Tani Kiln Complex, The Angkor Monuments : Report of the Third Investigation of Kiln B1 (1-13 September, 1998)

2. Tani Kiln Complex, The Angkor Monuments

Report of the Third Investigation of Kiln B1 (1-13 September, 1998)

Prof. Yoji AOYAGI, Tatsuo SASAKI, Kazuhiko TANAKA,
Takenori NOGAMI, Masako MARUI

1. Introduction

Remains of ceramic kilns are situated to the east of the Angkor monumental complex within the Angkor region, located northeast of the Tonle Sap lake in Siem Reap Province, northwestern Cambodia. The Tani kiln complex lies seventeen kilometers east of the Bayon, the monument at the heart of Angkor Thom. It is six kilometers northeast of the Northeast Stele in the East Baray. It lies three kilometers north-northeast of the low, freestanding hill known as Phnom Bok. The Bakaong kiln complex is located nine kilometers west-southwest of the Tani kiln complex. The existence of a kiln site within Cambodia atop Phnom Kulen, the mountain located thirty to forty kilometers northeast of the Angkor monuments, has been known since the late nineteenth century, but its actual circumstances are unclear. The discovery of a kiln complex on the plains between Phnom Kulen and the Angkor monuments is of great historical significance. The purpose of the present investigation is to clarify the situation and structure of the kiln through an ongoing archaeological investigation.

2. History of the investigation of the Tani kiln complex

In August, 1995, sherds of fired pottery were discovered scattered around an area of the hamlet of Tani, within Ruan Ta Ek Village, located about twenty kilometers east of the Angkor monumental complex. The area was determined to be a kiln complex. The Bakaong kiln complex was identified nearby at the same time. This was the first new discovery of a kiln site in the region since the late nineteenth century, when a kiln site had been identified atop Phnom Kulen, the plateau situated some ten kilometers distant. At present, the Tani kiln complex has been determined to consist of five areas, identified as Area A through Area E.

During the first investigation in August, 1996, it became clear that the kiln complex consisted of not just one area but of several, and a measured drawing was made of the distribution of those areas. Six kilns were identified within Area A, seven within Area B, one within Area C, and one in Area D.

At the same time a trench investigation was conducted on the south side of the mound constituting Area B. This constituted the first archaeological investigation of a Khmer Angkorean period kiln site within the present-day territory of Cambodia. The result of the trench investigation showed that a kiln structure survived within the mound, that the fragments of kiln wall and fired wares scattered in the vicinity were part of the site and had once formed part of the present mound. Just four days were allotted to this brief excavation, and there was not enough time to determine the structure of the kiln.

During the second investigation at the Tani complex in March, 1998, the site was re-surveyed, leading to the discovery of Area E further north than the areas that had already been identified and to the

addition of two kilns to the group in Area C. It became clear that Tani was a large kiln complex consisting of five areas. Area A contained six mounds or kilns, Area B contained seven, Area C contained three, Area D contained one, and Area E contained nine.

At the same time, in 1997 and 1998, the Nara National Research Institute for Cultural Property also mapped the Tani site and investigated it with the use of magnetometers and ground-penetrating radar.

3. Daily schedule for the third investigation (1-13 September 1998)

(Omitted)

4. Excavation of Mound 1, Area B, Tani kiln complex, September, 1998

The goal of the investigation was to clarify the kiln structure within Mound 1 in Area B, in order to provide basic data for the future research, preservation, and public presentation of the site.

Area A and B of the Tani kiln complex are located on top of a long, low dike built of sandy earth and extending north and south. To the north, Area B contains seven mounds or their remains. Five are clustered close together although not overlapping. An additional two are slightly separated from the group of five in a low mound lying further north. The five kilns would appear to have built one after another in close proximity. The present heights of the mounds are all similar, about two to three meters, with a diameter of close to fifteen meters. Mound 1 was investigated with exploratory trenches in August, 1996, and the mound was found to consist of the earth used as the foundation of the kiln, fragments of the kiln structure, and discarded wares. The three trenches reveals that the foundation of the kiln in the center of the mound was built on layers of clay containing clumps of red and white sand about ten centimeters in diameter. The trenches revealed layers of kiln wall debris and discarded wares. From these discoveries, it was unclear whether the kiln structure was circular or rectangular.

In 1996 mapping was based on sea level; when joined to the contour mapping carried out by the Nara National Research Institute of Cultural Properties, the result was plus 2.5 meters. The zero point of the 1996 B1 measured drawing (the trench intersection) was moved from 37.3 meters to 39.8 meters. In 1998, Mound 1 was divided into four sectors, and the intersection was moved one meter to the east of the zero point for the 1996 investigation. As a result, sector IA constituted the west side of trench IA, including trench IA itself; sector IB constituted the west side of trench IB including trench IB itself; sector IIA constituted the north side of trench II, and sector IIB constituted the south side of trench II including trench II.

The identification recorded on excavated artefacts consisted of the kiln complex, the area, the mound, the sector, and the layer, in that order.

Of the several dozen nails and wooden posts left behind after the 1996 investigation, on the first day of this investigation it was discovered that just two posts remained at the end of the trench. However, the two posts that remained on the starting day were not there on the second day. The nail that had been used to establish point 24 for the measurement by the Nara National Research Institute for Cultural Property remained in the root of a tree at the top of Mound 1 in Area B, but on the second day the blue plastic

portion had been removed and only the metal pin remained. Four iron nails used to mark points were discovered when the earth that had been used to back-fill the trenches was removed, so it was possible to reconstruct correctly the trenches and the points.

The earth used to fill the 1996 trenches was discarded. The sectors were re-identified. Sector IIA and sector IIB were excavated in layers, and the kiln structure climbing diagonally up the slope was uncovered within sector IIA some twenty to thirty centimeters beneath the present surface. The surface earth and two layers of sector IIB were excavated, and the artefacts were sorted according to sector and layer.

From the top of the mound protruded lumps of reddish fired earth that were assumed to be the ceiling of the kiln chamber. Nonetheless, surviving kiln wall was not identified. The surface was cleaned with a broom, and a trench was opened in one area, removing several centimeters of reddish fired earth. The lower surface was a layer of hard, mounded clay containing red and white sand. At this point the possibility that the kiln structure was circular was reduced. The area of red sandy lumps was drawn to 1/10 scale and photographed.

The three trenches excavated in 1996 did not reveal the kiln structure. In all three were found layers of broken kiln wall and discarded fired wares. Therefore, it was decided to removed the surface from sectors IIA and IIB and investigate the layering in the center of the mound.

Excavation of sector IIA. When the surface earth was removed, some areas consisted of lumps of reddish clay resembling that on the top of the mound, while other areas did not. Beneath the areas where a layer of several centimeters of reddish fired clay was revealed was hard, mounded-up clay containing red and white sand, like that found at the top of the mound. In the interval between trench IA and trench II, it became clear that a mound to serve as the foundation for the kiln had been constructed by piling up clay containing red and white sand.

The strata on the interior of the trench and other evidence indicated that clay had been piled up on the sandy surface of the ground to a height of 3.2 to 3.5 meters at most, in a rectangular plan with one side rising in a diagonal slope.

Partial portions of the kiln floor survived as reddish fired earth on the top of the hard, piled-up ash-colored clay containing lumps of red and white sand. The reddish fired earth was composed of clay containing red sand lumps and white sand lumps, which had turned red in firing to a depth of several centimeters. The surface of the floor was heavily damaged, but it was possible to reconstruct the probable line of the floor. The lower portion of the kiln, on the north side, is unexcavated and will be the focus of the next investigation.

The plan of the kiln is a rectangular slightly swollen at the midpoint. It rises from the base of the mound on the north side toward the top of the mound on the south. It does not overlap the floors of other kilns. Just one kiln was constructed on this site. The surface of the floor did not undergo major repair. The length is 5.3 meters plus alpha. The greatest width of the interior of the chamber is 2.64 meters. The gradient of the slope is 22 degrees. Near the smoke passageway the slope becomes steeper--36 degrees. The thickness of the base of the wall is about forty centimeters. The thickness of the fired red clay on the

kiln floor is approximately five centimeters.

Two layers were identified above the kiln floor (one is the surface clay). Sherds of roof tiles underfired and soft, were recovered from above the kiln floor seemingly buried in the red fired clay, and these were treated as layer three. No traces of wares in the process of firing remain on the kiln floor.

Several fragments of vats were found inside the kiln as though buried. Beneath them was found a square of earth mixed with ash. Their relationship to the kiln will be studied in the next investigation.

Excavation of sector IIB. The surface earth was removed, uncovering a layer of earth resembling the layers found in trenches IB and II during the 1996 investigation. It became clear that this was not part of the kiln structure, although layers of discarded fired wares continued to be collected. It was decided to return to layer three and below in the next investigation. (Layer two was also left unexcavated.).

The excavated wares consisted of glazed ceramics and unglazed ceramics. Thin disks and hollow cylindrical tube-shaped objects were uncovered; these are presumed to be kiln stacking tools. Sixteen standard containers' worth of sherds were collected. Washing, labeling, measuring, and photographing of the sherds was postponed until the next investigation.

At the conclusion of the investigation, the excavated portions were refilled with earth. In the next investigation we would like to clarify the structure of the lower half of the kiln and to ascertain the existence of a waste heap on the north side of the mound, centering around the firebox. We also hope for the discovery within the trench of remnants of the workshop or of production tools. The question of how to treat the preservation of the excavated kiln site will be considered as part of the overall consideration of the Tani kiln complex in its entirety.

The goal of the next and subsequent investigations will be to uncover materials basic to the consideration of how to preserve the Tani kiln site as a whole.

5. Topics for future research

Future research is needed on the following issues:

-clarifying the structure of the kiln;

-making measure drawings of every kiln site within the complex and studying them comparatively;

-comparison with other kiln complexes;

-classification of the kiln products;

-determination of the chronological sequence of the products;

-elucidation of the regional characteristics of the kiln structure and products;

-comparison of the kiln structure, production techniques, and products of the Khmer kiln complexes located in present-day Northeast Thailand;

-utilization of the evidence as historical data for reconstructing the life and culture of the region, including its potential for elucidating the conditions of production in Angkor;

-planning for the preservation, reconstruction, exhibition, and utilization of the kiln complex site.

(Translated by Louise Allison Cort)