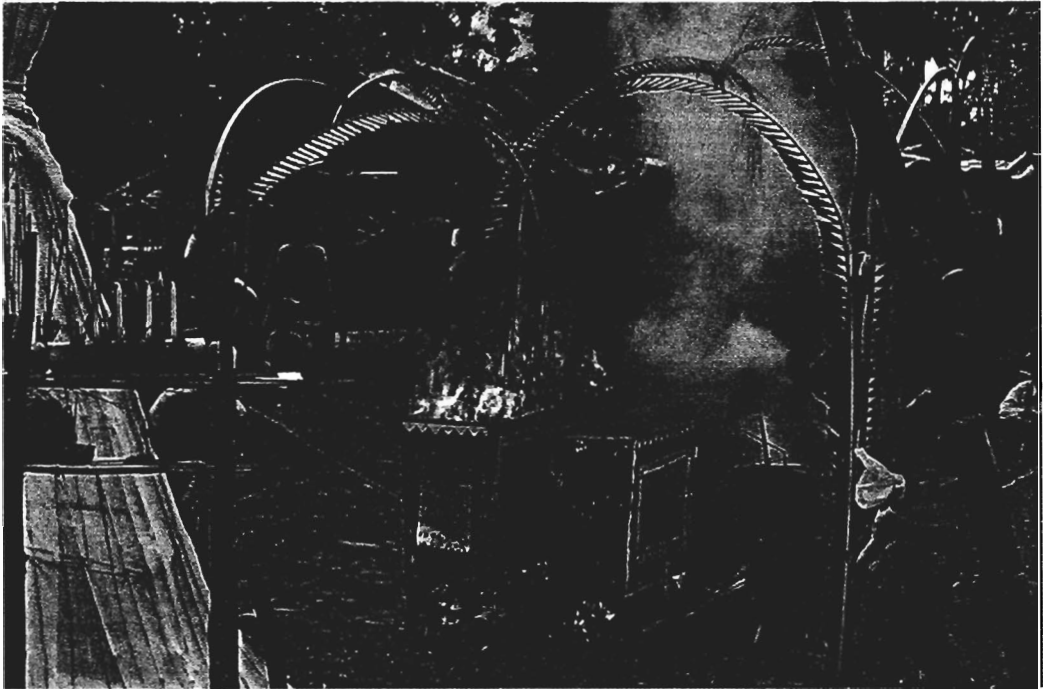


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SOME PRELIMINARY RESULTS OF THE 1999-2000 ARCHAEOLOGICAL FIELD INVESTIGATIONS AT ANGKOR BOREI, TAKEO PROVINCE

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This article presents some preliminary results of research by the Lower Mekong Archaeological Project (LOMAP) during its 1999 and 2000 field seasons in southern Cambodia. Established in 1996, LOMAP is an interdisciplinary, international project bringing together archaeological faculty and students from the University of Hawai'i (UH) with faculty, students, and recent graduates of the Royal University of Fine Arts (RUFA) in Phnom Penh.¹ The Lower Mekong Archaeological Project has two primary goals: (1) to undertake research on the archaeology of the Mekong delta, and (2) to provide training opportunities for students and graduates of the Archaeology Faculty at the Royal University of Fine Arts. Since 1996, LOMAP research has concentrated on the archaeological site of Angkor Borei (Takeo Province) in southern Cambodia (Figure 1). The following sections introduce the study area and summarize preliminary findings of LOMAP research since 1999.

The Mekong Delta During The First Millennium A.D.

The Mekong delta contains a rich yet poorly understood archaeological record of Pre-Angkorian occupation, from approximately 500 B.C. to approximately A.D. 500. Various lines of evidence — archaeological, epigraphic, and art historical — suggest that the Mekong delta was the center of one of the region's first 'states' (Higham 1989:239-307). Archaeological research has identified sites that had high populations and served as urban centers (e.g., Stark et al., 1999), and documentary evidence suggests the production of surplus food through wet-rice cultivation, perhaps through recession rice agriculture (Fox and Ledgerwood 1999, van Lier 1980).

Chinese accounts also suggest that the area was characterized by a pronounced degree of sociopolitical stratification. Art historians have focused on the Indic statuary that may have helped legitimate positions of power (e.g., Dalsheimer and Manguin 1998), while archaeologists have begun to date the brick monuments that presumably housed these sculptures (e.g., Manguin 1999, Stark et al., 1999:26-27, Vo Si Khai 1998).

¹ The project has its roots in 1994, when funding from the East-West Center (Honolulu, Hawai'i) supported the establishment of the University of Hawai'i/East-West Center/Royal University of Fine Arts Cambodia Project under the direction of Professor Chuch Phoeurn, Dr. Judy Ledgerwood (East-West Center) and Dr. P. Bion Griffin (University of Hawaii). Work through the Cambodia project began in 1995 as a field training program (Stark et al. 1999:12-15). LOMAP itself was founded under the co-direction of myself and Professor Chuch Phoeurn.

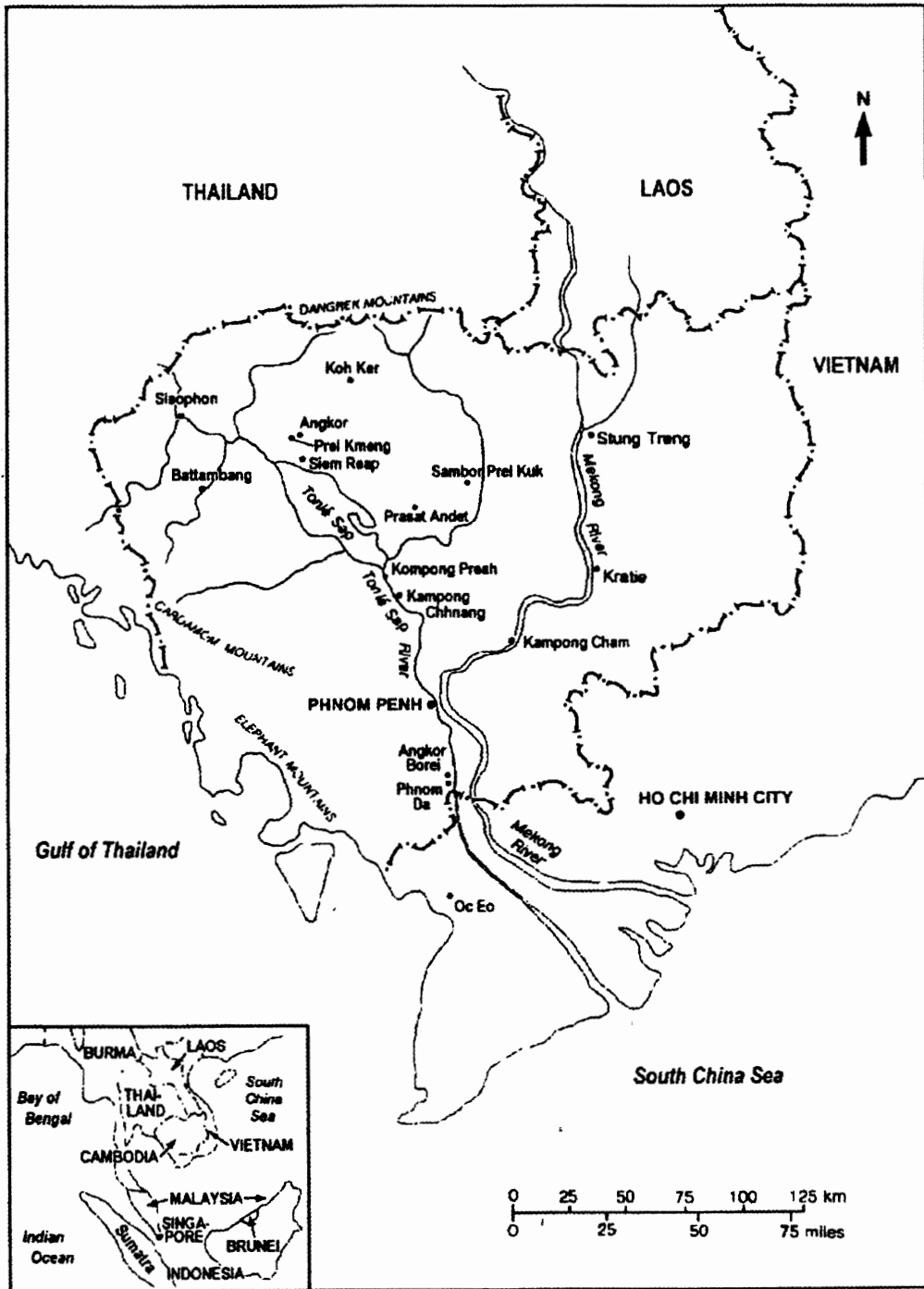


Figure 1. Locational map of Angkor Borei area, Takeo Province (courtesy of Jo Lynn Gunness).

Epigraphers have studied the system of early Khmer writing by the end of the early historic period (e.g., Coedès 1931, 1954, Jacob 1979, Jacques 1979, Jenner 1980), and Vickery (1998) has offered an intriguing model for sociopolitical organization during the pre-Angkorian period. Louis Malleret's important early work at the site of Oc Eo suggested, among other things, the existence of a vigorous network of long distance trade (Malleret 1959, 1960, 1962, see also Paris 1931, 1941).

Archaeological research in the last two decades suggests that the Mekong delta experienced extensive settlement and human land-use between ca. 500 B.C. and A.D. 500 (e.g., Dao Linh Côn 1998, Ha Van Tan 1986, Stark 1998, Trinh Thi Hoà 1996, Vo Si Khai 1998). Recent archaeological research suggests that at least one peak in settlement occurred in the mid -1st millennium A.D., corresponding to the emergence of one of mainland Southeast Asia's earliest states. In the Mekong delta, this mid -1st millennium A.D. development coincides with the emergence of statuary, brick architectural monuments, writing, and a more complex political organization that may have been integrated through religious ideology (see especially Brown 1996, Coedès 1968).

Most of the mid-1st millennium corresponds to the period that historians and archaeologists associate with the "Kingdom of Funan" (e.g., Christie 1979, Ishizawa 1996, Jacques 1979, Malleret 1959, 1960, 1962, Pelliot 1903, Vickery 1998). According to Chinese annals, emissaries Kangtai and Zhuying published accounts of their travels to the Funan region in the mid -3rd century A.D. The original accounts have been lost, but Chinese historians recopied fragments of these texts in nearly all Chinese dynastic histories. Indigenous inscriptions provide information primarily on dynastic sequences and dedicatory events, but also hold valuable information on economy and political organization (see, for example, Vickery 1998). Since documentary materials were frequently political instruments of the group in power, all types of documentary information for this period must be used with great care and supported with other lines of evidence (e.g., Jacques 1979, Mabbett 1977, Stark 1998, Wheatley 1983).

Not only do Chinese accounts suggest the location of Funan in the Mekong delta, these accounts also suggest the scale of this polity. Chinese sources report that the Funan territory was found 500 li (c. 200 km) from the sea, and that a great river, which came from the west or northwest, ran through it and emptied into the sea (Pelliot 1903:256-263). The territory of Funan stretched approximately 3000 li (c. 600 km) along its east-west axis, until its peak in the 3rd century A.D. At this point, the History of the Liang reports that the Funan ruler called Fan Shiman by the Chinese had expanded his territory to encompass 5-6000 li (c. 2000-2400 km). Chinese annals also suggest that at least one dozen urban centers were found in the Funan core area and no fewer than 200 km of canals connected these settlements (Pelliot 1903).

Studying the distributions of 7th-8th century inscriptions provides support for the documentary claim that this early historic polity encompassed much of southern Cambodia (i.e., the modern provinces of Takeo, Prey Veng, Kompong Speu, and Kampot) and sections of the Mekong through Kompong Cham province (Vickery 1998:97, Map 3). The density and content of inscriptions in southern Cambodia contrasts markedly with inscriptions from what is now Vietnam (see also Jacob 1979:425). Far more inscriptions are located in the north than in the south, which may suggest that the center of political power lay in the northern part of the Mekong delta (in modern-day Cambodia) during the early to mid -1st millennium A.D. The rather recent availability of chronometric dates (primarily radiocarbon dates, with some thermoluminescence dates) from sites in the delta provides another kind of data to examine with respect to the documentary accounts. Some of these dates derive from LOMAP excavations since 1996 at the site of Angkor Borei.

The Archaeological Site of Angkor Borei

Angkor Borei is found at the western edge of the Mekong delta, at 10°59' N latitude and 104°58' E longitude (See Figure 1). Scholars have long regarded Angkor Borei as an important archaeological site for at least three reasons. The first is because the earliest dated inscription in Khmer (A.D. 611) was discovered at this site (Coedès 1931, 1954, Jenner 1980). The second reason for Angkor Borei's importance lies in its proximity to Phnom Da, from which the earliest documented Khmer art tradition (or Phnom Da style) derives its name and which produced some of the finest examples of pre-Angkorian sculpture. The third reason is that Angkor Borei has a great deal of ancient (albeit still undated) monumental constructions: not only is the site surrounded by a substantial wall that is topped by brick architecture (first noted by G. Groslier 1935), but French geographer Pierre Paris also suggested that Angkor Borei was the northern terminus for a first millennium A.D. canal network that linked eastern coastal sites with the Mekong delta (Paris 1931, 1941).

The contemporary community of Angkor Borei is located atop the eponymous archaeological site. Remnants of a multi-coursed brick wall enclose the site, and the total walled area is approximately 300 hectares. Some sections of the ancient wall still stand between 3-4 meters high today, as many as 6000 residents now occupy this walled area and houses and gardens cover most of the central and northern sections of the site. The southern portion of the walled site today contains slightly lower population densities, and areas flanking the southern wall are currently used as agricultural fields. Thus the site is damaged continuously by human occupation, and fieldwork and excavations take place on private property, frequently in people's yards. Previous field seasons (in 1995 and 1996) involved test excavations at five units, identified as AB1-AB6 on Figure 2.² Several studies, including results of paleoenvironmental research and the bioarchaeological analysis of human remains from a cemetery uncovered in this campaign, are now underway and will be reported in future publications. The following sections summarize preliminary results of the 1999 and 2000 excavations at the pagoda called Vat Komnou (AB7).

1999-2000 LOMAP Excavations at Vat Komnou

The location and richness of archaeological deposits at Vat Komnou required two field seasons of excavation to sample one portion of its cemetery. Archaeological fieldwork in 1999 was undertaken at fewer locations than planned because the Vat Komnou excavations were an unanticipated component of the field program. The 1999 field season ran from January 27, 1999-March 10, 1999 and involved nine archaeologists, one geoarchaeologist, 10 field laborers, and three laboratory assistants. The 2000 field season ran from May 30-July 13, 2000 and involved eight archaeologists, 11 field laborers and 2 laboratory assistants. In each season, LOMAP project members included faculty and students from the Royal University of Fine Arts (RUFA) in Phnom Penh and from the University of Hawai'i (Honolulu). The following section describes findings from each of the two field seasons.

In 1999, LOMAP crew members tested two additional areas of the site through excavation (AB7,

² This contour map was produced electronically by the Department of Topography and Geographic Sciences of the University of Glasgow. Note that contour map elevations are relative, and assume that floodwaters in the 1992 Finnmap aerial photographs are uniformly 2 m above sea level. Provision of surveyed control points in the Angkor Borei area, which do not yet exist, are necessary to obtain absolute elevations for this map.

AB8) and initiated a coring program as part of the paleoenvironmental research program (Stark and Bishop 2000). Locations for the paleoenvironmental research, still in progress, are identified on Figure 2 (Core Samples 1-2, Auger Samples 1-6).

The bulk of archaeological fieldwork, however, focused on a cemetery uncovered at Vat Komnou. Most field efforts in 1999 were devoted to excavating unit AB7, a 2 x 3 meter unit on the southern slope of a mound in the center of Angkor Borei (Figure 2). The modern Vat Komnou pagoda, and a number of

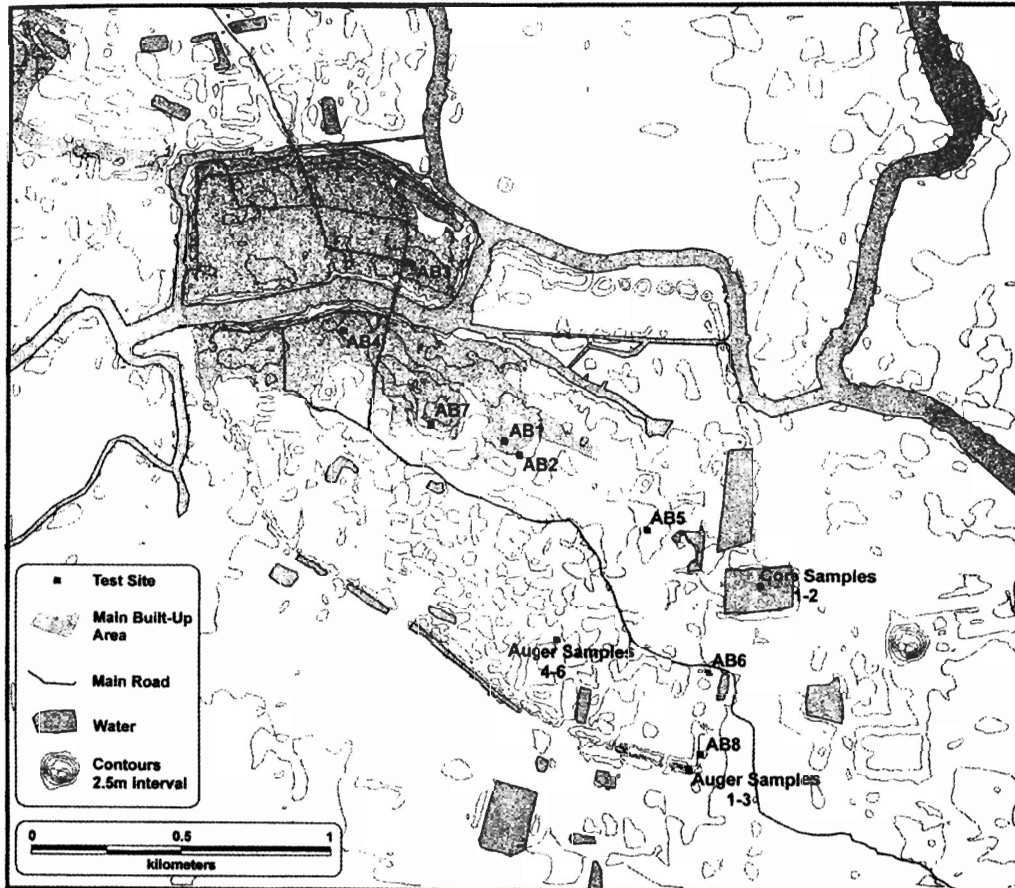


Figure 2. Digital elevation map of Angkor Borei (courtesy of the Department of Geography and Topographic Sciences, University of Glasgow).

associated buildings (including several classroom buildings), sits on top of the mound. Villagers today refer to this mound as the “royal palace” area. Its prominence today may derive, in part, from its central location; the mound is also the most elevated area within the walled site of Angkor Borei.

Interviews with villagers living near Vat Komnou suggested that ancient brick structures stood on its summit as recently as the 1930s. One school teacher recounted that, in his childhood, an old vihear (Buddhist worship hall) made of brick was still standing on Vat Komnou. Inside this vihear was at least one headless sculpture, and he noted that people worshipped every day at this building. Over the past decades, this brick structure (and perhaps others) was disassembled by villagers seeking to recycle materials.

The discovery of the Vat Komnou cemetery occurred in 1998 by accident. In 1998, a landowner whose property abuts the southern slope of Vat Komnou began clearing land (and the southern slope of the mound) to make house plots for his children. As his workmen removed earth from the southern edge



Figure 3. Excavations at the Vat Komnou cemetery (AB7). In this photograph, laborers assist Un Moninita, RUFA (center) and Bong Sovath, UH/ RUFA (right).

of the Vat Komnou mound, they accidentally uncovered human bones and associated artifacts, particularly whole earthenware vessels and beads. Interviews with the laborers suggest that they exposed at least eleven skeletons (and quite possibly more) before district officials halted their earth removal operations in 1998. Some burials were extended, but flexed burials were apparently most common. Villagers also reported finding some agglomerations of ash and carbonized bone fragments that might have been cremated human remains.

Archaeological excavations during 1999 took place upslope from this damaged area and reached a level ca. 3.65 meters below the mound's present surface (Figure 3). A total of 21.9 m² of archaeological matrix was excavated, recovering architectural fill and a wide range of artifacts. While ceramics (sherds, whole vessels, and unfired pellets) were the most common artifact category, excavations also recovered fragments of metal wire, slag, and minuscule amounts of gold leaf. Animal bone and shell fragments, beads, brick fragments, mineral samples, lithics, and unidentifiable vitrified materials were also recovered during excavations and during the subsequent screening process. Charcoal fragments that were found *in situ* were point-provenienced and collected as potential radio carbon samples.

One of the most important aspects of the 1999 excavations concerned the recovery of portions of 20 human skeletons. Most burials were inhumations, with a small number of possible secondary burials (bundles of human bones). No cremations (i.e., agglomerations of ash and carbonized bone fragments) were recovered during the 1999-2000 LOMAP excavations, and



Figure 4. Uppermost layer of Feature 1, the first human burial encountered during the 1999 LOMAP field season. Most burials were covered with mortuary goods like the pig mandibles seen here.

most human bone fragments could be assigned to specific burials. Associated grave goods generally included either pig skulls, globular earthenware jars, or both. Figure 4 depicts the uppermost layer of a burial feature (i.e., Feature 1), and contains fragmented pig jaws which presumably served as mortuary offerings. Many of the globular jars have ring bases and a burnished red slip. Some carnelian and glass beads were recovered with the burials. A few gold beads were also recovered, but no banded agate beads, frequently recovered in archaeological digs in the delta, were found. In addition, the bulk of glass beads were recovered from the matrix lying imme-

diately on top of the burial layer.

Time constraints prevented LOMAP from completing excavations of the entire cemetery at AB7 by the end of the field season in March 1999. Crew members reached the burial layer, ca. 3.65 meters below the present surface, but could not remove all the cemetery's exposed burials. With financial support from PRASAC (Programme de Réhabilitation et d'Appui au Secteur Agricole du Cambodge), a program sponsored by the European Union, LOMAP sealed the excavation unit with a 50 cm layer of clean sand and a 4-5 cm-thick layer of cement. This unusual site protection strategy proved remarkably effective. Through the installation of this cement layer and the protection of the excavation unit by members of the Vat and the landowner's family, the excavation unit was intact when LOMAP members returned for the 2000 field season.

Archaeological fieldwork during the 2000 field season continued excavations at the Vat Komnou cemetery (AB7). LOMAP's primary goal was to expand the excavation unit eastward by digging another 2 m x 2 m section in order to extend the east-west axis to 5 meters. Doing so would not only provide more artifacts and human remains, but might also illuminate aspects of burial lay-out and intra-cemetery relationships. The first task for LOMAP's 2000 field season involved removing the archaeological matrix from this new unit to the extant cemetery level, using 1 x 2 m blocks. In 1999, LOMAP crew members excavated blocks 1-3 (running west-east), and the 2000 unit included block 4 (west) and 5 (east). When archaeologists reached the cemetery layer in the (new) blocks 4 and 5, they removed the cement and sand layers from the 1999 excavations and took the cemetery layer down as a 2 m by 5 m unit. Figure 5 illustrates the 2 m by 2 m unit that LOMAP excavated during the 2000 field season. Doing so required excavating in 1 m x 1 m blocks across the unit. Excavators finished removing the burial layer from all but the easternmost blocks by the end of the season on July 13, 2000.

Excavations at Block 1 (the westernmost block in the unit) were continued until sterile soil was encountered at ca. 6.9 meters below the present surface. The stratigraphic profile in Block 1 of the Vat Komnou excavation unit parallels that seen in AB3 and AB4 from the 1996 field season. One important result of the 1999-2000 field season was the linkage of a uniform stratigraphy across major portions of the Angkor Borei site.

The 2000 excavations of the upper layers and the burial layer recovered nearly identical artifacts to those found in the 1999 field season. In the cemetery layer, crew members recovered human bones and, in some cases, entire human skeletons.

As was the case in the 1999 field season, the most important aspect of the 2000 fieldwork was the recovery of human remains: during the 2000 field season, portions of approximately 28 burials containing



Figure 5. Chhor Sivleng, RUFA, draws a human burial with assistance from Sok Kimsan, RUFA.



Figure 6. Burial features in Blocks 2 and 3 of the Vat Komnou cemetery (AB7), from top of the trench.

human remains were excavated. Burials varied in the integrity of associated human remains (Figure 6). This pattern was observed first in 1999, but more systematically explored in 2000. Some human burials were incomplete simply because portions of the bodies extended beyond the excavation unit (e.g., a left leg, or the upper torso). In other cases, skeletal portions of burials were missing due to modern villagers' land clearing activities. In addition, some human skeletons that lacked certain skeletal elements may have been disturbed in the distant past as people continued to bury their dead in this densely-packed cemetery. Both the sheer number

of burials recovered in a relatively compact space, and the fact that many burials lay directly atop each other, suggests that the cemetery was constructed through multiple successive burial events.

As in 1999, most burials excavated in 2000 were inhumations, with a small number of possible secondary burials. No cremations were recovered the precise nature of each burial is currently under analysis as part of the broader bioarchaeological study conducted by Dr. Michael Pietruszewsky (University of Hawai'i). Grave goods recovered through the 2000 excavations were identical to those of 1999, including either pig skulls, globular earthenware jars, or both. Likewise, many of these globular jars have ring bases and a burnished red slip. Small numbers of glass beads were recovered directly with the burials, although the overlying matrix contained hundreds of stray beads. By the end of the 2000 field season, LOMAP project members had removed nearly every burial in the unit (excepting the easternmost block, Block 5).

Initial Analyses and Discussion of Findings from the Vat Komnou Excavations

One of the most important questions surrounding the 1999-2000 excavations concerns the age of the cemetery and, indeed, of the entire deposit excavated by LOMAP at Vat Komnou. Interviews with local villagers regarding recent land clearing activities indicate that the cemetery originally extended another 10-20 meters south of the excavated area. It is also possible that the cemetery originally extended northward underneath the present mound. The ancient cemetery, and the construction layer that overlies the cemetery, may indeed form the bulk of the 5-8 meter-high mound that is visible today. Systematic excavations in the mound's center, however, are necessary to confirm this hypothesis.

Initial interpretation of the Vat Komnou stratigraphic sequence hinged on extant knowledge of stratigraphic sequences in the two units excavated in 1996 (AB3, AB4), since stratigraphic sequences appear similar in the three units. The dating program for the Vat Komnou/AB7 unit is composed of two stages. The first stage involved relative dating by comparing the stratigraphic sequence at AB7 with sequence from units excavated in 1996. The second stage involved submission of radiocarbon samples that represent different points in the unite's stratigraphic sequence and span the area's occupational history. In November 2000, seven radiocarbon samples were submitted to the University of Waikato Radiocarbon Laboratory (New Zealand). Results of those analyses are presented in Table 1 as raw data and also

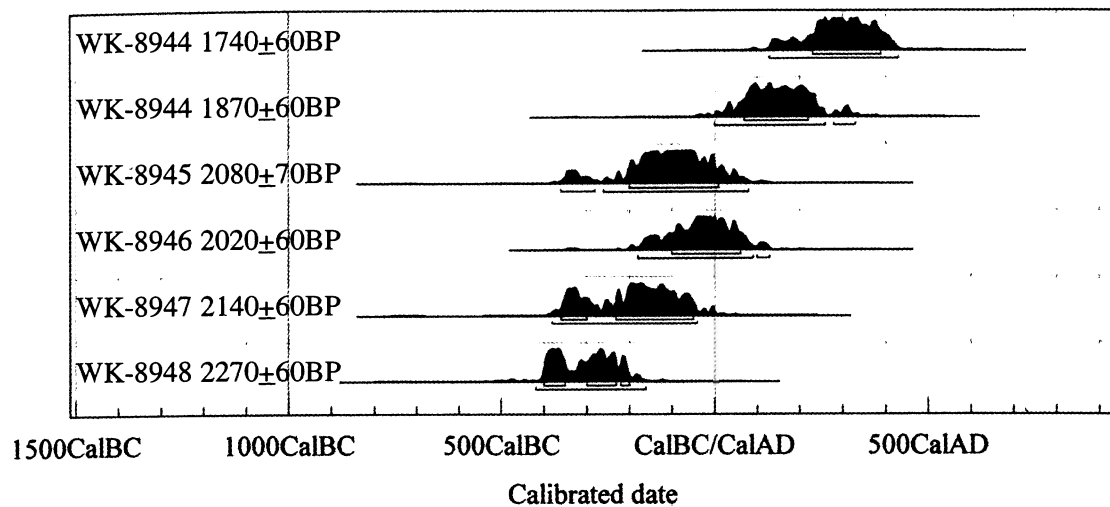


Figure 7. Calibrated radiocarbon dates from Vat Komnou cemetery; samples are plotted in stratigraphic order from top of deposit to bottom.

calibrated to the 2 range, using the OxCal 3.5 program (Bronk Ramsey 1995) and the atmospheric data set published in Stuiver et al. (1998). The calibrated data are additionally provided in graphic form in Figure 7. The context and significance of these dates are discussed in the following section.

In most respects, the stratigraphic sequence in the Vat Komnou unit (AB7) closely parallels stratigraphic sequences in AB3 and AB4 (Stark et al. 1999: Figures 2, 3). The Vat Komnou unit has a more intact upper stratum than did either AB3 or AB4 as the uppermost stratum in these latter units had been removed through construction activity during the 1980s and 1990s prior to archaeological work. In the Vat Komnou unit, this stratum is called the “construction layer” for its abundant sandstone and brick fragments. The size and abundance of sandstone and brick fragments in this layer may represent the foundation materials for brick structures that no longer stand on the grounds of Vat Komnou.

Unfortunately, the construction layer in AB7 lacked significant organic materials, such that no samples were submitted from the unit’s uppermost stratum (layers 1 & 2). As mentioned earlier, interviews with villagers in the vicinity in 1999 suggest that the top of the Vat Komnou mound contained considerable numbers of collapsed brick structures until as recently as the 1930s. Thermoluminescence dating work at other brick structures at the site may provide a baseline for dating this construction layer at Vat Komnou. Work in 1996 at another collapsed brick structure (north of Vat Komnou) produced a provisional thermoluminescence date in the 10th century A.D. (Stark et al. 1999: Table 1). Dates for deposits underlying this stratum show that the construction layer postdates the 5th century A.D. It is of course possible that brick construction activities continued at the settlement for many centuries.

It is, however, the cemetery stratum which holds the greatest interest in the Vat Komnou unit at this point in our research. Special care was taken to sample organic materials immediately above and immediately below this layer of AB7. As presented in Table 1, three samples bracket the layer: Wk-8944 (top of burial layer), Wk-8945 (middle of burial layer), and Wk-8946 (bottom of burial layer). The bottom of the cemetery layer is signaled stratigraphically by an abrupt change in matrix and artifact type, with the

underlying layer characterized by Fine Orangeware ceramics (see Stark 2000:76-77). Using the calibrated results presented in Table 1, it is likely that the cemetery may have been in use from approximately the 2nd century B.C. to the 4th century A.D., which is precisely the time that the Chinese visited the Mekong delta and described the “Kingdom of Funan” (Pelliot 1903).

Additional dates from the second phase of the dating program are clearly necessary to clarify the time range of cemetery use, but it is already evident that radiocarbon dates from AB7 span the period of time associated with Funan. Moreover, this cemetery has provided the greatest number of ancient human remains of any Cambodian archaeological site. It is also of potential importance that the Vat Komnouv cemetery may include two of the four Funan mortuary practices that the Chinese described in the 5th and 6th centuries A.D.: “burial by fire” (presumably cremation) and “burial by earth” (presumably inhumation) (Pelliot 1903: 270). Previous archaeological research across mainland Southeast Asia, and particularly in Thailand and Vietnam, has recovered a large number of prehistoric cemeteries that contain inhumations, rather than cremations (see summaries in Higham 1989, 1996). These cemeteries have been chronometrically dated to a period that ranges from ca. 2500 B.C. - 500 B.C. Evidence of contact between mainland Southeast Asia and South Asia, in the form of a variety of Southeast Asian artifacts, dates as early as the 4th century B.C. (Bellina 1998, Glover 1998). It is not clear, however, when -and whether- South Asian contact involved wholesale changes in mortuary practices from inhumation to cremation. Because the earliest radiocarbon dates in Angkor Borei’s occupation date to the 5th / 4th centuries B.C., studying variability in ancient mortuary practices at this site could shed light on the timing and nature of Indic influences in the Mekong delta. Thus far, cremation has been indicated only by villagers’ reports.

The fact that systematic excavations did not recover archaeologically identifiable cremations is problematic, but the area excavated as AB-7 is too small to generalize across the entire cemetery. The remaining two burial techniques described in the Chinese annals (disposal in the river and disposal in the fields) are not easily archaeologically visible. Findings from the bioarchaeological studies now underway should provide still more information on this time period in mainland Southeast Asia.

The penultimate date in the sequence brackets an important period of time that may conform to the Late Iron Age (following Higham 1989). The ceramic assemblage associated with this stratigraphic layer contrasts markedly with assemblages from later periods, and bears some resemblance to late prehistoric assemblages from the Khorat Plateau, in northeastern Thailand. The terminal date for the unit (sample Wk-8948), which extends back to the 5th century B.C., parallels dates found at the interface of sterile soil in AB3 and AB4 during the 1996 excavations. This date also provides further support for the contention that a community in the Angkor Borei vicinity was established several hundred years before the arrival of the Chinese and the emergence of the region’s earliest state.

The settlement of Angkor Borei was evidently a contemporary of other excavated sites in central and western Thailand (such as Chansen and Ban Don Ta Phet) and the Oc Eo and “Oc Eo Culture” sites of southern Vietnam. The settlement of Angkor Borei in the mid-first millennium B.C. also corresponds to the inception of Southeast Asia’s contact with South Asia (e.g., Bellina 1998, Glover 1998). One of the future challenges of LOMAP is to undertake technical analyses that shed light on patterns of commodity production and circulation throughout and beyond the Mekong delta between 500 B.C. and A.D. 500.

Beads made of a variety of different materials — particularly glass, carnelian, and agate — provide one material indicator of the period that begins ca. 500 B.C. and a potential signature of exchange networks. Archaeologists believe that Southeast Asian populations at some early historic period sites engaged in glass bead production (e.g., Basa et al., 1991, Bronson 1990, Malleret 1960), although it remains unclear whether

Layer- Level	Provisional AB Phase Assignment	Layer Description	Waikato Lab #	Result (BP)	Calibrated Result: 2 sigma range (with probability)
3 - 5	Phase 3b	Construction layer	Wk-8914	1740 +/- 60	AD 130 - AD 430 (95.4%)
6 - 14	Phase 3a/3b	Top of layer immediately above burial layer	Wk-8944	1870 +/- 60	AD 260 (91.4%) AD 280 - AD 330 (4.0%)
6 - 15	Phase 3a	First level in cemetery layer	Wk-8945	2080 +/- 70	360 BC - 280 BC (7.9%) 260 BC - AD 80 (87.5%)
8 - 24	Phase 2	Bottom of burial layer/top of Fine Orangeware lens	Wk-8946	2020 +/- 60	180 BC - AD 90 (92.9%) AD 100 - AD 130 (2.5%)
8/9 - 31	Phase 1/2	Interface between bottom of Fine Orangeware lens and lower layer	Wk-8947	2140 +/- 60	380 BC - 40 BC (95.4%)
10 - 48	Phase 1	Bottom of lower layer/ interface with sterile soil	Wk-8948	2270 +/- 60	420 BC - 160 BC (95.4%)

Table 1. Radiocarbon dates and provisional phase designations from 1999-2000 LOMAP excavations at Vat Komnou (AB7).

they manufactured glass or used imported glass materials from elsewhere, like South Asia. However, most archaeologists believed until recently that the carnelian and agate beads that mark this time period across mainland Southeast Asia derived from South Asia, recent research by Theunissen et al. (2000) indicates that local carnelian and agate sources were available, and might have been exploited by Southeast Asians during the early historic period. Few bead studies have included samples from the Mekong delta because of the lack of secure specimen provenance. Ongoing compositional studies of beads recovered through the excavations at Vat Komnou may help us to understand regional economic systems during this period.

Conclusions

Radiocarbon dates from the 1999-2000 excavations at Vat Komnou largely support the first half of the site chronology offered previously (see Stark 2000:73): (1) Angkor Borei Phase 1 (ca. 400 B.C. - 200/100 B.C.), (2) Angkor Borei Phase 2 (ca. 200/100 B.C. - A.D. 200/300). The cemetery, which provisionally dates to Angkor Borei Phase 3, requires additional dates to firmly bracket its period of use. So, too, does the uppermost construction layer. Angkor Borei was settled many centuries before the Chinese visited this region, and its occupational sequence continued for centuries afterward - perhaps unabated until the present day.

Research presented here is preliminary in nature, and several studies will be completed in the next few years that will illuminate our understanding of Angkor Borei and this cemetery. What is already clear, however, is that LOMAP excavations have linked stratigraphic sequences in three different parts of the site. In each unit, the earliest dates suggest that the community of Angkor Borei was founded by the 5th or 4th century B.C. This finding is important for two reasons. First, the early AB7 dates provide an additional line of evidence that the settlement was established nearly a millennium earlier than dates previously available through analysis of historical period evidence (see also Stark 1998 and Stark et al., 1999). Second, the earliest occupation of the settlement was more substantial in size than had been suspected previously. Before the 1999-2000 excavations, the LOMAP team hypothesized that the settlement was founded by a small population and expanded to reach its current (and maximum) size of 300 hectares over the course of several centuries. Equally early dates from the base of AB-7, located some distance from units excavated in 1996, may suggest that Angkor Borei was one of the first large urban centers in mainland Southeast Asia. Otherwise, the earliest well-dated large urban centers documented to date are situated in northern Vietnam at the site of Co Loa (reviewed in Higham 1989:193-194) and in central Burma at Pyu sites such as Beikthano (Aung-Thaw 1968, Stargardt 1990).

A second and equally important result of the work thus far lies in the secure dating of the human burial population to the early historic period that is associated with "Funan." Historians now feel certain that the polity the Chinese described as "Funan" lay in the Mekong delta, and was occupied by the 2nd century A.D. Although Vietnamese archaeologists have excavated more than 70 contemporaneous sites on the Vietnamese side of the delta (which they ascribe to the "Oc Eo culture"), these sites date to the mid-1st millennium A.D. and are constituted primarily by architectural remains. LOMAP has thus produced the only early historic period cemetery population available for study, and a rare example of burials from this period of time throughout mainland Southeast Asia. In many respects, the most useful findings from the 1999-2000 field seasons lie ahead, and future reports will continue to probe the ancient history of Angkor Borei.

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References Cited

Aung Thaw, U., 1968, *Report on the Excavations at Beikthano*, Ministry of Union Culture, Rangoon.

Basa, K. K., Glover, I. C., and Henderson, J., 1991, "The Relationship Between Early Southeast Asian and Indian Glass," *Indo-Pacific Prehistory Association Bulletin* 10: 366-385.

Bellina, B., 1998, "La formation des réseaux d'échanges reliant l'Asie du Sud et l'Asie du Sud-Est à travers le matériel archéologique (VI^e siècle av. J.-C. - VI^e siècle ap. J.-C.) Le cas de la Thaïlande et la Péninsule Malaise," *Journal of the Siam Society* 86 (Parts 1 & 2): 89-105.

Bronson, B., 1990, "Glass and Beads at Khuan Lukpad, Southern Thailand," 213-230, in I. Glover and E. Glover, eds., *Southeast Asian Archaeology 1986: Proceedings of the First Conference of Southeast Asian Archaeologists in Western Europe*, British Archaeological Reports, Oxford.

Brown, R. L., 1996, *The Dvaravati Wheels of the Law and the Indianization of South East Asia*, E.J. Brill, Leiden, New York and Köln.

Christie, A. H., 1979, "Lin-I, Fu-nan, Java," 281-287, in R. B. Smith and W. Watson, eds., *Early South East Asia: Essays in Archaeology, History, and Historical Geography*, Oxford University Press, New York.

Coedès, G., 1931, "Deux inscriptions Sanskrites de Founan," *Bulletin de l'École Française d'Extrême-Orient* 31: 1-23.

Coedès, G., 1954, *Inscriptions du Cambodge*, École Française d'Extrême-Orient, Paris.

Coedès, G., 1968, *The Indianized States of Southeast Asia*, edited by W. F. Vella, translated by S. B. Cowing, University of Hawai'i Press, Honolulu.

Dalsheimer, N. and P-Y Manguin, 1998, "Visnu mitrés et réseaux marchands en Asie du Sud-Est : nouvelles données archéologiques sur le Ier millénaire ap. J.-C.," *Bulletin de L'École Française d'Extrême-Orient* 85: 87-123.

Dao Linh Côn, 1996, "The Oc Eo Burial Group Recently Excavated at Go Thap (Dong Thap Province, Viêt Nam)," 111-117, in P-Y Manguin, ed., *Southeast Asian Archaeology 1994: Proceedings of the 5th International Conference of the European Association of Southeast Asian Archaeologists*, vol. 1, Centre for Southeast Asian Studies, University of Hull, England.

Fox, J. and J. Ledgerwood, 1999, "Dry-Season Flood-Recession Rice in the Mekong Delta: Two Thousand Years of Sustainable Agriculture?," *Asian Perspectives* 38, 1: 37-50.

Glover, I. C., 1998, "The Role of India in the Later Prehistory of Southeast Asia," *Journal of Southeast Asian Archaeology* 18: 21-49.

Glover, I. C., and Henderson, J., 1995, "Early Glass in South and Southeast Asia and China," in Scott, R. and Guy, J., eds., *Southeast Asia and China: Art, Interaction and Commerce, Colloquies on Art and Archaeology in Asia* 17, University of London Percival David Foundation of Chinese Art, London.

Griffin, P. B., Ledgerwood, J., and Chuch Phoeurn, 1999, "The Royal University of Fine Arts, East-West Center, and University of Hawai'i Program in the Archaeology and Anthropology of the Kingdom of Cambodia, 1994-1998," *Asian Perspectives* 38, 1: 1-6.

Griffin, P. B., Ledgerwood, J. and Stark, M. T., 1996, "Education, and Cultural Resource Management at Angkor Borei, Cambodia," *CRM: Cultural Resources Management* 19, 3: 37-41.

Griffin, P. B., J. Ledgerwood, and Chuch Phoeurn, 1999, "The Royal University of Fine Arts, East-West Center, and University of Hawai'i Program in the Archaeology and Anthropology of the Kingdom of Cambodia, 1994-1998," *Asian Perspectives* 38, 1: 1-6.

Higham, C., 1989, *The Archaeology of Mainland Southeast Asia*, Cambridge University Press, Cambridge.

Groslier, G., 1935, "Angkor Borei," *Bulletin de l'École Française d'Extrême-Orient* 35: 491.

Ha Van Tan, 1986, "Oc Eo: Endogenous and Exogenous Elements," *Vietnam Social Sciences* 1-2, 7-8: 91-101.

Ishizawa, Y., 1996, "Chinese Chronicles of 1st-5th Century A.D. Funan, Southern Cambodia," 11-31, in R. Scott and J. Guy, *South East Asia and China: Art, Interaction and Commerce, Colloquies on Art and Archaeology in Asia* 17, University of London Percival David Foundation of Chinese Art, London.

Jacob, J. M., 1979, "Pre-Angkor Cambodia: Evidence from the Inscriptions in Khmer Concerning the Common People and their Environment," 402-426 in R. B. Smith and W. Watson, eds., *Early South East Asia: Essays in Archaeology, History, and Historical Geography*, Oxford University Press, New York.

Jacques, C., 1979, "'Funan,' 'Zhenla': The Reality Concealed By These Chinese Views of Indochina," 371-379, in R. B. Smith and W. Watson, eds., *Early South East Asia: Essays in Archaeology, History, and Historical Geography*, Oxford University Press, New York.

Jenner, P. N., 1980, *A Chrestomathy of Pre-Angkorian Khmer. I. Dated Inscriptions from the Seventh and Eighth Centuries (A.D. 611-781)*, Southeast Asia Paper, No. 20, Part I, Center for Southeast Asian Studies, University of Hawai'i, Honolulu.

Mabbett, I., 1977, "The 'Indianization' of Southeast Asia: Reflections on the Historical Sources," *Journal of Southeast Asian Studies* 8, 2: 143-161.

Malleret, L., 1959, *L'archéologie du Delta du Mékong, 1. L'exploration archéologique et les fouilles d'Oc-Èo*, École Française d'Extrême-Orient, Paris.

Malleret, L., 1960, *L'archéologie du Delta du Mékong, 2. La civilisation matérielle d'Oc-Èo, 2 vols.*, École Française d'Extrême-Orient, Paris.

Malleret, L., 1962, *L'archéologie du Delta du Mékong, 3. La culture du Fou-Nan, 2 vols.*, École Française d'Extrême-Orient, Paris.

Manguin, P.-Y., 1999, *Mission Archéologique du Delta du Mékong: Rapport sur la Campagne 1998*, École Française d'Extrême-Orient, Paris.

Paris, P., 1931, "Anciens canaux reconnus sur photographies aériennes dans les provinces de Ta-Kev et de Chau-Doc," *Bulletin de l'École Française d'Extrême-Orient* 31: 221-224.

Paris, P., 1941, "Notes et mélanges: anciens canaux reconnus sur photographies aériennes et les provinces de Ta-Keo, Chau-Doc, Long Xuyen et Rach-Gia," *Bulletin de l'École Française d'Extrême-Orient* 41: 365-370.

Pelliot, P., 1903, "Le Fou-nan," *Bulletin de l'École Française d'Extrême-Orient* 3: 248-303.

Ramsey C. Bronk, 2000, "Radiocarbon Calibration and Analysis of Stratigraphy," *The OxCal Program version 3.5*, Oxford University, Oxford, England.

Stargardt, J., 1990, *The Ancient Pyu of Burma: Early Pyu Cities in a Manmade Landscape, vol. 1*, Publications on Ancient Civilization in South East Asia, Cambridge, England.

Stark, M.T., 1998, "The Transition to History in the Mekong Delta: A View from Cambodia," *International Journal of Historical Archaeology* 2, 3: 175-204.

Stark, M.T., 2000, "Pre-Angkor Earthenware Ceramics from Cambodia's Mekong Delta," *Udaya* 1: 69-90.

Stark, M.T., and Bishop, P., 2000, "Environmental Change and Early State Formation in Cambodia's Mekong Delta: Report on the 1999 Field Season, Angkor Borei, Southern Cambodia (National Geographic Society Grant # 6087-97)," Department of Anthropology, University of Hawai'i, Honolulu.

Stark, M.T., P. B. Griffin, Chuch Phoeurn, J. Ledgerwood, M. Dega, C. Mortland, Dowling, J. M. Bayman, Bong Sovath, Tea Van, Chhan Chamroeun., and D. K. Latinis, 1999, "Results of the 1995-1996 Field Investigations at Angkor Borei, Cambodia," *Asian Perspectives* 38, 1: 7-36.

Stuiver, M., P. J. Reimer, E. Bard, J. W. Beck, G. S. Burr, K. A. Hughen, B. Kromer, F. G. McCormac, J. v.d. Plicht, and M. Spurk, 1998, "Revised Data Set," *Radiocarbon* 40: 1127-1151.

Theunissen, R., Grave, P., and Bailey, G., 2000, "Doubts on Diffusion: Challenging the Assumed Indian Origin of Iron Age Agate and Carnelian Beads in Southeast Asia," *World Archaeology* 32,1: 84-105.

Trinh Thi Hoà, 1996, "Réflexions sur les vestiges de la culture d'Óc Eo," *Etudes Vietnamiennes* 50 (120): 111-123.

van Liere, W. J., 1980, "Traditional Water Management in the Lower Mekong Basin," *World Archaeology* 11(3): 265-280.

Vickery, M., 1998, *Society, Economics, and Politics in Pre-Angkor Cambodia: The 7th-8th Centuries*, The Centre for East Asian Cultural Studies for Unesco, the Toyo Bunko, Tokyo.

Vo Si Khai, 1998, "Plans architecturaux des anciens monuments du Delta du Mékong du 1^{er} au 10^e siècles AD.," 207-214, in P-Y Manguin, ed., *Southeast Asian Archaeology 1994: Proceedings of the 5th International Conference of the European Association of Southeast Asian Archaeologists, vol. 1*, Centre for Southeast Asian Studies, University of Hull, England.

Wheatley, P., 1983, *Nagara and Commandery: Origins of the Southeast Asian Urban Traditions*, Research Papers Nos. 207-208, Department of Geography, University of Chicago, Chicago.