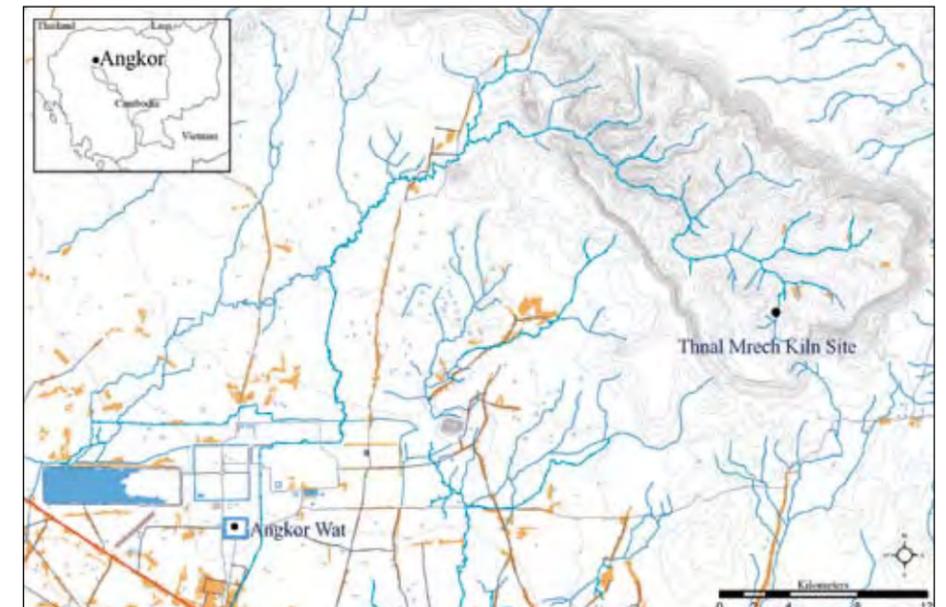


Khmer Potters Emerge from the Shadows: Thnal Mrech and Bangkok Kiln Sites

Interest in research on Khmer pottery production has been increasing. **John N. Miksic** and **Chhay Rachna** report on discoveries on two sites in Angkor, Cambodia

It seems likely that the Khmers first began to produce glazed ceramics around 1000 CE. The existence of kilns on Phnom Kulen was first noticed over 100 years ago, but research on pottery production had a low priority for archaeological researchers. The situation has changed radically in the past decade. The first generation of Khmer archaeologists, in particular, has taken a strong interest in this subject. Two important sites, Tanei and Thnal Mrech, have been excavated and published in detail. A third site, Bakong, near the temple of that name in Roluos, was excavated in January 2008. Although our sample size is too small to draw firm conclusions from these results regarding the course of Khmer ceramic evolution, knowledge of this subject has made a quantum leap compared to the state of the field in 1998.

Thnal Mrech map



The Thnal Mrech Kiln site (TMK) – Thnal Mrech literally means ‘road of pepper’ – is located on Phnom Kulen, approximately 35 km northeast of Siem Reap in the Angkor region of Cambodia. Radiocarbon dating of one kiln yielded five dates which cluster in the early 11th century (reign of Suryavarman I). This is one of many similar sites near the village of Anlong Thom (meaning approximately ‘big river channel’). Other data indicate that the site was occupied for some time, possibly until the 13th century. There are indications of evolution at the site of kiln structure, engineering, and use.

Historians believe that Phnom Kulen was known as *Mahendraparvata* in the past (Coedès 1968). The Sdok Kak Thom inscription (K.235), composed in 1052 CE, suggests that *Mahendraparvata* was once the capital of Jayavarman II after liberation from “Java” (Coedès 1964). Along with temples and religious foundations registered in the area, ceramic kilns were recognised during a survey in 1883 (Aymonier 1901).

B.P. Groslier identified a ceramic type, which he called Kulen Ware (Groslier 1981), based on stratigraphic analysis of various excavations in the Angkor region. He suggested that Kulen Ware might date back to the ninth century, contemporary with the reign of Indravarman, founder of the Bakong temple in the Roluos group, southeast of the larger Angkor complex. Until January 2007, there were no systematic research projects conducted to understand kiln sites on Phnom Kulen.

In 1995, the APSARA authority in cooperation with Sophia University conducted the first research on Khmer kiln technology, at the Tani kiln site, approximately 19 km from TMK. In August 1999, a short site reconnaissance was undertaken by APSARA, Nara National Cultural Properties Research Institute, and Sophia University (Nishimura 2000, Nara-APSARA 2000). However, numerous visitors such as officials of NGOs based in Siem Reap were only interested in visiting and collecting wasters from these kilns, and did not produce any reports or analysis. Since then, several research projects and theses by students at the Royal University of Fine Arts (Phnom Penh) have been dedicated to the study of ancient Khmer ceramics. Cambodian kilns which have been systematically investigated include Tani, Khnar Po, and Sarsei, all located near Phnom Kulen (Ear 2000, Nara 2000, Sophia 2000, Chhay and Chap 2002, Sok 2003, Em 2004). One thesis,

defended in 2002 by Chhay Visoth and Chap Sopheara, is dedicated to identification and classification of ceramics found *in situ* at TMK. This thesis relies mainly on wasters found in surface scatters, as well as remains from looting in the early 1990s.

In January 2007, the Department of Monuments and Archaeology 1 (DMA 1) of the APSARA authority in collaboration with the National University of Singapore (NUS) conducted an archaeological excavation of TMK sites. This excavation was designed to build a better understanding of Cambodian ceramic technology in the Angkor era. Another goal was to create a preliminary classification and typology of ceramics recovered from each kiln located at TMK. A second excavation was carried out concurrently at TMI 1 by another team from APSARA and a Japanese archaeologist (Tabata and Chhay Visoth 2007; Miksic, Chhay Rachna, Heng Piphal, and Chhay Visoth 2009).

The excavation was conducted with the aid of a computer-generated contour map based on surveys in January and May 2006, analysis of which made it possible to divide the kiln structures located on Thnal Mrech into two groups, northern and southern. The results of this survey caused the investigators to suspect that possible kiln structures



Firebox of Thnal Mrech kiln

are located on both sides of the dike which penetrates a peninsula-like area. The main objective of the excavation was to identify elements of a kiln structure, including ground plan, location and dimensions of such features as the walls, floor, roof, firebox, etc., as well as artefacts associated with each of these features. The excavation of Tani and Thnal Mrech 01 provided a preliminary idea of what the Thnal Mrech 02 kiln might look like.

Informants reported that this area had been heavily looted during the 1990s. The site is riddled with dozens of looted pits with kiln structure fragments and ceramic fragments present on the surface. However one mound remained in good condition, suggesting that one or more undisturbed kilns might be located there. A broad trench was excavated to reveal the kiln structure. The east side of this unit was found to constitute the front end of the kiln, where the firebox was located. There

Thnal Mrech kiln 2 top view



were remains of a collapsed roof structure, composed of chunks of burned clay mixed with soft dirt, forming a flattened layer of burned clay all over the unit, but no trace of any chimney was present.

After drawing, the roof was removed and two modified kiln structures and a floor with multiple steps, including a firebox, were uncovered. The upper part of the kiln turned out to be the remains of an early kiln structure

(TMK 02a) which was later modified/enlarged (TMK 02b). Both of these kilns display a strange irregular shape which differs from TMK 01, Tani, Sasey, and Boriram. These two stages of TMK 02 do not exhibit the expected elongate oval shape; instead they describe a combination of oval and rectangular shapes. Excavation of the floor suggests at least two distinct phases. During its final usage, the kiln

floor comprised twelve steps of irregular height and width, made of recycled firing supports and plastered with clay bands to form level platforms. TMK 02 is one of the biggest kilns yet found in the Angkor region. It is assumed that potters exploited the slope of a pre-existing dike, Thnal Mrech, to build a cross-draft structure.

Charcoal samples collected from multiple layers in front of the kiln produced a series of consistent dates ranking from BP 970 (± 30) to 05 (± 30). Highest probabilities of the dates rank from:

- AD 1016-1157 (96.5%): sample recovered from layer 4c.
- AD 1022-1166 (97.2%): sample recovered from layer 4c.
- AD 1025-1208 (98.7%): recovered from layer 6b in the extension unit.
- AD 1027-1211 (99.2%): recovered from layer 3a
- AD 1031-1215 (99%): recovered from layer 5.

These absolute dates suggest that TMK02 was in use during a period of approximately fifty years, in the early 11th century CE. Only one piece of Chinese ware (qingbai), most probably associated with habitation, was recovered on top of the collapsed kiln roof.

Qingbai from Thnal Mrech



Thnal Mrech surface finds

Artefacts and Classification

Kiln products can be divided into many categories, including supports for stacked firing, roof tiles, restricted-neck jars, small restricted-neck 'jarlets', and covered containers. Some of the covers fit within the body using an inverted rim, and others overlap the external body rim. The total number of sherds found was 10,009; these weighed 388.8 kilograms. Ceramics obtained from the excavation contain both glazed and unglazed stoneware and earthenware. Glazed wares represent the highest concentration of the total assemblage. Earthenware comprises mostly cooking pots and large containers. A majority of the stoneware was possibly fired between 900 to 1200 degrees Celsius.

Most of the forms of ceramics found in the kiln are still known by locals, and Khmer words for them exist (Chuon 1967). This enables us to produce a trial classification scheme of Kulen wares based on Khmer terms. An artefact classification system using Chhay and Chap (2002) has been developed. Other sources utilized include Ear 2000, Sok 20003, and Em 2004. We are also attempting to reconstruct the evolutionary trajectory of the vessels through basic seriation techniques.



Bangkong bulldozed

Khmer linguistic and cultural categories are rich in ceramic types. For example, the *danlap* – in modern context – is a small vessel in which to store bees' wax which was often used in black magic (a shaman may put a spell on the wax and container). Only men can touch them. Females might be harmed or driven mad if they touch these vessels. Angkorian inscriptions use the term '*tanlap*' mostly to refer to

examples made of gold and silver (Coedès 1951 and 1954). K391 "...*vrah gandha tanlap mway*..." indicates that *danlap* could have been used as perfume containers. Unit H yielded large covered containers of this shape. This term can be applied to both large and small covered boxes. Their use in antiquity is unknown, but the same forms and concepts adhere to modern contexts.

Kilns on Thnal Mrech are mostly built on an artificial embankment, thereby exploiting its slope. Other kiln sites found in Angkor are also built on embankments, such as at Sarsey, Khnar Po, and Tani. Conversely, Bangkong and one of the Sarsey kiln group were built on mounds in flat areas near river channels and ponds. Tani kiln B1 shows a similar cross-draft structure to TMK 02 (Aoyagi et al 2000). The structure of TMK 02 is considerably different from that of kilns in Buriram. Chinese influence of the Dragon Kiln on the structure of TMK cannot be verified due to limited research. The structure could be merely the result of internal evolution from previous periods, external influence, or a combination of both; this is the same concept as represented by Khmer temple construction. Some green glazed sherds collected from the Bangkong kiln group yielded higher quality clay, glaze, and firing technique than ceramics from TMK 02. On the other hand ceramics uncovered from Tani, Sarsey, and Khnar Po are of inferior quality to TMK ceramics (Sophia 2000, Sok 2003, Em 2004).

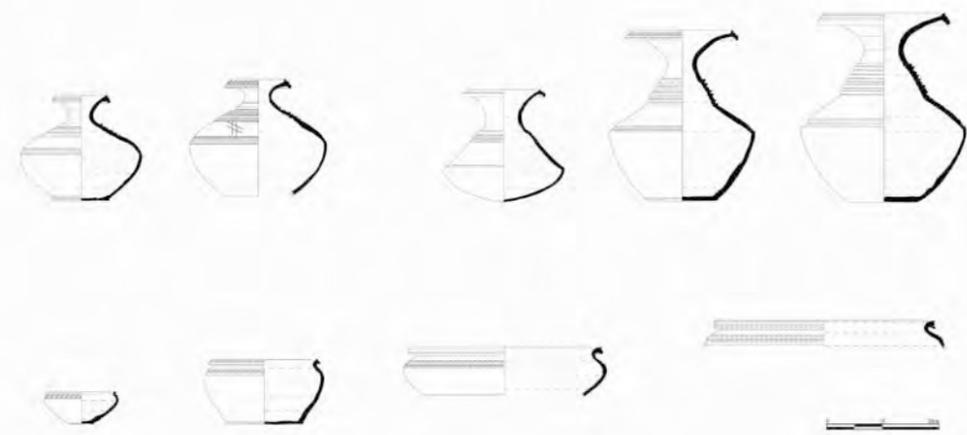


Bangkong kiln firebox

Bangkong Kiln Site

Roluos was a temple complex and probably a royal capital for most of the 9th century, before major construction began at the modern site of Angkor. Surface survey located 39 kilns at Bangkong, about 4 km north of the temple known as Bakong. At the end of 2007, the government started to build a "development centre" on top of this kiln complex. Out of the 39 kilns identified through surface survey, two which were still partially preserved in January 2008 (designated Kilns 15 and 16) were excavated. One of these yielded a radiocarbon age of

1107 ± 20 BP [68% confidence interval 898 AD to 922 AD (28.6% of area), or 943 AD to 975 AD (38.7% of area) or at the 95% confidence interval 893 AD to 985 AD (95.4% of area) (NZA 29792 Institute of



Bangkong
Kiln 15
Khuoch
Ka-am
and
Phoeng
or Peang



Phoeng and Peang Khuoch

Geological and Nuclear Sciences Ltd/Rafter Radiocarbon Laboratory, New Zealand).

Shapes of artefacts recovered from the excavation include *chan* (bowl or plate) and *krala* (ovoid shaped jar, big or small, mainly used for storage; very large ones are called *phoeng*, *peang*, and *ka-am*). Artefacts collected from the surface of BKK 12, which had been bulldozed, include *danlap* and *kotth* (literally 'urn used to store cremated ash'). Groslier reported finding identical containers with human remains in an excavation at Srah Srang (Dumarçay and Courbin 1988, Brown 1988). That usage of these containers was restricted only to burial cannot be confirmed. In modern Khmer practice, human relics can be stored in any type of container, including bowls, teapots, metal urns, etc.. Bas-reliefs on the Bayon seem to show this shape serving to contain food rather than human relics. This



Ka-am

shape is reminiscent of the *danlap* with the exception of its half-conical or cylindrical form.

Another form is the *khuoch*, generally translated as 'bottle'. "Small, globular vessel with restricted neck and everted rim" is a more accurate description than bottle. This shape suggests that it was used as a liquid container. Khmer currently identify these as containers for oil (perfume).

Unfortunately, we are unlikely ever to know more about this extensive and early industrial site from the very beginning of the Angkor period. Fortunately, at least the bare bones of the story which has now been erased from existence forever have been preserved.

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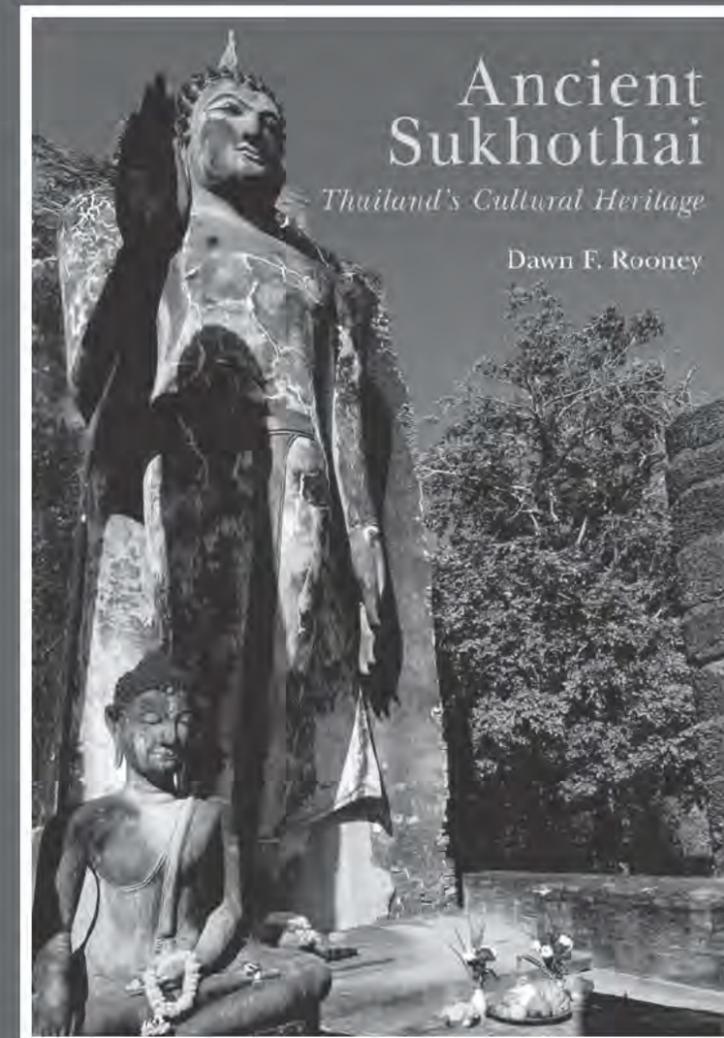
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Book Information

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This guide covers the history and art of the early Kingdom of Sukhothai, which was situated in the fertile Yom River basin of north-central Thailand and is renowned for artistic achievements in the mid-thirteenth and fourteenth centuries. Influences from earlier inhabitants of the area and neighbouring kingdoms were overlaid with Theravada Buddhist ideas from Sinhalese culture to create a unique style that is recognised today as 'classic' Thai art. Beautiful remains of this period can be visited at Sukhothai, Si Satchanalai to the north and Kamphaeng Phet to the southwest. Lotus-bud spires, delicate stucco decoration, pillared foundations, huge Buddha images encased in niches and secluded forest monasteries atop surrounding hills testify to the original expression of Sukhothai artisans. The author takes the reader on a journey to the early Kingdom of Sukhothai and explores the remains and cultural heritage of this sacred site.

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