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A Study of Architectural Design of Thai Temples Influenced by Thai and Mon Ethnics in Sam-Khok District

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Abstract. This study aims to investigate and compare architectural design including layout planning and stupa design of Thai and Mon Buddhist temples in Sam-Khok district. The data collection is gained from literature reviews, field observation, and interview. It is found that the design of these two temples is slightly transformed from those of the royal temples in terms of the layout axis and size of stupa. The change of the main access from water-based to land-based approach effects the layout of Buddhavas and Sangkhawas zones. These findings can provide an understanding of influential factors on architectural design of Thai and Mon Temples. It is benefiting the cultural tourism development in Sam-Khok district.

1. Introduction
“Sam-Khok district” known as ‘Muea ng Sam-Khok’ is an ancient city of Thailand [1]. The north part is connected to the old town Ayutthaya province. The city was established in early Ayutthaya period. King Narai provided the land for the settlement of Mon migrated from Burma. The Mon is famous for their expertise in potteries [2]. Besides the potteries, Sam Khok has high opportunities for cultural tourism development since this area consists of several temples and local community. It has rich local history, arts, and cultures [3]. However, information of architectural design of temples in Sam-Khok has not been investigated. This study aims to investigate an impact of Thai and Mon Buddhist Ethnics on temple layout and architectures in Sam-Khok district. The data is assessed by using contextual analysis method as a preliminary field investigation to analyze the architectural design process. The condition of the site such as building’s layout, zoning, architectural elements and style is carefully studied to project the potential of the site in the future. [4].

2. Layout and architectural design of Thai temple
The compound of Thai temple layout is typically divided into three main sections: Buddhavas, Sangkhawas, and Sangha. The Buddhavas is the most important area that the monks use for religious ceremonies. Sangkhawas area is the residential area for the monks. It consists of a monk residential building and other personal facilities called ‘Kuti.’ The Sangha is the area for public use such as school and crematorium (Phra-meru). This study focuses only a relationship between Buddhavas and Sangkhawas areas. Sangha area is excluded from the study. Previous study investigated the layout and location of Buddhavas and Sangkha was from several temples constructed in Ayuthaya and Ratanakosin periods, which can be separated into 4 main layouts as shown in Figure 1. Typically, the Buddhavas area is located on the area with easiest access from the neighboring communities while Sangkhawas area is located in private zone.
Therefore, Buddhavas is the most sacred place where the monks conduct religious ceremonies. This area consists of three architectural elements, namely stupa (Chedi) in (a), chapel (Bot) in (b), and sanctuary (Viharn) in (c) as presented in Figure 2. Table 1 presents typical layout of Buddhavas with those three architectural elements located along different axes [5].

![Figure 1. Design of Buddhasawas and Sangkhawas locations in the compound of Thai temple layout](image)

![Figure 2. Architectural design of stupa (a), chapel (b), and sanctuary (c).](image)

Table 1. A layout planning of main stupa (circle), chapel (shaded square), and sanctuary (unshaded square) found in different periods [5].

| Era (year)          | Single axis | Double axis | Tripple axis | Axial layout scene | Cross axis |
|---------------------|-------------|-------------|--------------|--------------------|-----------|
| Tawaravadee (B.E.12 -16) | ✓           | ×           | ×            | ×                  | ×         |
| Sukhothai (B.E.19 - 20)  | ✓           | ✓           | ✓            | ×                  | ×         |
| Ayutthaya (B.E.20 - 23)  | ✓           | ✓           | ✓            | ✓                  | ✓         |
| Rattanakosin (B.E.23 - present) | ✓           | ✓           | ✓            | ✓                  | ✓         |

3. Research methodology
Firstly the study selects two temples, that their architectural designs are influenced by two different ethnic groups living in Sam-Khok district the history of the temples and local communities is reviewed from historical documents and former studies. The contextual analysis emphasizes on the design of the layout arrangement of the architectural elements in each zones. The arrangement of such elements is
collected by field investigation and the interview with the abbot. Then the temple’s zoning, architectural layout, and stupa style of those two temples are compared and discussed (Figure 3).

Figure 3. A framework of this study

As for the case study selection, there are 30 temples situated in Sam Khok district. This study chooses Wat Thour Thong (a) and Wat Sam Lae (b) as the case studies because the architectural design of Wat Sam Lae represents Mon Buddhist temple while Wat Thour Thong represents Thai Buddhist temple. These two temples were built in early Rattanakosin period (during 1824-1837) and both locate on the west bank of Chao Phraya River (c) as shown in Figure 4.

Figure 4. Selected case studies: Wat Thour Thong (a) and Wat Sam Lae (b). (c) presents the location of the two temples.

4. Results
According to historical evidences, both temples were built by the local communities, but difference in ethnic groups. The funding and construction contribution to built Wat Thour Thong was made by Thai Buddhist while the Mon funded and constructed Wat Sam Lae. Wat Thour Thong used to be a transportation hub and marketplace where people traded and exchanged products. Since the location was easily accessed for the monks, people later built this temple for monk’s residence and serving
religion ceremonies. Wat Sam Lae was the place where the Mon emigrated from Burma, settled and formed the community in Sam-Khok after the nine-armies wars in King RAMA I era. The activities in Wat Thour Thong were conducted under Maha Nikai lineage principles while the activities in Wat Sam Lae were conducted under Dhammayuttika Nikaya principles [4]. The layout and architectural designs of these two temples are compared and discussed according to the following topics:

4.1. Layout planning
Figure 5 shows the comparison of building layout and zoning of the two temples. It is found that the arrangement of Buddhavas and Sankhawas zones of Wat Thour Thong and Wat Sam Lae are quite different. In Wat Thour Thong, the Buddhavas zone’s layout formed in ‘L’ shape similar to the layout investigated from previous study [5]. Whereas Wat Sam Lae, the Buddhavas is surrounded by Sankhawas and formed ‘L’ shape layout arrangement. According to the field observation and interview from the abbot, the major strategy in planning the temple’s layout and location emphasizes on the accessibility from the surrounding context. The study discovered that the layout is modified from its original setting. In the past, the main access to the temples was from the water-based access the Chao Phraya River but, at present, the temple’s entrance is from the land-based access the main road.

(a) Wat Thour Thong

(b) Wat Sam Lae

Figure 5. Comparison of building layout (middle) and zoning (right) Wat Thour Thong (a) and Wat Sam Lae (b).

4.2. Architectural design and stupa style
In Buddhavas zone, the arrangement of three architectural elements: stupa, chapel, and sanctuary, are not aligned according to the center of universe axis shown in Table 1. The locations of the stupa in these two temples are slightly shifted from the faithful Buddhist and universal paradigm founded in royal temples. It might be because these two temples were built by the communities. Comparing the scale of these three architectural elements with those of the royal temples, the size of stupa and sanctuary of these two temples are smaller due to the lower hierarchical significance of the temple. There is a significant difference in the style of the stupa design between Thai and Mon Buddhist temples, as presented in Figure 6. Mon stupa (b) is influenced by Burmese style, which has three lotus bases and it is surrounded by four small stupas.
5. Conclusions
This study emphasizes on the temple’s layout and architectural design influenced by Thai and Mon Buddhist communities. The study is conducted through field observation and interview with the abbot. The selected case studies of two temples, namely Wat Thour Thong represents the Thai Buddhist temple and Wat Sam Lae represents the Mon Buddhist temple. It is found that the Thai and Mon Buddhist temples have similar design concept in term of the arrangement of the stupa, the chapel, and the sanctuary in Buddhavas zone. The layout of Buddhavas and Sankhawas zones that their functions also shares similarity in zoning programs and its design according to the accessibility from the context. The architectural design and layout planning of these two temples are not aligned on the main axis, which differ from those of the royal temples. The major function of the community temples is to serve religious ceremonies resulted in the size of large chapel while the scale of stupa and sanctuary are smaller than those of the royal temples. However, the relationship of the layout planning of Buddhavas and Sangkhawas is the same as the royal temple arrangement. The only difference in the temple’s character between the Thai and Mon Buddhist temples is in the stupa design. The Mon Buddhist temples is influenced by Burmese style. In the later stage of the research, the study plans to collect detailed data of the stupa design. Furthermore, more field observation will be conducted in more temples in order to prepare the database to support the cultural tourism development in Sam-Khok district. The limitation of this study lays upon the limited knowledge and experience in architecture of the key stakeholders. It is limiting the verbal references of this study, The careful planning to work around this limitation is necessary to achieve the more in-depth socio-cultural dimensions data and integrated analysis with the contextual summary of the site.

6. References
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