Results of the 1995–1996 Archaeological Field Investigations at Angkor Borei, Cambodia

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ALTHOUGH ANCIENT STATES EMERGED in several parts of Southeast Asia (Bentley 1986; Coedès 1968; Higham 1989*a,* 1989*b*), few of the world's archaeologists look to Southeast Asia to study the development of sociopolitical complexity. One reason for this lack of attention is that other Old World regions, such as the Near East, have dominated research on early civilizations (see also Morrison 1994). Perhaps another reason lies in archaeologists' current focus on prehistoric research: we have made great strides in understanding key changes in the prehistory of Southeast Asia (see Bellwood 1997 and Higham 1989*a,* 1989*b,* 1996 for reviews). Our understanding of the archaeology of early state formation in mainland Southeast Asia, however, has developed more slowly (Hutterer 1982). Many long-term research programs on this topic have been initiated only in the past decade (Allard 1994; Glover et al. 1996; Glover and Yamagata 1995; Higham 1998; Moore 1992, 1998; Yamagata and Glover 1994). Nowhere is this gap in our understanding more acute than in Cambodia, where one of the great ancient states of Southeast Asia flourished during the ninth to fourteenth centuries.

Cambodia has a rich cultural heritage, but little is known about periods that preceded the founding of Angkor in A.D. 802. French archaeologists visited pre-Angkorian sites throughout Indochina (particularly Cambodia and Viet Nam) and translated inscriptions from these sites between 1920 and 1950. Their work recovered statuary and inscriptions from pre-Angkorian times, and they offered the first theories regarding the origins of Cambodian civilization (e.g., Briggs 1951; Coedès 1968; Groslier 1956, 1961, 1966; Jacques 1990). Soon after 1970,

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civil war put an end to active archaeological research throughout most of Cambodia. Although several important reviews of Cambodian archaeology appeared after this time (e.g., Higham 1989*a*: 245–268, 321–355, 1996: 208–211; Mourer 1977, 1988, 1994), archaeological field research has only recently resumed throughout the country. Now the demand is growing for archaeological studies of the origins of Khmer civilization, which lie deep in the pre-Angkorian period. Such studies not only illuminate our understanding of the origins of Khmer civilization but also provide a comparative example of state formation in the lowland tropics.

ARCHAEOLOGY OF THE MEKONG DELTA

One of the more promising developments in Cambodian archaeology is taking place in Cambodia's Mekong Delta through the Lower Mekong Archaeological Project (or LOMAP), which is one portion of a broader University of Hawai'i/East-West Center/Royal University of Fine Arts project (Griffin et al. 1996). The Mekong Delta region is famous as the heartland of one of the earliest civilizations in mainland Southeast Asia. Called "Funan" by visiting Chinese dignitaries in the third century A.D., it reputedly contained multiple urban centers between the first and sixth centuries A.D. (e.g., Coedès 1968; Jacques 1979; Vickery 1986, 1998). Brief excavations in the 1940s at the site of Oc Eo revealed an elaborate system of water control, monumental architecture, and rich material culture (Higham 1989*a*: 245–254; Malleret 1959–1963). Malleret's research suggested that this early historic period site was a node in an international maritime trading network, and he argued that Oc Eo was the coastal entrepôt for the polity the Chinese referred to as Funan. Malleret's work was truncated by World War II, and strife during the ensuing three decades prevented archaeologists from working in the region. Vietnamese archaeologists resumed work in the Mekong Delta after 1975, when the Social Science Institute (Ho Chi Minh City) established a long-term research program to study the early historic period.

Vietnamese archaeologists refer to cultural manifestations from this period as the "Oc Eo culture" (e.g., Bui Phat Diem et al. 1997; Dang Van Thang and Vu Quoc Hien 1997; Dao Linh Côn 1998; Ha Van Tan 1986, Lê Xuân Diêm et al. 1995; Pham Duc Manh 1996, 1997; Trinh Thi Hòa 1996; Vo Si Khai 1998), and they have worked intensively in the Mekong Delta and in regions immediately east of the delta. Results from this research are more accessible today than ever before, as Vietnamese archaeologists have recently begun to publish their findings in Western-language publications. Although the delta itself contains little evidence of prehistoric occupation, work at such sites as Bung Bac (Pham Duc Manh 1996, 1997) and in the Vam Co River basin (Bui Phat Diem et al. 1997) suggest that parts of southern Viet Nam were occupied by c. 4000 B.P. Whether alluviation has obscured a similar sequence in the delta remains unclear, and requires geomorphological investigation.

Extensive Vietnamese research on the Oc Eo culture suggests a complex occupation of the Mekong Delta after 500 B.C., which may have increased by the mid–first millennium A.D. Archaeologists have identified at least three forms of sites: (1) residential sites, some of which contain fragments of wooden house piles; (2)

architectural sites, which contain either brick or stone foundations (subterranean or aboveground) and building fragments; and (3) funerary sites or cemeteries, which contain either jar burials or brick constructions whose bases contain human cremations (e.g., Dao Linh Côn 1998; Ha Van Tan 1986; Trinh Thi Hòa 1996; Vo Si Khai 1998). Archaeologists have recovered additional inscriptions from areas such as the Plain of Reeds that date to this period (Trinh Thi Hòa 1996 : 117). This research suggests an uninterrupted sequence of occupation in southern Viet Nam since 4000 B.P. and suggests continuities in material culture from the prehistoric through historic periods in the region.

We have reason to believe that a similar sequence characterized the Cambodian side of the Mekong Delta, but we currently know very little about the early historic sites in this region. Most of our knowledge derives from unprovenienced looted artifacts from these sites that appear in the markets of Phnom Penh and, increasingly, in private collections. Interviews with villagers in Angkor Borei suggest that large-scale looting began in the early 1990s, and this problem also affects Viet Nam: Trinh Thi Hòa (1996 : 123) concluded that not one Oc Eo culture site in southern Viet Nam is now intact.

Very little is known of the archaeology of most early states that developed throughout mainland Southeast Asia between the first and sixth centuries A.D. Polities or mandalas emerged in river valleys from central Viet Nam to Burma during this time (e.g., Bentley 1986; Brown 1996; Higham 1989*a;* Vallibhotama 1992). Historians and archaeologists continue to discuss and contest the origins of these early Southeast Asian states (Bentley 1986; Reynolds 1995; Stark 1998). To many historians (e.g., Coedès 1968; Hall 1985; Wheatley 1979, 1983), the development of maritime commerce and Hindu influence stimulated early state formation in polities along the coasts of mainland Southeast Asia, where passive indigenous populations embraced notions of statecraft and ideology introduced by outsiders. Yet archaeological research—gleaned from Late Prehistoric sites throughout major river valleys and deltas of what is now Burma (Irrawaddy), Thailand (Chao Phraya, Mun and Chi on the Khorat Plateau), Viet Nam (Red River, Tonkin region), and Cambodia (Mekong)—seems to suggest otherwise.

For most archaeologists, the transition to history involved the culmination of long-term processes that began in the Late Prehistoric period (e.g., Higham 1989*b;* Welch 1989; White 1995). Careful archaeological documentation of these early historic period settlements may resolve issues concerning their relationship to the Funan polity described by the Chinese. Studying the rise of sociopolitical complexity in the Mekong Delta also provides insights on the nature of interregional interaction, and on the articulation between local systems of production with varying scales of distribution. In this article, we summarize results of two seasons of field investigations by members of the University of Hawai'i (UH)/East-West Center (EWC)/Royal University of Fine Arts (RUFA) team at the site of Angkor Borei (Takeo Province) in southern Cambodia.

ARCHAEOLOGICAL FIELDWORK: 1995 AND 1996

Archaeological work described here concentrates on excavations at areas within the walled and moated site of Angkor Borei (Takeo Province). Angkor Borei is

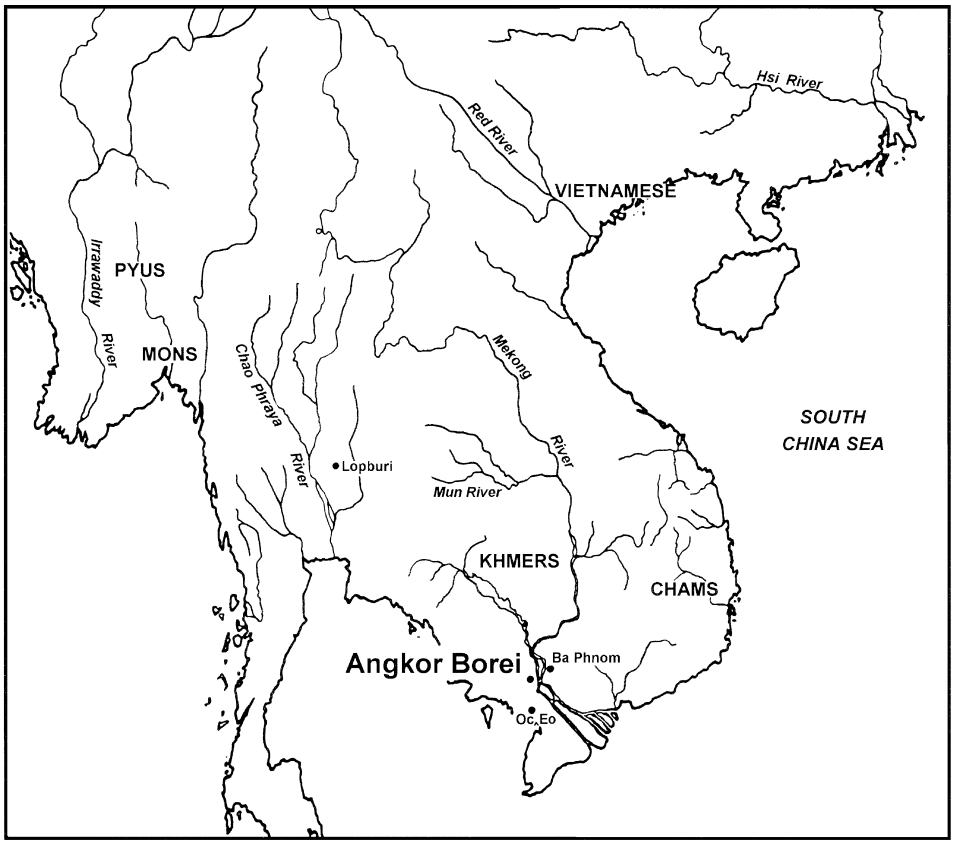

Fig. 1. Location of Angkor Borei in mainland Southeast Asia (adapted from Hall 1985 : 66, Map 3).

situated at the western edge of the Mekong Delta, at 10°59′ N and 104°58′ E (Fig. 1). Angkor Borei is located on the southeastern edge of elevated land in this region, and is surrounded by low-lying delta in all directions except the northwest. Most of the Mekong Delta has an altitude of c. 2 m above sea level (Brocheux 1995), and the altitude around Angkor Borei varies from approximately 2 to 10 m above sea level. To the south of the town lie two hills: Phnom Angkor Borei (or Angkor Borei Mountain) has a peak 170 m above sea level, and Phnom Da has twelfth- and perhaps sixth-century temple structures (see Dowling, this issue). Because a modern town sits atop the ancient site of Angkor Borei, several activities currently threaten to destroy this archaeological site.

Bulldozing areas of the site to obtain road construction fill in 1996 severely damaged one ancient brick structure. Many routine types of activities, such as gardening, cleaning, use of work areas, house construction, and road maintenance, gouge into archaeological deposits and damage the site. Villagers have also looted the site for marketable artifacts, a problem that villagers claim has intensified in the past five years in response to increased demand. Despite various destructive processes, the site of Angkor Borei still contains abundant archaeological

deposits that warrant a long-term research program of archaeological field investigation and laboratory analysis.

Archaeological research at Angkor Borei combines teaching with research in a modified field school setting (Griffin et al. 1996). In 1995 and 1996, graduates of the archaeology program at the Royal University of Fine Arts worked with American archaeologists to obtain experience in field excavations and mapping. By 1996, three advanced Cambodian students provided assistance in supervising excavations on the site during the project. Archaeological research at Angkor Borei through the Lower Mekong Archaeological Project (begun in 1995) is part of a broader research program to investigate settlement history and development during the early historic period in the lower Mekong region. This multiyear research program involves four phases, each of which emphasizes international collaboration and participation by specialists in ancillary disciplines, from archaeobotany and geomorphology to bioarchaeology and, ideally, archaeological conservation.

PREVIOUS RESEARCH AT ANGKOR BOREI

Although the UH/EWC/RUFA Cambodia Project represents the first anthropological archaeological research at Angkor Borei, many archaeologists have visited and/or described this site in the past. The earliest dated Khmer inscriptions (K. 557 and K. 600 [Jenner 1980]) were found at Angkor Borei and date to the early seventh century A.D., making these some of the earliest inscriptions found in Cambodia (Coedès 1931, 1954). Pelliot's (1903) translation of Chinese documentary accounts of the region led previous historians to equate Angkor Borei with an inland capital of the Funan "kingdom" that flourished between the first and sixth centuries A.D. (e.g., Christie 1979; Coedès 1968; Hall 1982, 1985; Wheatley 1983). Scholars continue to debate the precise location of Funan (e.g., Colless 1972–1973; Hoshino n.d.; Loofs-Wissowa 1968–1969; Vickery 1996, 1998). Thus far, we know the origins, culture, and dynastic sequence of Funan primarily through Chinese descriptions and oral traditions of the area (Gaudes 1993; Jacob 1979; Jacques 1979; Ledgerwood 1996; Stark 1998), rather than through systematic archaeological research.

Several French art historians, archaeologists, and geographers visited Angkor Borei to acquire collections for the National Museum during the first half of the twentieth century. French geographer Etienne Aymonier (1900) described architectural features of the site (in particular the surrounding wall). Interviews with current villagers suggest that some French scholars took several pieces of statuary from temples at Angkor Borei during the 1930s, and Bernard Groslier's (1935) report on the site seems to confirm local reports. As part of his research on the Vietnamese side of the Mekong Delta, Louis Malleret drew limited comparisons between the material culture of Oc Eo and that of Angkor Borei (e.g., Malleret 1960, II : 99–100, pl. 10). More recently, geographers (Lind 1981; van Liere 1980) have used aerial photography of the region to make inferences regarding settlement and economy during the early historic period. Angkor Borei is clearly important for historical reasons, and our field investigations have begun to reveal the complex stratigraphy and history of this ancient city.

GENERAL OBJECTIVES OF PRELIMINARY RESEARCH AT ANGKOR BOREI

The Lower Mekong Archaeological Project focuses on the development of political complexity in this region during the early historic period, c. 500 B.C. to A.D. 500. Developing a regional chronology for southern Cambodia is one of our primary goals. To do so, we must combine systematic excavations and radiometric dates from Angkor Borei to build a ceramic chronology for use elsewhere in the region. Another goal of our project is to document Angkor Borei's occupational sequence as a long-term record of human occupation in the area. The scale and complexity of Angkor Borei suggest that it became a dominant center in the delta by the mid–first millennium A.D. Future work at other sites in the region may extend our sequence further back in time, and provide clues regarding shifts in settlement after the sixth century A.D. Work at Angkor Borei yields information on demographic and economic changes in the area with the development of interregional interaction.

The first phase of this long-term program involved preliminary research in 1995 and 1996. Three objectives guided our fieldwork: (1) documentation of the site's form and the range of its archaeological features; (2) evaluation of the integrity of subsurface materials and description of the site's stratigraphy; and (3) collection of samples for dating portions of the archaeological site. We accomplished these objectives through a combined program of field research and training.

Field methods during 1995 and 1996 consisted of surface survey and mapping, test excavations, and auger sampling (or coring). In 1995, nine graduates from the Royal University of Fine Arts worked with archaeologists and archaeology graduate students from the University of Hawai'i. Similar field methods were used in 1996, when eight Cambodian graduates worked with American archaeologists. However, greater effort concentrated on systematic excavations in 1996. These excavations produced a series of radiocarbon samples whose dates illuminate aspects of the site's occupational sequence.

Goals of the 1995 Field Season

The field season took place in July and August 1995.[1] We concentrated fieldwork efforts at Angkor Borei on meeting two goals: (1) to provide field training for graduates from the archaeology program at the Royal University of Fine Arts and (2) to evaluate the extent and nature of cultural materials from the site. Field methods consisted of surface survey and mapping, limited test excavations, and auger sampling (or coring). Besides the mapping project, limited test excavations were undertaken in two areas: (1) a large disturbed/looted pit called AB-1, which was excavated as a teaching exercise for the field school students, and (2) a 1×2 m test excavation unit called AB-2, located c. 200 m east of AB-1.

Excavation and coring of AB-2 revealed a 3.8-m-deep sequence of cultural materials and produced two radiocarbon dates (see Table 1). The first date (Beta-89295), at 2.33 m below the surface, produced a result of cal. A.D. 145–350 (calibrated at the 1 δ with the program CALIB 3.0.3 [Stuiver and Reimer 1993]); the second date (Beta-89294), at 2.71 m below the surface, produced a result of cal. 5 B.C. to A.D. 90 (calibrated at the 1 δ with the program CALIB 3.0.3 [Stuiver and Reimer 1993]). No radiocarbon samples were taken from the interface of cultural

Table 1. Chronometric Dates from 1995–1996 Fieldwork at Angkor Borei (Takeo Province), Cambodia

Year	Sample Number	Type of Date	Conventional Radiocarbon Age[a] B.P.	Calibrated Results (1δ)	Test Unit	Level	Context of Sample
1995	89294 Beta	^{14}C: AMS	1970 ± 50	5 B.C.–A.D. 90	2	None given	AB-1 c. 271 cm below surface
1995	89295 Beta	^{14}C: radiometric (standard)	1790 ± 70	A.D. 145–A.D. 350	2	None given	AB-2 c. 233 cm below surface
1995	89298 Beta	^{14}C: AMS	1960 ± 50	A.D. 5–A.D. 100	Sample no. 5	N.A.	MOAT (sample no. 5); from interface between sterile soil and fill (not associated with particular cultural material).
1995	89299 Beta	^{14}C: AMS	4640 ± 60	3505 B.C.–3425 B.C. 3390 B.C.–3350 B.C.	Sample no. 6	N.A.	MOAT (sample no. 6); from interface between sterile soil and fill (not associated with particular cultural material).
1996	Wk-5312	^{14}C: radiometric (standard)	1450 ± 160	A.D. 432–A.D. 711 A.D. 746–A.D. 756	3	12	Tag 034. Matrix may be redeposited or midden at base of architectural lens c. 141 cm below surface.
1996	Wk-5313	^{14}C: radiometric (standard)	1820 ± 200	2 B.C.–A.D. 427	3	21	Tag 090. Level appears "ashy." No exact depth given. Taken from Level 21, 225–235 cm below surface
1996	Wk-5314	^{14}C: radiometric (standard)	2150 ± 60	348 B.C.–315 B.C. 205 B.C.–67 B.C.	3	38	Tag 173. FOW lens c. 402 cm below surface
1996	Wk-5315	^{14}C: radiometric (standard)	2180 ± 70	365 B.C.–275 B.C. 265 B.C.–113 B.C.	3	47	Tag 220. Interface with sterile soil at 490 cm below surface
1996	Wk-5316	^{14}C: radiometric (standard)	1920 ± 80	A.D. 12–A.D. 215	4	5	Tag 516. Could be associated with postholes and occupational surface. No exact depth given. Taken from Level 5, 43–53 cm below surface

(Continues)

TABLE 1 *Continued.*

YEAR	SAMPLE NUMBER	TYPE OF DATE	CONVENTIONAL RADIOCARBON AGE[a] B.P.	CALIBRATED RESULTS (1δ)	TEST UNIT	LEVEL	CONTEXT OF SAMPLE
1996	Wk-5317	^{14}C: radiometric (standard)	2130 ± 80	348 B.C.–315 B.C. 205 B.C.–40 B.C.	4	6	Tag 523. Uppermost limit of FOW lens. No exact depth. Taken from Level 6, 53–63 cm below surface
1996	Wk-5318	^{14}C: radiometric (standard)	1990 ± 140	165 B.C.–A.D. 146 A.D. 174–A.D. 193	4	16	Tag 566. FOW lens c. 162 cm below surface
1996	Wk-5319	^{14}C: radiometric (standard)	2130 ± 160	381 B.C.–A.D. 60	4	30	Tag 654. Possibly lowermost limit of FOW. Taken from 294 cm below surface
1996	Wk-5320	^{14}C: radiometric (standard)	2270 ± 60	394 B.C.–346 B.C. 317 B.C.–204 B.C.	4	44	Tag 727. Interface with sterile soil at 440 cm below surface
1996	UWTL-258	Thermoluminescence	N.A.	A.D. 965 ± 116[b]	N.A.	N.A.	Vishnu Temple (no unit no. given); associated with Vishnu statues uncovered in March 1996

[a] Estimated (rather than measured) ^{13}C/^{14}C value.
[b] Weighted average, not calibrated result.

and sterile deposits. No stratigraphic profile was completed for this unit during fieldwork. Dates produced from AB-2 fall within the projected first- through sixth-century occupation of the site, although nothing is known about the date of the earliest cultural materials in this unit.

Ceramic and osteological materials recovered from AB-2 underwent preliminary analyses at the Archaeology Laboratories of the University of Hawai'i during the 1995–1996 academic year. No typological studies or seriations of the ceramics excavated from the unit were completed. However, the 1995 field excavations confirmed the depth and complexity of cultural deposits. Preliminary examination of these materials and initial mapping information from the 1995 field season also provided a foundation for undertaking the 1996 field season.

Goals of the 1996 Field Season

The 1996 field season took place in June and July 1996.[2] Four goals structured archaeological research during the 1996 field season: (1) to excavate new test units to obtain stratigraphic information and material for chronometric dating; (2) to complete a site map of major archaeological features within the walled site, and to explore possible portions of the site beyond the settlement's walls; (3) to investigate the morphology and technology of brick structures (or monuments) at the site by removing overburden from one such structure (Test Unit 5); and (4) to develop an inventory of all sculptural images from the Angkor Borei region that are now housed at the National Museum. The following section presents preliminary results of our excavations.

Excavations — We investigated four new areas of Angkor Borei during the summer of 1996: two of these were 1 × 2 m test excavation units, one was an earth-covered brick monument, and the fourth was a moat-to-wall trench. Some crew members worked at the two test excavation units, while others participated in stripping and investigation of the brick structure complex. In the final days of the field season, Michael Dega and several laborers opened a moat-to-wall trench along the settlement's eastern wall. The two sets of stratigraphic excavations produced abundant artifacts (particularly ceramics, brick fragments, and animal bone), complex stratigraphic sequences ranging from 4.5 to 5.5 m in depth, and many potential radiocarbon samples.

The 1996 excavation areas were assigned consecutive numbers that followed the 1995 sequence. Test Unit 3 (hereafter "AB-3") is one of the two 1 × 2 m excavation units that we opened to study site stratigraphy. AB-3 is the northernmost excavation unit that we investigated (see Fig. 2) and focused on an area in the northwestern corner of the Angkor Borei District Office compound. Test Unit 4 (hereafter "AB-4") is the second of two 1 × 2 m excavation units; AB-4 was excavated in an area c. 100 m south of the Angkor Borei River, at the southern edge of a disturbed area of (presumably) ancient brick rubble.

Each of these units was excavated in arbitrary 10 cm levels, and all excavated materials were screened through 1.5 mm (1/4-in.) mesh screen. Sherds smaller than 2.5 cm diameter were not retained unless they were considered temporally diagnostic (e.g., porcelain fragments). Ceramics were taken to the field laboratory in the District Office Building (located directly below the project's living quar-

ters) for washing and sorting into gross ware categories. Other artifact classes (particularly bone and shell) were not washed after excavation but were instead bagged, tagged, and stored in the field facilities. We hired several villagers as laboratory assistants to help wash the large quantities of sherds that we recovered from excavations. The following sections describe each of the excavated units.

Test Unit 3 — AB-3 was opened on 6 June 1996. It was selected as a locus for excavation for several reasons. First, both of the 1995 excavation units are located on the southern side of the Angkor Borei River, and no subsurface investigations had been undertaken in this northern portion of the site. Selecting this area thus expanded our spatial coverage of the site. Second, we observed exceptionally abundant surface materials (particularly large sherds and brick fragments) throughout the compound area, which also has a higher elevation than the rest of the site's northern section. Unlike most surrounding areas, which are covered with houses or used as streets and public spaces, the enclosed portion of the compound had been spared some of the impact of recent construction events. Moreover, pedestrian survey of the compound suggested that substantial brick construction might lie beneath the modern building, which villagers told us had served as a Buddhist temple before its relatively recent renovation into district offices. We reasoned that the modern temple might have been constructed on the same location where an ancient brick monument once stood. We hoped the test excavations might recover artifactual material and radiocarbon samples associated with this area of dense brick construction, which might have been that monument.

Carol Mortland supervised excavations for the first two weeks of work at the unit. Tea Van assumed responsibility thereafter for the remaining excavations. A stratigraphic profile from the western face of this unit is illustrated in Figure 2, and is briefly summarized here.

The uppermost layers (Layers 1–3) of this unit consist of loosely consolidated, dark brown organic soil with abundant brick fragments. Extensive root disturbance was noted in the first 50–100 cm of deposit. Munsell color for this layer ranged from 7.5 YR 4/2 (dry) to 7/5 YR 3/2. The recovery of very recent material (e.g., glass fragments, a medicine bottle, and recent porcelain sherds) suggests that the uppermost portion of this unit contains redeposited material. Chhan Chamroeun's interview with a local villager revealed that this area had served as a dumping area during the construction of the district compound. Intermingled in this layer were abundant fine-buff-ware ceramics that include spouted vessels and globular jars, among other forms. This buff-ware quite likely is Malleret's (1960 : 99–100) Type 5: the exterior surface color has a peach or buff hue, while these vessels almost invariably have a gray carbon core (see also description of Kendi vessels in Miksic and Yap [1990 : 46–52]).

Clay content in the matrix increased as we excavated down to more intact deposits (c. 100 cm below the present surface), and artifact density increased. By Layer 4, we began to encounter a yellowish high-clay matrix that contains sherds, occasional pieces of slag, and a few pieces of animal bone. In Layer 5, we encountered the beginning of a lens containing large quantities of fine-orange-ware sherds and occasional posthole features. This sherd lens is more than 100 cm thick in AB-3, and may be either midden deposits or an ancient industrial area. The abundance of fine-orange-ware sherds dropped in Layers 10 and 11. Below that

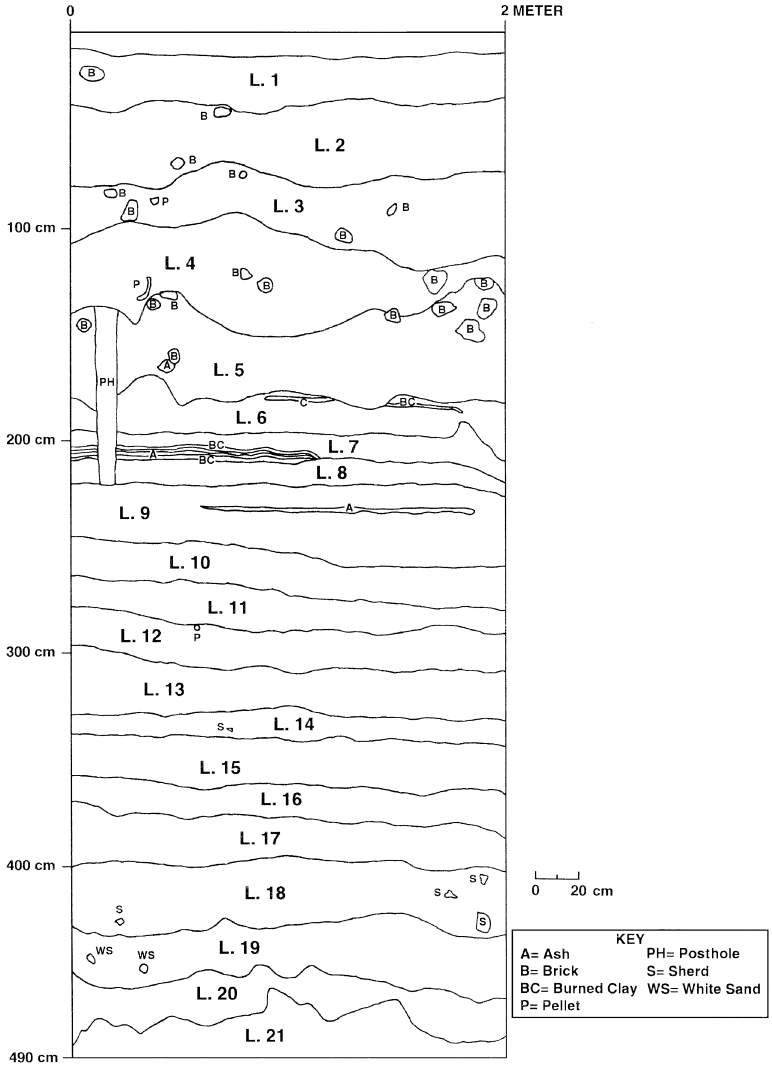

Fig. 2. Stratigraphic profile of western face of AB-3 (Unit 3) from 1996 field season. Profile illustrates three horizons: (1) layers 1–3 (disturbed) contain fine-buff-ware; (2) layers 4–11 constitute the bulk of the fine-orange-ware lens; and (3) layers 12–21 contain burnished and pedestaled vessels.

lens is a different ceramic assemblage, which consists largely of finely burnished and incised pedestaled vessels (generally black or gray) and cord-marked ceramics. Animal bone, clay pellets, and a few pieces of slag were scattered throughout this lower layer. We encountered sterile, sandy soil approximately 515 cm below the surface in AB-3, with a Munsell color of 2.5 Y 7/6.

Test Unit 4 — AB-4 was opened on 10 June 1996. It was selected for excavation for several reasons. First, AB-4 is located south of the Angkor Borei River (AB-3 is located north of the Angkor Borei River). AB-4 is also located in the western

portion of the site, whereas the 1995 excavations took place in the eastern portion of the site. The specific location was selected because a villager alerted us to the discovery of an earthenware jar and "human" burial in this area exposed through earth removal by the local villagers. Subsequent excavation of this area revealed no jar burials, as had been hoped by the villager's notification, but did expose extremely rich cultural deposits.

The area surrounding AB-4 is heavily damaged by recent bulldozer activity, presumably for road construction materials. Immediately north of the excavation unit is an extensive zone (between 100 and 200 cm thick) of disturbed brick rubble that likely contained many brick structures from the ancient occupation of Angkor Borei. AB-4 thus has a truncated sequence that is missing its uppermost (brick rubble) layers, which correspond to Layers 1–3 in AB-3. We drew two profiles of sections above AB-4, linking the entire depositional sequence into a single profile, but did not attempt systematic excavations in these upper layers because they were greatly disturbed. Because the excavated material extended approximately 450 cm below the current surface, it is possible that the original cultural deposits had a depth that exceeded 6 m.

James Bayman supervised excavations at this unit for the first three weeks of the work at that unit. Bong Sovath assumed responsibility thereafter for the remaining excavations. A stratigraphic profile from the western face of this unit is illustrated in Figure 3, and is briefly summarized here.

Excavators first encountered at least 20 cm of brick rubble, below which was gradually exposed a complex stratigraphic sequence of thin lenses of reddish brown and orange and gray matrix, most of which contained large amounts of organic material (charcoal flecks, ash, and bones). Abundant staining was quickly visible, and we found that some postholes or mottled depressions noted in the uppermost layer of AB-4 extended into the first eight layers of the deposit. At approximately 27 cm below the surface, excavators encountered the first part of the hard-packed dark reddish soil (Munsell 2.5 YR 3/4) lens that contained charcoal flecks and abundant staining. This surface marks the beginning of the fine-orange-ware lens described as Layer 5 of AB-3. Fine-orange-ware sherds are exceptionally dense in this lens, and excavators estimated that sherds comprised approximately 30 percent of the matrix.

Inspection of ceramics from AB-4 during ceramic analysis (now in progress) suggests several temporal trends in the unit's stratigraphic sequence. Below the fine-orange-ware lens is a different ceramic assemblage that contains abundant burnished, pedestaled forms and fewer cord-marked earthenware ceramics. This ceramic assemblage consists largely of finely burnished and incised pedestaled vessels (generally black or gray), with some cord-marked ceramics. Both AB-3 and AB-4 have this lower cultural layer, which also contains animal bone and clay pellets. We encountered sterile, sandy soil approximately 454 cm below the surface in AB-4, with a Munsell color of 10 YR 7/3.

Summary Comments on the 1996 Excavation Units — Test excavations at AB-3 and AB-4 during 1996 revealed deep and complex stratigraphic sequences that reflect cultural and natural depositional processes. Although the top 100 cm of AB-3 exhibit postdepositional disturbance (Fig. 2), the stratigraphic sequence contains evidence of human use and, perhaps, residential habitation at different points

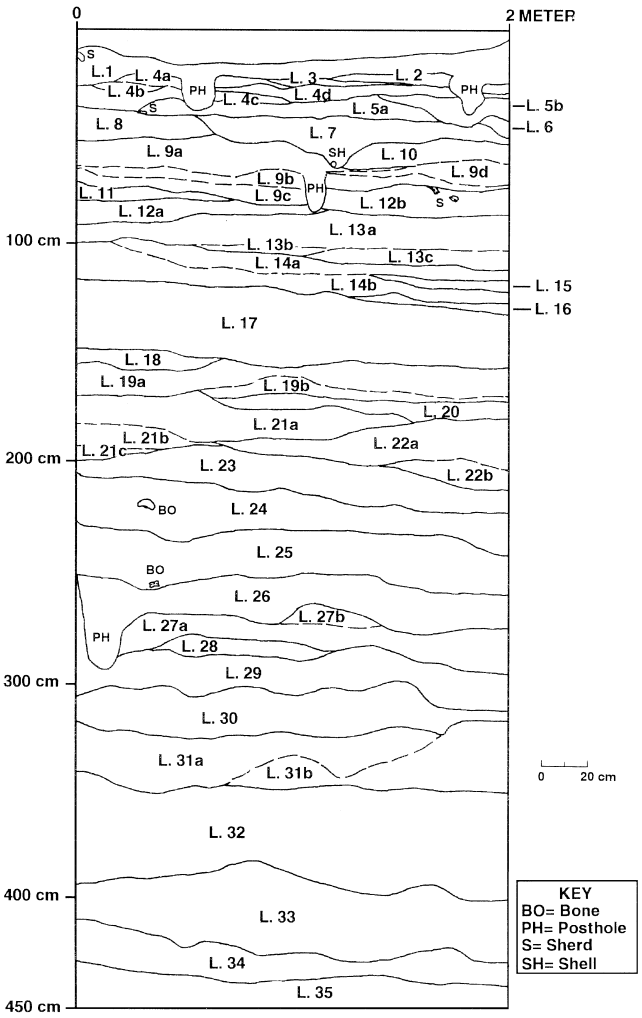

Fig. 3. Stratigraphic profile of western face of AB-4 (Unit 4) from 1996 field season. Profile illustrates three horizons: (1) layers 1–5 contain mottling and possible features; (2) layers 6–30 constitute the bulk of the fine-orange-ware lens; and (3) layers 31a–35 contain burnished and pedestaled vessels.

in the temporal sequence. Occasional ash lenses, found primarily with the fine-orange-ware lens, suggest human industrial or residential activities.

The stratigraphy of AB-4 is particularly dramatic, in part because excavation began in a disturbed area in which 100–200 cm of fill had already been removed by villagers for use in various activities, such as road filling. The stratigraphy of AB-4 is characterized by thin lenses of dark orange alluvial clays, cultural materials, and sands in the upper 200 cm of the unit. Excavators recovered lumps of low-humic gley soils in association with the fine-orange-ware lens of AB-4; humic gley soils are closely associated with paddy agriculture (Ng 1979 : 267). Excavators also found limited amounts of these clay lumps in the fine-orange-ware lens of AB-3.

This matrix parallels previous hydrogeological descriptions of the area, which state that the Angkor Borei region is covered with Holocene alluvium, which consists largely of unconsolidated silt and clay with some lenses of sand (Anderson

1978: R11–R12). This stratigraphic pattern of thin laminations could result from regular flooding events, interspersed with such human activity as farming and habitation. In either case, the presence of these thin laminations reveals the depositional integrity of the deposits and the overall lack of disturbance in this section of the site.

Using geographic criteria, both Ng (1979) and van Liere (1980) argued that the Angkor Borei region should be an ideal area for rice cultivation. Previous hydrogeological work in the area also gives us the baseline information regarding the geology of the region and processes that produced stratigraphic sequences that we encountered. However, on-site geological expertise necessary to understand the processes that created the stratigraphic sequences of Angkor Borei awaits future field seasons.

Survey/Mapping Project

The goal of the 1995–1996 survey/mapping project was to complete a reconnaissance of all identifiable archaeological features within the walled site of Angkor Borei. Mapping work was initiated in 1995 by Michael Dega and Kyle Latinis (with assistance from Cambodian students), and Michael Dega continued the mapping project in 1996 with help from Cambodian crew members. Selected loci outside the city wall, identified on 1972 aerial photographs, were also visited and mapped during the 1996 season. Work resulting from the mapping project (Fig. 4) provides a baseline map that identifies locations of monumental architecture, architectural mounds, and water features.

The mapping project used several methods to obtain information, including transit, tape-and-compass work, and analysis of aerial photographs. Transit mapping was restricted to key features under investigation by the project (such as AB-5 in 1996) or to areas of the site (such as Wat Komnou) that earlier French visitors had described in their reports. The mapping crew identified more than 151 features throughout the walled area of Angkor Borei, including 112 water features (such as reservoirs, artificially constructed pools, and natural ponds of various sizes). Ancient water storage features at the site are commonly associated with mounds of collapsed brick architecture. The lack of construction dates for these water features complicates archaeological interpretation, since it is unclear how many of these water features were dug during the recent past versus how many were part of the ancient city. It is also unclear whether the older water features were constructed incrementally from the site's establishment, or whether this system of water management was adopted over a relatively short period. At least two symmetrical water features at Angkor Borei (a rectangular feature that we call the Eastern Baray, along the southeastern section of the site, and a square feature immediately southwest of the site's southern wall) resemble Angkorian-period features elsewhere in Cambodia, but we currently lack chronometric estimates for the features.

Moats that flank exterior and interior sections of the wall were also mapped during the operations. The inner moat parallels the city wall and averages 22 m wide (see also Dega 1996). The similarity in dimensions and location of the inner and outer moats suggests that the two monumental features were constructed during the same period as part of a single hydraulic system. However, more work

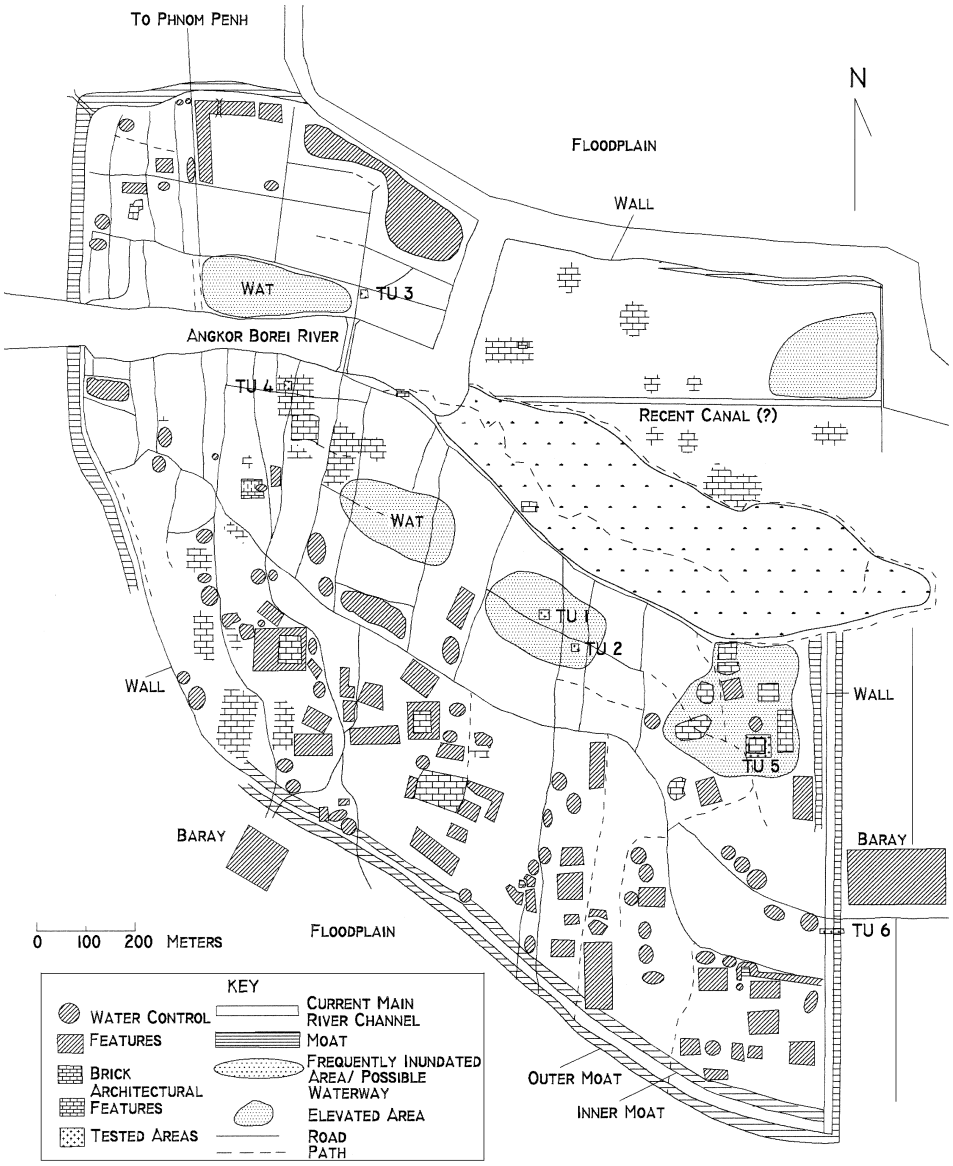

Fig. 4. Preliminary map of Angkor Borei, produced by survey/mapping project during 1995 and 1996.

is required to bracket the construction sequence of the moats and wall. Such work might include cutting several backhoe trenches from the moat to the wall at different points along the perimeter to collect radiocarbon and thermoluminescence samples. Only through such a systematic strategy will we be able to chronicle the development of the moat and wall system adequately.

Of 35 mounds identified during the survey, 15 contained exposures of bricks (either on the surface or visible in looters' pits) and are classified as monumental

architecture, and 20 mounds lacked visible brick. Some of these brick features were quite large, with dimensions exceeding 40 m^2, while others were quite small. Additional work is necessary to ascertain the function of the mounds that lacked visible brick. Other loci identified during the survey included the "quays" described by Aymonier (1900) and areas of dense, ancient habitation (as evidenced through the thick deposits of ceramic middens).

Results of the mapping/survey project yielded valuable information on the configuration of the walled portion of Angkor Borei. As noted previously, the presence of contemporary habitations on areas that had the densest ancient occupation complicated the process. The modern landscape of Angkor Borei is in the process of continual modification for construction, gardening, and the development of orchards. All these activities modify and damage the archaeological site of Angkor Borei, and the site plan produced through the mapping/survey project is thus incomplete. Future mapping work using a combination of low-altitude remote sensing and Geographic Information Systems (GIS) analysis will add further detail and precision to this baseline map.

Wall Stratigraphic Trench

Part of the 1996 fieldwork involved the excavation of a stratigraphic trench (AB-6) from the outer moat into the city's wall in the southeastern portion of Angkor Borei. The goal in this work, supervised by Michael Dega, was to investigate methods of wall construction, to study the relationship between the construction of the wall and moat, and, if possible, to obtain samples from the wall's base for dating. The trench area was chosen for a combination of factors: (1) this section of the site has a visible, well-preserved exterior moat; (2) this area has sections of intact wall that flank a wall cut (immediately north of AB-6) where some elements of wall construction are visible; and (3) the area is currently used only lightly, so that excavation activity would not disturb farmers or their livestock.

Michael Dega supervised excavations at the trench, and was assisted by local laborers. The 16-m stratigraphic trench extends from the wall's top section down to the wall's base, which meets the moat. This trench was 1.5 m wide and was excavated to varying depths, from 30 cm below the surface at the wall's uppermost point to approximately 2.5 m below the surface at the wall's base. Specific bricks and wall profiles were photographed, and a 16-m profile was also drawn (Fig. 5). Almost no artifacts were visible, none of the soil was screened, and three ceramic sherds were recovered *in situ*.

Trenching activities suggest that the wall's brick core measures approximately 2.4 m wide and is approximately 4.5 m high. The core width at AB-6 is substantially larger than those given previously by Groslier (1935 : 491), who estimated a general width of 1.0–1.2 m. Significant variation in core design is evident in several exposed wall cuts throughout the site; possible reasons for this variation include initial variability in design, successive reconstruction episodes, and repairs, but more work is needed to clarify this pattern. The wall appears to have a core-veneer construction technology: its core consists of brick masonry (which in AB-6 contained 18 to 30 courses of brick), which is covered by a layer of rubble 0.5–1.0 m thick and sealed by a single-course veneer of large, rectangular bricks. In total, the wall is approximately 20 m wide today, and approximately 5–7 m high.

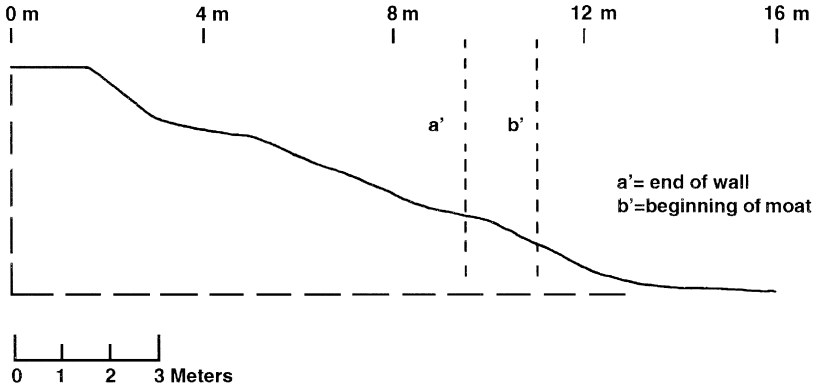

Fig. 5. Wall and moat profile of AB-6 (Unit 6) from 1996 field season. Slope grade is approximately 20–26 percent; horizontal distance from top of wall to bottom of moat is 4.29 m; vertical distance from top of wall to base of wall is 3.20 m.

Groslier's earlier estimate of wall height at 6–8 m accords well with investigations at AB-6.

Our lack of adequate radiometric or relative dates prevents us from bracketing the period of wall and moat construction at present. Two radiometric dates are available from coring the moat during the 1995 field season, but they produce contradictory dates. Each of these cores produced a sample at the interface between sterile soil and fill that was submitted for AMS dating with equivocal results (Table 1). One sample (Sample 5 = Beta 89298) was assigned a conventional ^{14}C age of 1960 $\pm$ 50 B.P., which produces a 1 δ calibration of A.D. 5–A.D. 100. The other sample, however (Sample 6 = Beta 89299), was assigned a conventional ^{14}C age of 4640 $\pm$ 60 B.P., with two possibilities for a 1 δ calibration, which both date to the fourth millennium B.C. (calibrated using CALIB 3.0.3 [Stuiver and Reimer 1993]). This date is unlikely, based on the corpus of radiocarban dates we now have from Angkor Borei. More research is needed on the wall and the moat to determine the timing and construction sequence of each feature.

Investigations of Brick Structures

Brick masonry constructions are a critical but poorly known aspect of Angkor Borei and across the Mekong Delta. Previous scholars believed that the lower Mekong lacked brick monuments during this period and had only wooden architectural traditions (see Higham 1989*b*: 262, following Briggs 1951 : 32–34). Archaeological field investigations between 1984 and 1993 in several Vietnamese provinces, however, have verified the existence of a pre-Angkorian brick architectural tradition in the Mekong Delta (e.g., Dao Linh Côn 1998; Trinh Thi Hòa 1996; Vo Si Khai 1998). Vietnamese archaeologists investigated more than 12 architectural monuments between 1984 and 1994. Significant architectural and (ostensibly) functional variation exists among brick features that they studied; some brick construction features at Go Thap (formerly Prasat Pram Lovên), for example, apparently served as tombs for cremations (Dao Linh Côn 1998).

Chronometric dates from the Vietnamese sites range from the first to tenth centuries A.D., and a disproportionate number of these Oc Eo culture sites date to the fourth to sixth centuries A.D. We still know little, however, about whether the delta's brick architectural traditions exhibited change through time. Architectural plans of Vietnamese constructions vary in configuration and dating (Vo Si Khai 1998: Figs. 1–7). Temporal variation may also be found in Cambodia, where previously studied Cambodian brick sanctuaries, such as Sambor Prei Kuk and Banteay Prei Nokor (Aymonier 1900; Parmentier 1927), date to the seventh century A.D. Field investigations during 1996 at one mound (AB-5) provided tantalizing yet incomplete information on such edifices at Angkor Borei, which may ultimately contribute to the construction of the region's architectural chronology.

Most of the mounds with brick exposures that were identified through survey and mapping are covered by vegetation and scattered brick fragments; occasionally, these mounds also have schist slabs. One such mound, in the south-central portion of Angkor Borei (Fig. 6), was selected for investigation in 1996 and was designated AB-5. Sections of this mound were already exposed through previous brick mining and looting, and landowners were willing to let archaeologists strip other sections of their property. Nancy Dowling and Chhan Chamroeun supervised investigations at AB-5, which was partially cleared of its overburden to expose a rectangular brick platform that is 10 m wide (SW–NE) and 19 m long (NW–SE) (Fig. 6). These dimensions are incomplete, as work at AB-5 was in progress at the end of the field season.

Although AB-5 was not completely cleared, testing at this feature produced several useful findings. Bricks are noteworthy for their size and uniformity and exhibit several recurrent forms (rectangular and triangular). Most are rectangular, with similar dimensions ($38 \times 19 \times 7$ cm), and resemble those found in other brick mounds at the site and also those found in Viet Nam's Mekong Delta (see illustrations in Lê Xuân Diêm et al. 1995; Malleret 1960). All of this hints at contemporaneity in construction, but chronometric dates are needed to confirm this relationship. The relatively low quantity of bricks surrounding AB-5 makes it seem unlikely that monuments at Angkor Borei achieved the scale and complexity of monuments that Henri Parmentier previously documented at "Fou-nan" sites, most of which are located farther north, near the intersection of the Mekong and Tonle Sap Rivers near Phnom Penh (Parmentier 1933 : 185). However, interviews with villagers suggest that in recent years large quantities of bricks have been removed from the features for modern construction projects.

Numerous postholes were also documented during work at AB-5, which may suggest the construction of a nonbrick superstructure (presumably wooden) for this platform. The identification of so many postholes might support Briggs' (1951 : 34) speculation that perhaps the superstructures of these earliest monuments in the delta were constructed of perishable materials. Concentrated work, in consultation with an architectural specialist, is needed to illuminate the dating and construction techniques of brick architectural features at the site. The identification of multiple construction plans in Viet Nam's Mekong Delta, and the identification of mortuary functions for some brick construction features (Dao Linh Côn 1998), suggest that more work is necessary to understand the range of brick architectural features at Angkor Borei.

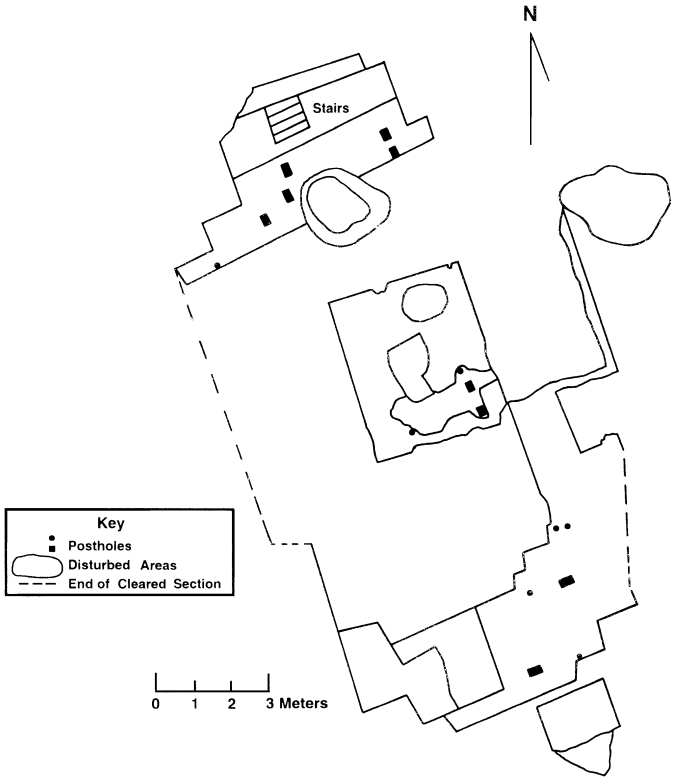

Fig. 6. Plan view of AB-5 (Unit 5) from 1996 field season.

DATING THE OCCUPATIONAL SEQUENCE AT ANGKOR BOREI

One of the most pressing issues in our research program involves dating the occupational sequence at Angkor Borei. Investigation of this question prompts still more questions. For how long was the ancient settlement an important political center? How early are the many inscriptions that have been recovered recently from Angkor Borei? How old are these brick structures, and might they be among the oldest religious structures yet found in Cambodia? We use several lines of evidence, including epigraphy and chronometry, to find answers to these questions. We noted previously that Angkor Borei has long been recognized for its early-seventh-century inscriptions (K. 557 and K. 600 [Jenner 1980]). Two additional granite and schist slabs have been recovered recently that contain inscriptions, and these await translation.

Results of Radiometric Dating

Obtaining chronometric dates from stratigraphic excavations was a primary focus of our work in 1995 and 1996. Excavations produced 11 radiocarbon dates from three 1 × 2 m test excavations and one thermoluminescence (hereafter TL) date.

These data are calibrated as 1 δ results in Table 1. The earliest dates for the site derive from the basal cultural layers of AB-3 and AB-4 and date to the early fourth century B.C. These dates suggest that Angkor Borei was established during the late first millennium B.C. and was continuously occupied through the first half of the first millennium A.D. These dates make Angkor Borei contemporaneous with the Oc Eo culture sites found in southern Viet Nam (Ha Van Tan 1986; Lê Xuân Diêm et al. 1995). Cham sites in central Viet Nam, particularly Tra Kieu, also date to this general interval (e.g., Glover et al. 1996; Glover and Yamagata 1995; Yamagata and Glover 1994).

Results of Thermoluminescence Dating

We sampled three brick features at the site during 1996 for thermoluminescence dating: AB-5, the moat-to-wall trench, and a recently bulldozed brick monument whose partial destruction uncovered two Vishnu sculptures, which we call the "Vishnu temple" for ease of discussion. We submitted samples from AB-5 and the Vishnu temple for TL dating to the University of Washington Thermoluminescence Laboratory (see Feathers 1997). We assumed, in submitting the samples, that each brick had been heated (or fired) as part of the manufacturing process and that TL dating would enable us to ascertain the date of manufacture. Unfortunately, both of these brick samples were sufficiently low-fired to complicate TL dating. The AB-5 sample produced inconsistent and unreliable dates and was eliminated from consideration (Feathers 1997).

Although TL dating is not without its complications (see, e.g., Aiken 1985 : 30–33), problems of context and recovery are probably responsible for the problematic date. It is interesting that the brick sample from the Vishnu temple produced a tenth-century date (A.D. 965 $\pm$ 116). If this date is indeed accurate, it might suggest that monumental construction began several centuries (or even a millennium) after the initial occupation of the settlement. A small proportion of brick construction features that Vietnamese archaeologists have studied thus far date to the ninth and tenth centuries, while most have been assigned to the fourth to sixth centuries (Vo Si Khai 1998 : 213). The existence of pre–fourth-century dates in Viet Nam's Mekong Delta poses the possibility that brick construction activities at Angkor Borei continued throughout the settlement's occupation, and that we have captured the endpoint of the construction history within the walled portion of the site with this TL date. Additional TL dates are needed to test these hypotheses.

Stone sculptures were recovered during the 1996 bulldozing of one brick monument at Angkor Borei, and a sizable collection of pre-Angkorian sculptures from the Angkor Borei area is now housed at the National Museum in Phnom Penh. Dowling's inventory and analysis of clothing style and body form in male Hindu deity sculptures (Dowling n.d.) provide another possible line of evidence for dating the site. Most images date to the seventh century A.D., with a hiatus between C. A.D. 780/790 and A.D. 1080. Some of these brick monuments housed sculptural images; if construction of the monuments and sculptures coincided, then perhaps occupation at Angkor Borei peaked in the sixth and seventh centuries A.D. and subsided for several centuries thereafter.

Clearly, we need more dates from stratigraphic excavations, brick masonry

structures, sculptures, and two as yet untranslated inscriptions. What these dates suggest so far is that Angkor Borei was established at some point during the late first millennium B.C., and may have been occupied continuously until at least the tenth century A.D. The settlement is occupied today, and we still lack evidence for a hiatus in occupation during the past. Features around the site (such as the Eastern Baray, seen on the eastern edge of the walled settlement in Fig. 4) and constructions at the neighboring site of Phnom Da will likely extend the region's occupational sequence into the twelfth or thirteenth century. It also seems likely that some portions of the site were more intensively occupied than others; for example, areas flanking the bisecting east-west waterway of the site have the highest densities of artifacts and architecture within the walled site. Future excavations will produce more radiocarbon samples from stratigraphic excavations, which will further illuminate our understanding of the timing and occupational span of Angkor Borei.

Discussion of Angkor Borei Chronology

Coastal principalities and inland polities developed across mainland Southeast Asia during the early historic period, which lasted from approximately 500 B.C. to A.D. 500. Dates from the 1996 excavations indicate that ancient Angkor Borei was contemporaneous with other sites reported from central Thailand (e.g., Chansen [Bronson 1979; Bronson and Dales 1972], Ban Don Ta Phet [Glover 1989, 1990], Ban Tha Kae [Ciarla 1992; Rispoli 1992], Sab Champa [Maleipan 1979] and sites recorded by Srisakra Vallibhotama [1986, 1992]) and from central Viet Nam, such as Tra Kieu (Glover and Yamagata 1995; Glover et al. 1996; Yamagata and Glover 1994). Sites dating to the early historic period have also been identified in northeastern Thailand through ground (or aerial) survey and through excavations that are grossly contemporaneous with Angkor Borei (e.g., Higham 1989*a*: 279–287; Moore 1989, 1992, 1998; Welch 1989; Welch and McNeill 1988–1989). Even Pyu sites in the Irrawaddy Valley of Burma have similar dates and material culture to those recovered from Angkor Borei (Aung-Thwin 1982–1983; Stargardt 1990).

CERAMICS FROM ANGKOR BOREI

Art historians have dominated Khmer ceramic studies thus far, and their database has often involved Angkorian-period museum collections that either date to the Angkorian period or lack proper provenance information (e.g., Frasché 1976; Guy 1989; Rooney 1990; Stock 1981). So little is known about pre-Angkorian Khmer ceramics that we still do not know precisely when the first wheel-made pottery was manufactured in Cambodia; based on his analysis of materials from Sambor Prei Kuk, B. P. Groslier (1981 : 14) suggests the end of the sixth century A.D. Ceramic studies with materials from Angkor Borei will greatly increase our understanding of pre-Angkorian Khmer ceramic traditions, particularly because of the abundance of wheel-made pottery through much of the sequence.

Most ceramics recovered during the 1995 and 1996 excavations fall into at least 12 different categories of earthenwares, based on differences in fabric, surface treatment, and vessel-forming technique. Glaze wares and celadons, so common

in Angkorian sites, constituted a minuscule portion of ceramics found on the site's surface and an even smaller proportion of the excavated materials. The low-fired earthenwares exhibit both technological and temporal variation. Despite the diversity of the ceramic assemblage, several ceramic groups dominate the collection: fine-orange-wares, cord-marked earthenwares, burnished earthenwares, gray-wares, and slipped wheel-made earthenwares. Two of the most temporally diagnostic ceramic categories at Angkor Borei are fine-buff-wares (post–fifth century A.D.) and the fine-orange-wares (ca. third century B.C. to first century A.D.). Burnished earthenwares and cord-marked earthenwares occur throughout the occupational sequence, with some variation in fabric and forming technique. Descriptions of the earthenware groups follow.

Fine-Buff-Wares — Sherds in this ware have variable vessel wall thickness, from thin-walled vessels (<4 mm) to much thicker walls (>7 mm). What distinguishes this ware are its fabric and form. Sherds in this ware have a characteristic buff exterior color (7.5 YR 8/2–8/4), and commonly have light or deep gray carbon cores. Malleret (1960 : 99–100) described this ware as "Type 5." At Angkor Borei, forms in this ware include spouted vessels, spherical bowls, and narrow-necked, flare-rimmed jars. Groslier (1981 : 14–15) describes similar ceramics excavated from Sambor Prei Kuk that date to the seventh century A.D. The association of this fabric with spouted, globular vessels (like those illustrated from Oc Eo) known as Kendi vessels across Southeast Asia suggests a wide distribution of this vessel (e.g., Evans 1927 and Gibson-Hill 1952; see summary in Miksic and Yap 1990 : 47–52).

The temporal span of fine-buff-wares is not clear, in part because few ceramics of this ware have been associated with chronometric dates. Some other Southeast Asian sites containing this ware apparently date to the ninth to thirteenth centuries. Fine-buff-ware sherds are strewn across the surface of Angkor Borei, and were recovered in the upper deposits of AB-3. Upper layers in AB-3 associated with fifth-to-eighth-century A.D. dates contain fine-buff-ware ceramics, including the Kendi form. This date range is somewhat earlier than previous studies of this ware.

Fine-Orange-Wares — Fine-orange-ware ceramics constitute the most common ceramic category recovered from test units excavated during 1996. The 1996 excavations revealed a "fine-orange-ware lens" in each excavation unit that was at least 100 cm thick; in this lens, fine-orange-ware sherds comprised at least 30 percent of the matrix. Both AB-3 and AB-4 have a fine-orange-ware lens that dates from approximately the third to fourth centuries B.C. until perhaps as late as the first century A.D.

Fine-orange-ware sherds have very thin walls (ca. 3–4 mm), an orange to buff color (5 YR 7/6–10 YR 6/2) in a mottled surface, very fine paste with occasional red and gray flecks, and cord marking around the base of the vessel. Fine-orange-wares include a small number of vessel forms, most of which are cylindrical. These small vessel forms have orifice diameters that rarely exceed 5 cm; vessel height in one common form rarely exceeds 10–12 cm. The precise function for these small, thin-walled vessels is not clear, and the ware has not been reported from other sites in the Mekong Delta to date.

Burnished Earthenwares — Below the fine-orange-ware lens in each unit is a distinctive ceramic assemblage that contains polished, pedestaled vessels with curvilinear incised designs, thick incised columnar fragments, many portions of slipped, wheel-made objects and knobbed objects that Malleret (1960 : 97–102) assumes are lids. Some of these forms (e.g., knobbed objects) are found throughout the sequence in varying quantities. However, the particular technological tradition represented by the polished, pedestaled vessels dominates the lower layers of Angkor Borei, and is reminiscent of Late Prehistoric ceramic traditions elsewhere in mainland Southeast Asia that date to the mid–first millennium B.C. Slipped, wheel-made pottery occurs in small quantities throughout the sequence and provides clear evidence for a wheel-made technological tradition in the Mekong Delta that predates the sixth century A.D. However, we do not yet know whether these wheel-made ceramics were manufactured locally or were imported to Angkor Borei.

Parallels are also already evident between the Angkor Borei ceramic assemblage and that reported by Malleret for sites (including Oc Eo) on the Vietnamese side of the Mekong Delta. Technological traditions in these two regions are similar, and some vessel forms that Malleret illustrates (including furnace fragments) were also recovered from the 1996 excavations. Malleret's lack of a well-defined ceramic chronology from Oc Eo limits our comparisons at present, but the ongoing construction of a ceramic chronology for the Vam Co River basin (Nishimura and Vuong Thu Hong 1997) should produce a comparative sequence from Viet Nam in the future. Systematic analysis of vessel forms and technology of samples from well-dated deposits at Angkor Borei and Vietnamese sites should ultimately yield insights on economic and social connections between contemporaneous sites in the Mekong Delta.

CONCLUSIONS FROM 1995–1996 RESEARCH AT ANGKOR BOREI

Analysis of archaeological materials at Angkor Borei is an ongoing process. However, we have already made several important findings that may affect current interpretations of Funan and of the role of the Mekong Delta in international maritime trade networks during the early historic period (e.g., Ray 1989; Reynolds 1995; Wolters 1982). We believe that stratigraphic sequences and their associated ceramic assemblages in both AB-3 and AB-4 suggest at least three general layers of occupation, with multiple strata contained within each occupational layer. Although the precise timing of these layers awaits additional field excavations, it is possible that the middle layer (the fine-orange-ware layer) is associated with the first-to-sixth-century A.D. occupation of Angkor Borei. The sheer quantity of these ceramics makes them an ideal candidate for in-depth compositional and technical studies, both of which have already begun.

Ongoing research also suggests that this settlement was occupied continuously from the late centuries B.C. until the present, and may have been established even earlier. Whether this settlement was walled and moated from its inception remains unclear, although the tenth-century TL date of one brick monument may suggest that the settlement was occupied for some time before these monumental features were built. Additional dates are clearly needed to further support this in-

ference, but we now believe that the site of Angkor Borei was occupied throughout much of the first millennium A.D.

A third finding, based on radiocarbon dates and ceramic assemblages, is that Oc Eo and Angkor Borei were occupied during the same period. The coincidence of dates, similarities in material culture, and canal linkages between the two settlements suggested previously by the French (Paris 1931, 1941), all suggest that they were part of a larger political and economic system. Some Vietnamese sites were also established before the first century A.D. (Vo Si Khai 1998:213), and their occupational sequences may parallel that of Angkor Borei. Previous dates for Angkor Borei, derived from inscriptional evidence, provide an early-seventh-century date, and sculptural analyses suggest a burst of activity during this time. The fact that these radiocarbon dates are several centuries earlier than the inscription date suggests a continuous occupation and—perhaps—that Angkor Borei was occupied for centuries before the arrival of Chinese emissaries to this region in the mid-third century A.D.

We are currently exploring several hypotheses regarding the initial settlement and occupational history at Angkor Borei. First, was Angkor Borei settled gradually, over several generations, or did it emerge abruptly with state formation? Second, was the settlement continuously occupied, with fluctuations in its political and economic importance through time? Or did Angkor Borei's development and rise correspond directly with the emergence of complex polities in the Mekong Delta, with a possible decline in the eighth or ninth centuries A.D.? Answers to these questions may force us to revise our views on the timing of early state formation in this region of Southeast Asia.

Archaeological field research in recent decades has already changed our understanding of settlement and early state formation throughout the Mekong Delta. Previous historians and archaeologists relied almost exclusively on Chinese documentary sources, and consequently had a narrow view of the occupational span and the range of settlements that were established from one end of the delta to the other (see review in Stark 1998). Analysis of the distribution of early Khmer inscriptions suggests that the most important area of early historic period settlement was central and southern Cambodia (Vickery 1996:390). Despite the widespread destruction of sites from the early historic period, new techniques available to archaeologists today—from the implementation of regional surveys to the use of remote sensing imagery—should also yield information that earlier generations of archaeologists could never have hoped to obtain. Continued work at Angkor Borei and at sites throughout southern Cambodia provide vital information for understanding the development of complex polities in the delta by the first millennium A.D.

ACKNOWLEDGMENTS

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tigations during 1996 were supported by a UH-EWC collaborative grant, a University of Hawai'i seed grant, and several intramural grants through the University of Hawai'i's College of Social Sciences. Collections from the 1995–1996 fieldwork are now housed in the Royal University of Fine Arts Archaeology Laboratory and in the Archaeology Laboratories at the University of Hawai'i. We produced multiple copies of field records (excavation records, drafted maps, and lists of artifact bags) following the 1996 field season; these are stored at the Royal University of Fine Arts, the Ministry of Culture, and the University of Hawai'i's Archaeology Laboratories. We extend our thanks to Kanani Paraso, Timothy Reith, and Jo Lynn Gunness for assistance with data management and graphics, and to Michael Graves for comments on a draft of the paper. Finally, we are grateful to the people of Angkor Borei, who since the beginning of our project have tolerated our presence with curiosity and friendliness.

NOTES

1. The field season took place from 5 July to 5 August 1995; nine graduates from the Royal University of Fine Arts (Bong Sovath, Prak Beaureaksmi, Chan Sambath, Chhan Chamroeun, Kim Sedara, Kou Vet, Ly Vanna, Pheng Sitha, and Tea Van) worked with two graduate students from the University of Hawai'i's Department of Anthropology (Michael Dega and Kyle Latinis). Dega and Latinis provided training in mapping and excavation techniques, under the direction of P. Bion Griffin (Professor and Chair, Department of Anthropology, University of Hawai'i) and with assistance from Drs. Nancy Dowling, Carol Mortland, Judy Ledgerwood, and Jefferson Fox.
2. The 1996 field season took place from 3 June to 7 July 1996. Four Cambodian students from the previous year and four new graduates from the faculty of archaeology participated in field research. The nine RUFA students were Bong Sovath, Chan Kanha, Chan Nak, Chan To, Cheang Serei Vuthy, Chhan Chamroeun, Kim Sedara, Kou Vet, and Tea Van. Dr. Miriam Stark co-directed the project with Professor Chuch Phoeurn and was assisted in the field by Dr. James Bayman and graduate student Michael Dega. Other project members who participated in aspects of the archaeological fieldwork include Drs. Nancy Dowling, P. Bion Griffin, Judy Ledgerwood, Carol Mortland, and Jefferson Fox.

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ABSTRACT

One of the earliest states in Southeast Asia arose in the Mekong Delta during or shortly after the first century A.D. Called "Funan" by Chinese travelers, this polity witnessed the emergence of many features of the ancient state: urbanization, political hierarchy, institutionalized religion, economic specialization, and writing. What we know so far about Funan comes primarily from documentary evidence, and largely from Chinese accounts. No archaeological research has been conducted on this state in Cambodia's Mekong Delta in several decades, and it is precisely this region that reputedly housed the capitals of Funan. Research concentrated on developments in southern Cambodia and on the Funan polity that is generally believed to have flourished from the first to sixth centuries A.D. A variety of data sources are now available to us—Chinese historical accounts, inscriptions, local oral traditions, and archaeological materials—that suggest the early Southeast Asian city was a unique mixture of ritual, economic, and political activity. This report focuses on a period that began in the early first millennium B.C. and ended shortly before the inception of Angkor (ninth century A.D.). We discuss results of the 1995 and 1996 field excavations and mapping/survey project, and describe future directions for the Lower Mekong Archaeological Project (LOMAP). KEYWORDS: Southeast Asia, Cambodia, early historic period, Funan, Angkor Borei, social complexity.