudrā is hidden in stupas. During his first sermon in the park of the Gazelles at Benares, Buddha assumed this posture.

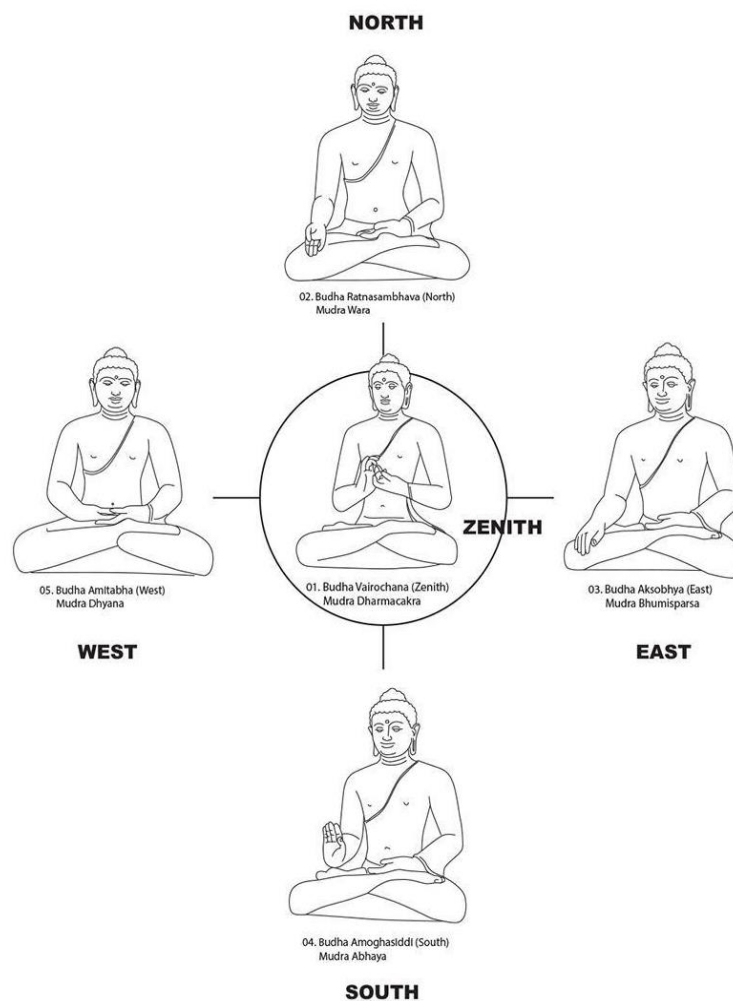


Figure 11: Buddha gesture in Borobudur temple

3.5 Borobudur and Phra Mahathat

Table 1: Universal values of Borobudur and Wat Phra Mahathat Woramahawihan

Principle	Items	Borobudur temple	Wat Phra Mahathat Woramahawihan
Universal	Site plan	The site plan of this temple is symmetrical in square shape. Adopting mandala principle. Divided into three stages: Kamadhadu, Rupadhatu, and Arupadhatu. The direction of the entrance temple faces East.	The site plan of this temple is symmetrical in rectangular shape. Adopting mandala principle. The direction of the entrance temple faces East.
	Stupa	Bell shape, the top part blunt shoots. Number of small stupas: 72 stupas, the main stupa is not hollow, small stupas hollowed, some containing statues of sitting Buddha.	Bell shape with a pointed part of the shoot, influenced by Sri Lanka Buddhism. Number of small stupas: 173 stupas, main stupa hollowed, small stupas, are not hollow.
	Buddha statue	Found Buddhist gestures all in a sitting position with different mudra hand gestures (5-hand gestures).	There are 3 basic gestures of Buddha statues. sitting Buddha, reclining and standing, with 2 different hand gestures.

Both temples demonstrate the influence of universal principles, the ideal values shared by most Buddhist traditions. Table 1 presents the universal values identified in the two temples: site plans, stupas, Buddha gestures, location, and purpose. First, when viewed from above, it is apparent that the site plans of both temples adopt a mandala design (Piplani & Brar, 2020), with the largest stupa placed in the middle of each temple as the centre of the mandala and the smaller stupas radiating out from there. In both temples, the stupa is bell-shaped, and both temples incorporate the three utensils that the Buddha had when he was a priest: the robe (bottom), bowl (middle), and stick (top). These three objects are both a form of stupa and the three objects Buddhist monks retain when they have abandoned all other worldly things (Yazir & Heraty, 1991). In Thailand, Buddhism was influenced by Sri Lankan culture, while Cham culture shaped Buddhism's development in Indonesia. Concerning the Buddhist gestures, each hand posture the Buddha is depicted as making while sitting cross-legged, as during ascetic rituals, has its own meaning and is associated with one of the cardinal directions. Regarding the purpose of the temples, while both were constructed to pray, honor Buddha, and memorialize local rulers, Phra Mahathat serves the additional purpose of storing relics, while Borobudur has a teaching function.

Likewise, while the local principles observed in each temple reveal important differences, these nevertheless reflect comparable values. In addition to the points presented in Table 2, additional factors include Buddhist teachings, cultural roots, and temple and statue building materials. First, Borobudur's site plan and location were determined based on the need for a natural setting that suited religious purposes and a metaphysical concept (Soekmono, 2005). The temple is located on the Kedu Plain, a fertile, bowl-shaped area containing rice fields surrounded by the Merbabu, Sumbing, Merapi, and Manoreh mountains. The Borobudur, Pawon, and Mendut temples are aligned such that they form an imaginary straight line and may be considered a single entity of temple compounds. According to oral tradition, there is a good reason for this layout. As a pilgrimage site, Borobudur was planned to facilitate contemplation while pilgrims ambulated around the temple; thus, Buddhist teachings were carved into reliefs that told the story of the Buddha (Soekmono, 2005). The plan for Borobudur takes the form of squares and circles (mandala principle). Pilgrims circled the temple clockwise while worshipping. The material of Borobudur uses andesite stone, which differs from the materials used in Phra Mahathat due to the availability of materials in their respective locations.

Phra Mahathat is located in the largest province in southern Thailand, in the ancient port city of Nakhon Si Thammarat (Old Town Community). The temple follows a rectangular plan that includes a place of worship and a residence for monks. Phra Mahathat serves both as an old town landmark and a necessary focus for community worship (Thinnakorn, 2021). Like Borobudur, worshippers proceed through the temple in a clockwise fashion. The Phra Mahathat temple is made of brick, stone, stucco, metal, and wood materials.

Table 2: Local values of Borobudur and Wat Phra Mahathat Woramahawihan

Principle	Items	Borobudur temple	Wat Phra Mahathat Woramahawihan
Local	Site plan	Located on a hill, surrounded by mountains. The position of Borobudur is in one imaginary line with Pawon Temple and Mendut Temple. The Borobudur plan is in the form of a square and a circle (mandala principle). The ritual of pilgrims circling the temple clockwise while worshipping. Built in the 8th century.	Located in the largest province in Southern Thailand, the ancient port city of Nakhon Si Thammarat was built. The plan is rectangular in shape. The areas are: place of worship and a monk residence. The ritual of worship goes clockwise. Built in the 13th century.
	Stupa	The main stupa is at the Arupadatu level, the highest-level position, meaning perfection. The function of the stupa as a symbol of the stages of purity. Smaller stupa has hollow.	The temple's main stupa, called Phra Borommachati Chedi, literally means Noble Heritage Stupa. Stupa function for relics storage. Smaller stupa solid (without hollow).
	Buddha statue	Dhyani Buddha gesture, according to the cardinal direction (different gestures to remind of Buddhist teachings).	Buddha statue with hand gestures according to Buddhist teachings. Buddha statue, not only in a sitting position, but also in a standing and a sledding position.

The stupas of Borobudur are intended to depict various Buddhist concepts: the main stupa symbolizes perfection beyond the mundane; the diamond-shaped hollow stupa symbolizes the individual who seeks to limit himself to the world; and the square hollow stupa on the third terrace symbolizes an individual who is already stable toward the world (Puspitasari et al., 2018). The Borobudur temple was significantly influenced by the culture of the Srivijaya kingdom. At Phra Mahathat, the largest stupa (Phra Borommachati Chedi; literally Noble Heritage Stupa) is said to contain relics of the Buddha, which makes it a sacred place for Buddhists. The smaller stupas in this temple do not have hollows like those in the smaller stupas at Borobudur. The Buddha statue materials are gold-plated statues and stones.

The Buddha statues at Borobudur represent the Dhyani Buddha forms, which follow cardinal directions and portray different mudrā to remind worshippers of Buddhist teachings. At Phra Mahathat, the Buddha statues include standing and reclining Buddhas in addition to the sitting Buddhas of the type seen at Borobudur.

THE STORY ARC IMMERSIVE EXHIBITION CULTURAL HERITAGE

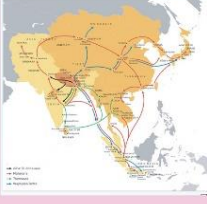
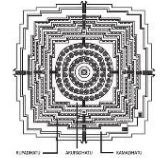
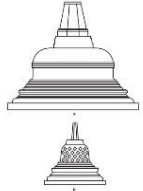
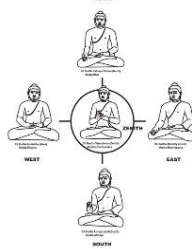
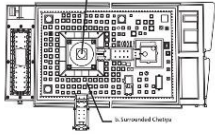
01. Background		02. Architecture	02a. Stupa	02b. Buddha Statue	03. Denouement
History of the spread of Buddhism in Thailand and Indonesia 	INDONESIA Mahayana	Borobudur 			
	THAILAND Theravada	Wat Phra Mahathat 			
ASSETS - Literature data - Historian - Text documents & Infographic		- Architectural Form - Architectural features - Temple Blueprint - Photo documentation from various angle	- Stupa shape - Stupa type - Photo documentation from various angle	- The shape of Buddha Statue - Buddhist hand of positions of Budha (Mudra) - Buddha statue gesture - Photo documentation from various angle	- The "tying up of loose ends" - Indonesia & Thailand shadow puppets (visual style) 3D or 2D assets

Figure 12: The Story Arc Immersive Exhibition Cultural Heritage

The reclining Buddha symbolizes Gautama Buddha's condition during his final stage of earthly life before reaching nirvana, while the standing Buddha symbolizes the act of rising to teach after reaching nirvana (Perkins, 2024).

Figure 12 shows an explanatory picture of the narrative arc of the immersive display on cultural heritage. The universal and local principles of the two temples will be conveyed through the depicted flow. The sequence of backgrounds, site plans, stupas, and Buddha statues are in the data collection stage. The results of this data collection study will inform the development of an immersive exhibition in the visual style of Indonesian and Thai shadow puppets.

The art and design of Borobudur and Phra Mahathat were influenced by society. Although the temples share an overlapping significance and purpose, they are differentiated by the cultures and societies that influenced them during their respective eras. The results of this study of Borobudur and Phra Mahathat will inform content for immersive media exhibitions intended to adapt these historical sites for the technological generation (Isrow, 2017).

4. CONCLUSION

This case study of two Buddhist temples offers insights into the historical spread of Buddhism to Southeast Asian countries, specifically Thailand and Indonesia. Through processes of acculturation, each country came to follow different Buddhist traditions: Theravāda in Thailand and Mahāyāna in Indonesia. Nevertheless, the universal principles of Buddhist teachings are evident in the site plans, stupa, and Buddha statues of both temples. In this case, universal principles were applied directly in the overall construction of the temples. Local principles—that is, Buddhist teachings that blended with local and traditional beliefs—are apparent in some of the identified differences. In Indonesia, these differences reflect integration with Nusantara culture, which occurred in the distant past. When two cultures integrate, local cultures are influenced such that some elements of the original culture are retained while some elements of the new culture are adopted. The result is a unique set of characteristics that differentiate Thai and Indonesian temples despite their shared origins in Indian Buddhism.

These findings will inform the story arc of an immersive exhibition being planned as part of a collaboration between Indonesia and Thailand. The purpose of the exhibition being developed is to preserve the cultures of both countries while introducing historical art, design, and culture to the next generation through contemporary media approaches, such as interactive video mapping, that are familiar to today's generation.

DECLARATION

1. Conflict of interest

The authors declare no conflict of interest.

2. Generative AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the authors used translate, structure and grammar for language editing with ChatGPT. The authors reviewed and edited all content produced with this tool and takes full responsibility for the final published work.

3. Data availability statement

Dataset design and figures are available from the fig share repository: <https://doi.org/10.6084/m9.figshare.32016105>

4. Ethics statement

This study did not involve human participants. All data analyzed and resulted from the site visit and literature review.

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6. Contributor Role Taxonomy (CRediT)

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Ferric Limano: Methodology, Formal analysis, Data curation.

Lintang Widyokusumo: Writing, Visualization, Data curation.

Budsakayt Intarapasan: Investigation, Data curation

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