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THE CERAMIC CHRONOLOGY OF ANGKOR BOREI, TAKEO PROVINCE,
SOUTHERN CAMBODIA

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ABSTRACT

This dissertation reviews several different sources (i.e., local and foreign documents and archaeological data) in an effort to define and understand the settlement of ancient Angkor Borei, Takeo province, Cambodia, between 500 B.C. and A.D. 500. These sources include Chinese documentaries and inscriptions, and data from an archaeological excavation (AB4) undertaken in 1996 by the Lower Mekong Archaeological Project (LOMAP). Based on the descriptions of early Chinese document records, many Khmer and non-Khmer historians believe that Angkor Borei may have been a capital of one the earliest state/kingdoms in Southeast Asia.

As early as the third century A.D., two Chinese diplomats documented the kingdom of Funan located west of Lin-yi in a great bay of the sea. The capitol was 500 li from the sea. On the basis of this account, many historians (Coedes, Briggs, Vickery, etc.) speculate that either Angkor Borei or Ba Phnom was the capitol of the Funan kingdom and Oc Eo was its international port city. Pierre Paris, using investigative aerial photography taken by Victor Goloubew, suggested that there was a canal running from Angkor Borei to Oc Eo in southern Vietnam.

The actual site of Angkor Borei as we see it today is on a floodplain surrounded by a wall and an inner and an outer moat. A currently occupied village is built on top of this ancient city. Potsherds and architectural construction remains are scattered across and below the surface of this site.

This research presented in this paper is divided into three phases: 1) a review of our knowledge of the site of Angkor Borei based on available documents (Chinese written records, inscriptions, early French archaeological investigation, etc); 2) classification of the ceramic collection of Angkor Borei according to shape, form, decoration, color, wall thickness, paste and other diagnostic characteristics; and 3) construction of the chronological sequences of AB4 and the site of Angkor Borei in general.

Through a study of the ceramic collection from the AB4's excavation in 1996 and by use of radiometric dates, this study found six ceramic groups associated with three chronological phases.

Phase I (500 - 200 B.C.) contains four ceramic groups, including Burnished Earthenware, Grayware, Slipped Ware, and Cord-marked Earthenware. Some vessel forms (i.e.,

pedestal bowl, short and tall flare rimmed jar, and carinated bowls) can also be attributed to Phase I.

Fine Orangeware is the diagnostic ceramic of Phase II which dates from between 200 B.C. - A.D. 300/200. Cylindrical shaped vessel is the unique form of ceramic in the Fine Orangeware group.

Phase III (A.D. 300/200 - 600) contains one ceramic group, Fine Buffware. This Fine Buffware can be found in two distinctive forms: Kendi and pedestalled vase.

The results of this typological and chronological research have the potential of providing information on gross patterns of local production and manufacturing traditions through time at Angkor Borei. It will allow the Ministry of Culture and Fine Arts of Cambodia and other researchers who are interested in the area and the general time frame (400 B.C - A.D. 500) to develop a more precise regional chronology of the Lower Mekong region of Cambodia.

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CHAPTER I
AN INTRODUCTION TO THE RESEARCH PROBLEM, OBJECTIVES,
METHODOLODY AND TO THE BACKGROUND OF ANGKOR BOREI

A Beginning and Overview

Late in the 19th century, Angkor Borei, an ancient archaeological site located along the Mekong delta of southern Cambodia, began yielding exciting finds to French art historians, epigraphers, and archaeologists. Early forms of brick and sandstone religious architecture, Buddhist and Brahmanism statuary, Khmer and Sanskrit inscriptions, Shiva Linga and ubiquitous pottery debris were revealed from the then unknown ruin.

Aymonier defined "Angkor Borei" as "*la ville royale*" or "*la ville souveraine*", or "*the royal capital*" (Aymonier 1900:197); through French scholars it began its pivotal role in the understanding of early historic Cambodia. The legacy of early studies left by French researchers during the late 19th and the middle of 20th century greatly contributes to understanding the background of Angkor Borei. This dissertation continues more than a century of inquiry, focusing on the pottery or ceramic debris now known to extend several meters deep. This pottery offers archaeologists the opportunity to identify and interpret of human activity over the last two thousand years. The

present town of Angkor Borei is situated at the western edge of the Mekong Delta, at 10° 59' north latitude and 104° 58' eastern longitudes. There is a 6-kilometer long earthen wall surrounding the present village. Within this earthen wall, there are many ancient features, including a pond, a temple foundation, and sandstone inscriptions, dated more than a thousand years ago.

Chinese records written during the third century A.D. described a rich polity located at the lower Mekong delta, called "Funan". Drawing from this narration, George Coedès, one of the leading Southeast Asian historians of the 20th century, believed that Angkor Borei or Ba Phnom was the capital center of the Funan kingdom. Brick and sandstone monuments and statuary at Angkor Borei reveal a more archaic art style than other ancient sites in Cambodia. The earliest dated Old Khmer inscriptions were also discovered at Angkor Borei, which dated to as early as 7th century A.D. Information extracted from these early Old Khmer inscriptions are mainly concerned with three domains: domestic and state ritual cults, land and agriculture, and a genealogy of the king. Oral history told at the site mostly depicts a legend about the origin of Angkor Borei that links it back to the first century A.D.

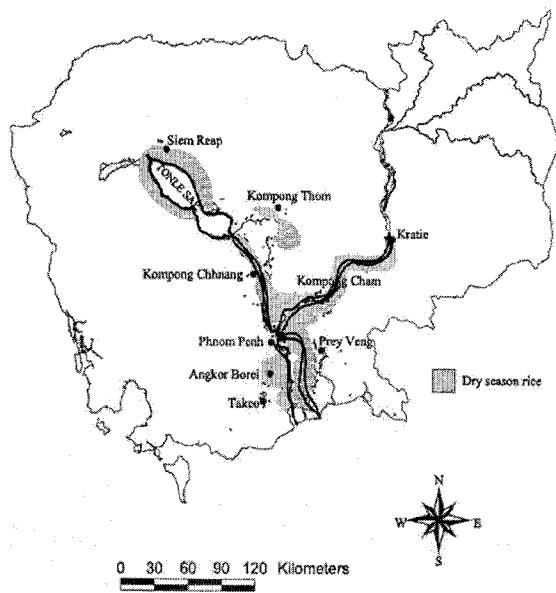


Figure 1.1: Map of Cambodia and Location of Angkor Borei
(Adapted from Fox and Ledgerwood 1999: 46)

Many Khmer and non-Khmer historians have argued that Angkor Borei was a major political center and the cradle of Khmer civilization that emerged between ca. 500 B.C – A.D. 500 (Treng Ngea 1973; Briggs 1951; Vickery 1994). Western scholars generally agree that Angkor Borei was an important center of one of the earliest complex polities in Southeast Asia (Vickery 1994; Briggs 1957; Coedes 1968). Recent data suggest the city flowered as early as 500 B.C (Stark 1998; Stark et al. 1999; Stark 2000). And was at its height by A.D. 500 (Stark 1998: 195; Stark et al. 1999; Stark 2000: 67, 71). Some researchers hypothesized that the city served as the area's capital city of the kingdom of Funan (Briggs 1951; Vickery 1994; Vickery in prep.). Khmer equate the city with *Kok Thlok*, the origin site of the Cambodian people.

Paul Pelliot, a French historian, translated the Chinese description of Funanese kingdom during the third century of the Christian era (1903). Funan was, according to the Chinese record (*K'ang Tai*), a strong and well-developed kingdom that very often sent ambassadors and representatives to pay respects to the emperor of China. The Chinese sources also described the polity as a major commercial center that produced and distributed foods,

including rice, and natural resources such as spices, aromatic woods, antlers, ivory, animal hides, and other rare materials to the foreign traders who came from China, South Asia and Arabic kingdoms (Pelliot 1903; Hall 1985).

The Chinese documents allowed Stark to suggest that one key region during this period was the Mekong delta, where Chinese documentary records describe the early "kingdom" of Funan from the 1st - 6th century A.D. (Stark 1998: 185). The Lower Mekong region, according to Fox and Ledgerwood, includes parts of southern Cambodia (Takeo Province and Angkor Borei) and southern Vietnam where the Funan site of Oc Eo is found (Ng 1979). These two areas have been long thought to be the centers of the Funan polity by historians (Coedès 1968; Pelliot 1903; Vickery 1986; 1994; Vickery in prep.).

According the Royal Chinese Chronicle records from the early Christian era, the emperor of China sent special envoys to Southeast Asia to find new partners in commerce and to expand China's power base (Pelliot 1903 Coedes 1968: 37-41). The Chinese arrived in the Mekong region and recorded their observations. They named the region "Funan" which supposedly encompassed much of the delta area (Pelliot 1903; Briggs 1951; Coedès 1968).

By looking at the description of the area in the Chinese records, George Coedes surmised that "Funan" was the name of a state in the Lower Mekong in which its capital was located at either Ba Phnom or Angkor Borei, and that Oc Eo was the port city of this state (Coedes 1968: 7). Coedès and other scholars (e.g. Pelliot 1903; 1923; Aymonier 1900) speculated that the name of "Funan" was probably designated from the Chinese mispronunciation of "vnom", an Old Khmer word (Coedes 1968: 36). The language and history of this Old Khmer word is still retained, and "*The Period of Nokor Phnom or Vnom*" is frequently mentioned in Khmer history (Treng Ngea 1973).

Several historians have argued differently concerning the origins and nature of Funan society (Coedes 1968; Hall 1985; Vickery 1994; Wheatley 1983); the debates still continue to present. Coedès (1968), Hall (1982, 1985) and Wheatley (1983) emphasized the role of external factors, such as trade and Indian contact, which played a major role in early state formation throughout this region. Wolters (1982) and Vickery (1998, in prep.) instead contend that of emergence of early states in Southeast Asia was due to local processes. They strongly argue that the Lower Mekong polity that arose (what the Chinese called "Funan") was an

agrarian society that based its power on local and international trade.

Many archaeologists critical of the fact that most of these theories are based on little or no archaeological (empirical) data (Higham 1989; Stark 1998; Allen and Stark 1998). As the debate precedes many questions concerning the appearance of an early state kingdom at Angkor Borei remain unanswered even in the face of abundant publications by art historians, epigraphers and historians. Therefore, a new generation of Southeast Asian archaeologists is bringing its approach to bear on the problem (Stark 1998: 181-183; Higham 1989; 1996; 1998; Allen 1998). It is in such as context that this thesis summarizes an archaeological study of ceramics and chronology at Angkor Borei.

The Research Problem

The primary interest of this research is to develop a ceramic chronology, based on a typological analysis of ceramics recovered from systematic excavations at Angkor Borei. Ceramics recovered from one test unit during the 1996 excavation by the Lower Mekong Archaeological Project provided the database for the research. Based on radiocarbon dating from the 1996 archaeological field season, the oldest cultural layer at Angkor Borei dates as early as the 5th century B.C. while occupation continued

(with possible interruptions) into the present. Post A.D. 500 samples are not considered because the upper level of the excavation unit does not post-date this time.

Because the large mound of Angkor Borei currently serves as residential center for rice farmers (totaling about 5,000 persons) the site lying beneath this settlement is disturbed by activities like digging, tree planting, house building, and illegal artifact looting. Between 1982 and 1994, the looting for gold leafs, statuary, and other valuable materials occurred regularly at Angkor Borei.

To salvage the heritage of Angkor Borei, the Ministry of Culture and Fine Arts of Cambodia in 1995 invited the University of Hawai'i at Manoa to collaborate with the Royal University of Fine Arts to set up an archaeological project (Griffin et al. 1999). The original goals of the Ministry included both training and research. With the assumption of the roles of Project Co-Directors, professor Chuch Phoeurn and Dr. Miriam Stark, the Lower Mekong Archaeological Project was formalized in 1996. Part of its mandate was to systematically investigate and rescue the site before it was completely devastated by vandalism.

This dissertation focuses on building a ceramic chronology for Angkor Borei. Specifically, the investigation was concerned with a body of data from a

single archaeological location within Angkor Borei and for the time period ca. 5th B.C. - A.D. 5th century. This focus was chosen because the ceramics of this time period are still poorly known and await more detailed study. The current understanding of Angkor Borei during this period is, unfortunately, mainly based on the Chinese written records and a few ancient Khmer inscriptions dated to the 7th century A.D (Pelliot 1903; Coedes 1931; Mauger 1935, 1936; Stern 1932, 1933, 1934; Boisselier 1955) and the archaeological report of a brief survey made by Pierre Paris and Louis Malleret during the 1930s and 1940s (Paris 1931, 1941; Malleret 1960). [I elaborate on these sources in Chapter Two].

Another reason that is necessary to pursue research on the ceramic chronology at Angkor Borei during this time is that Angkor Borei was the regional center of the northern Mekong delta for the duration of the early historic period. It may have served as a ceramic production center for the region, and contains a high diversity of ceramics that suggests its role as a node in a broader interactional network. Constructing a ceramic chronology for Angkor Borei thus provides the basis for building a relative chronology for the surrounding area. Little archaeological research was conducted in the Angkor Borei region during the French

colonial period, with the exception of an early survey by Captain Lunet de la Junquiere (1902) and on the early Sanskrit and Khmer inscriptions from this region (Coedès 1931). However, recent work by the Lower Mekong Archaeological Project has produced several articles summarizes ongoing archaeological research at Angkor Borei (e.g., Stark 1998; Stark et al. 1999; Stark and Bong 2001; Stark 2000; 2001).

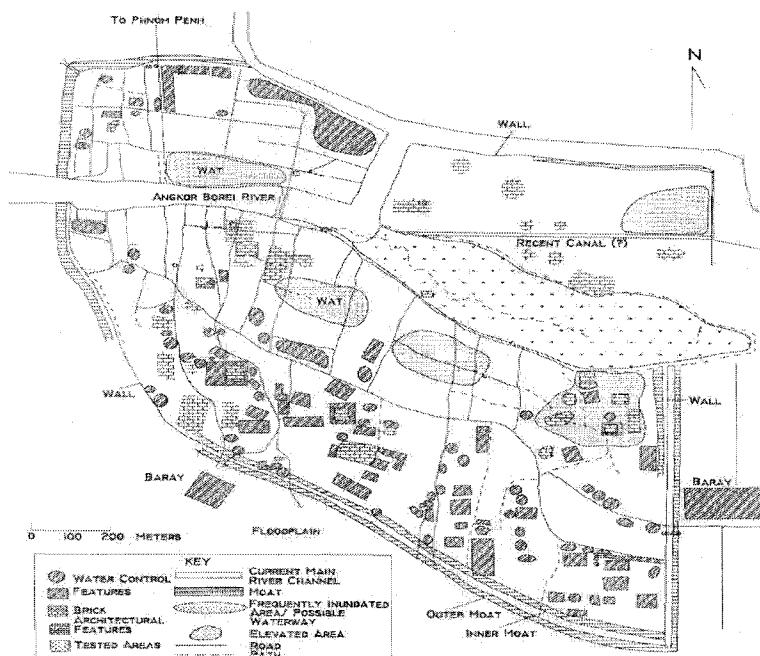


Figure 1.2: Ancient Site of Angkor Borei and Wall surrounding many archaeological features
 (Adapted from Stark et al. 1999: 21)

Until this dissertation research began, no formal ceramic analysis has been undertaken of ceramics from Angkor Borei, and no chronological sequence had been

devised. Preliminary analyses by Miriam Stark (Stark 2000; 2002) provide a foundation for this more detailed study. With this in mind, the present effort was initiated.

The research was further stimulated by interest in arguments that this time period was transitional. Political and social organization of early polities in Southeast Asia may have changed from pre-historic Bronze age chiefdoms to early historic society states as evidenced by the increase in site size, by the appearance of moated sites, religious buildings, and earthen-walled cities. International trade exchange networks may also have first appeared (Higham 1989: 190, 192, 239-240; Stark and Allen 1998: 164).

Furthermore, the Angkor Borei region itself is thought to be the earliest site in Cambodia that many *Khmer History Books* defined as the capital of the "Zhenla of the Water" (Treng Ngea 1973). It is interesting to note that many local and western scholars think that the Angkor Borei's culture, and that of Funan, was the foundation of the civilization of *Sambor Prei Kuk (Isanapura)* of Kampong Thom and *Angkor (Yasodharapura)* of Siem Reap today. While the focus of the dissertation is ceramic chronology, it is significant for the thesis to seek an understanding the origins of the Pre-Angkorian period at Angkor Borei.

Within the context of ceramic chronology building, primary questions for this research include:

1) When did the Angkor Borei's culture begin? In other words, may we deduce that our ceramic sample includes the earliest settlement of the site, and if so, what were its general characteristics? May we discern some measure of social and political complexity for the basal culture?

2) How does this civilization evolve within a thousand year time frame (500 B.C. - A.D. 500)? Again, the ceramic chronology coupled with indications of changing socio-political complexity may indicate, at least in a preliminary fashion, a shift from chiefdom to a simple state level of society. Conversely, certain aspects of stability in the ceramic assemblage may point to stability in the structure of the society. This in itself might point to the importance of an eventual study of Pre-Angkorian ceramics as a measure of social transformation.

3) In what ways did ceramic style change through time? Herein lies the heart of the dissertation. Typological analysis and the study of variation in ceramics over time will illuminate the nature of social complexity, diffusion and trade, and specialization of labor. Attribute-based analysis provides insights on changes in ceramic styles through time and, furthermore, will help this research to

properly classify ceramics into their types. Archaeological ceramists often assume changes in a pottery's form and style in the archaeological record may be correlated with temporal units and with changes in aspects of human behavior.

The results of this research will provide a ceramic chronological sequence for the site that is linked to chronometric dates. This database also provides a foundation for future archaeological work on early historic sites throughout the Angkor Borei region and possibly other sites in Cambodia. For example, excavations at Ba Phnom could be undertaken in the future to provide a comparative collection for Angkor Borei.

Research Procedure Introduced

The proposed research investigates only portions of the ceramic assemblage from the archaeological site of Angkor Borei's 1996 field season. I concentrate on pottery sherds from a 1m X 2m, 4.5m deep excavation unit known as test unit 4 or "AB4". We assume that AB4 is generally representative of the entire settlement and the broader region in terms of chronology, typology, and production technology. Specifically, the following steps were followed.

1. An attribute-base analysis that studied the form, type, wall thickness, relative hardness, rim the shape form, base type, surface treatment, slip and paint location, and decorations of potsherds collected from the 1996 archaeological excavation (AB4) was coupled. The attribute coding form is illustrated in the Appendix A.

2. Analysis of the 4,995 ceramics from AB4. The resultant patterns provided the basis for the construction of a ceramic chronology of the AB4 and Angkor Borei in general.

Some of the ceramic attributes recorded during the analysis are, we assume, sensitive to time periods and to geographical areas. The ceramic chronology will be related to chronometric (radiocarbon) dates and may, by extension, permit the examination of the development and evolution of prehistoric/early historic society of the region.

The AB4 ceramic collections recovered by James Bayman and myself through stratigraphic excavations are extraordinarily diverse, both within layers and through time. The burnished earthenware and pedestal vessel commonly appeared within the five lowermost layers of AB4 (Stark et al. 1999: 19). They are usually discovered below the Fine Orangeware sherds. As for Fine Orangeware, this form is found between layers 6 and 30 cm. According to the

1999 report by Lower Mekong Archaeological Project, Buff-ware ceramics were collected from upper layers (Stark et al. 1999: 28; Stark 2000: 77-80). Thai archaeologists also unearthed buff-ware ceramics that resembles those found at Dvaravati sites; they suggest that this ceramic type dated as earliest 6th century A.D. (Indrawooth 1995:50-52).

Louis Malleret reported that there were at least seventy-one types of ceramics recovered from the Oc Eo investigations in the early 1940s (Malleret 1960: 133-190). Stark (2000: 76-79) identified selected ceramic groups found at Angkor Borei that are associated with three chronological phases:

- 1) Phase I, (ca. 500 B.C. - ca. A.D. 200)
- 2) Phase II, (ca. B.C. 100 - ca. A.D. 200/300); and
- 3) Phase III, (ca. A.D. 200/300 - ca. A.D. 600).

Based on preliminary analyses, Stark (2000) suggests that the ceramic data collected from AB3 & AB4 and the following excavations at Angkor Borei during the 1999 and 2000 field seasons indicate that burnished earthen wares are associated with Phase I; Fine Orange wares and cemetery (AB7) with Phase II; and finally spout and brick architecture are common discovered within Phase III (Stark 2000:76-79). Finer classifications are not possible without

the kind of systematic, attribute-based analysis that this study employs.

This research focuses on technological variability in the ceramic assemblage through time as a strategy for constructing a ceramic chronology for the site. This is the main goal of this investigation and also important for future studies in Cambodia because no one has done a systematic ceramic study in the area before, and the detail dating of the site does not yet exist.

The ceramic data for this research was obtained from archaeological excavations at AB4. AB4 is located on an elevated area, approximately 100 meters south of *Stoeung* (River) Angkor Borei (Stark et al. 1999: 15).

Dissertation Outline

This dissertation synthesizes results of the analysis and interpretation of the ceramic data collected from Angkor Borei in the 1996 archaeological field excavation.

Chapter 2 provides an introduction to the archaeological site of Angkor Borei. Chapter 3 discusses the sources of information background to understand the ancient Angkor Borei through documentary records, including data from Chinese records, Sanskrit and Old Khmer inscriptions and oral traditions. Previous art historical research of early French scholars who mainly focused on

Brahmanist and Buddhist statuaries and linga will be reviewed. This chapter also includes data from the archaeological and monumental studies during the French colonial period. In addition, the results of surface and subsurface investigations of the Lower Mekong Delta Archaeological Project were used to enlarge the knowledge of ancient Angkor Borei's activity.

Chapter 4 presents a summary of results of ceramic data from the late pre-historic and early historic in Southeast Asia between 500 B.C and A.D. 500. It includes data from previous archaeological research in Cambodia, Thailand, southern Vietnam, and Laos.

Chapter 5 describes the methods for the excavation of Angkor Borei test unit 4, data collection procedures, description of matrix in each stratigraphic layer, and the determination of stratigraphic layers at AB4. The archaeological site of Angkor Borei, including Test Unit 4, has three chronological phases that will be elaborated in detail in this chapter.

Chapter 6 reviews the methodologies that were used for the analysis of ceramics that were excavated from AB4. This chapter also provides a detailed description of each attribute, and it provides a full discussion of each ceramic group, as they were defined the attribute analyses.

Chapter 7 presents the results of the ceramic analysis and interpretation by basing on different attributes, including paste, rim profile, slip location, type of base, surface treatment, carbon core, and wheel scars, in association with chronometric dates from radiocarbon samples taken during the archaeological excavation. This also illustrates the chronological sequence of Test Unit 4 and its ceramics.

Chapter 8 offers a brief comparison of ceramic data from other archaeological sites in mainland Southeast Asia. Chapter 9 summarizes the main ideas of this research; provide some recommendations for future research on Angkor Borei ceramics, and recommends future directions for archaeological research in Cambodia's Mekong delta.

CHAPTER 2
GEOGRAPHY AND LOCATION OF ANGKOR BOREI

The present town of Angkor Borei is situated at the western edge of the Mekong Delta, at 10° 59' north latitude and 104° 58' eastern longitude (Fox and Ledgerwood 1999: 39). The site is located on the southeastern edge of elevated land in this predominantly flat region, and is surrounded by low-lying delta in all directions except the northwest. According to Fox and Ledgerwood, most of the Mekong Delta has an elevation of circa two meters above sea level, and the elevation of Angkor Borei varies from approximately 2-10 meters above sea level (Fox and Ledgerwood 1999: 40).

The region around Angkor Borei is inundated by flooded waters during the rainy season (August-December) and surrounded by rice fields during the dry season (January-May). The town sits on an elevated rise and, its walled area contains approximately 300 hectares, where people build their houses, plant vegetables, and grow economic trees. Angkor Borei is a name of a district of Takeo province, which exceeding the boundaries of the town itself. The name also refers to the eponymous site that immediately underlies today's town. Ancient Angkor Borei is

surrounded by remaining portions of a 4.5 meter high earthen and brick walled, with a perimeter of approximately 6 kilometers.

Within the walled enclosure that is called Angkor Borei are several elevated areas, or mounds. Most of these areas are found in the settlement's central section, running in an east-west direction. Many archaeological features such as foundations of brick temples, water bodies (barays) and artifacts (i.e., statuary, beads, gold leaf, potsherds, and linga) are still found on the surface and, more commonly, below ground. Among the material culture, ceramics are ubiquitous.

Aerial photography, taken by Victor Goloubew in the late 1920s, also shows that Angkor Borei's enclosing wall (Paris 1931). The surrounding wall is accompanied by inner and outer moats. Outside of the wall to the east and southeast, there are three temples, Phnom Da, and Asram Maha Rossei. The aerial photography reveals a long canal that might link Angkor Borei to Oc Eo in Southern Vietnam. During the first half of the 20th century a member of *Ecole Française d'Extrême Orient*, Henri Mauger, visited the archaeological site of Angkor Borei and he noted that it was very important site that has many temple constructions,

statuaries, inscriptions, and includes many brick temple foundations and water bodies
(Mauger 1935: 491).

The Lower Mekong Archaeological Project members identified a water reservoir, or *baray*, to the east of the city wall through pedestrian reconnaissance during the 1995 field season. In 1900, Etienne Aymonier described this same *baray* as a "secret basin" (Aymonier 1900). The contemporaneity of the *baray*, the walls, the moats, and the temples has not yet been established. Recent research by the LOMAP team suggests that the date for construction of the eastern area of Angkor Borei is between 17th and 19th century A.D. (Stark et al. 2003).

History Of Research At Angkor Borei

Because of the abundance of ancient architectural constructions, religious statuaries, and inscriptions throughout Cambodia and all Indochina, early French researchers were most interested in studying cultural remains on the surface and they did not pay much attention to subsurface remains. In addition, French colonial archaeology was in its infancy until post-World War II.

To understand these local archaeological traditions, the French spent almost a century investigating monumental construction and art styles (e.g., Parmentier 1932, 1951;

Stern 1934; 1938; 1939; Rémusat 1940). Only a few archaeological projects had been undertaken on prehistoric sites in the regions (Mansuy 1923; Paul Levy 1943; Colani 1935). Moreover, almost none of these researchers were trained in prehistoric archaeology and therefore systematic excavation never reached its full potential.

In their publications during the early 1900s, *Le Cambodge* (Aymonier 1900) and *L'Inventaire Descriptive du Monuments du Cambodge* (De Lajonquière 1903), Aymonier and de la Delajonquière inventoried most of the monuments that are found within Cambodia, including the temples of Phnom Da, and Asram Maha Rossei. Henri Mauger (1935) referred to Angkor Borei as the ancient city of Vyadhapura and he discussed an earthen wall that surrounded the site (Mauger 1935: 91). Coedes called Angkor Borei the "Naravara nagara" (Coedes 1968: 68). Wheatley believed that Angkor Borei area was once an important center in the ancient past (Wheatley 1983: 132).

Early French art historians in the late 19th and early 20th centuries were primarily interested in collecting and investigating many Buddhist and Hindu statues from the site and in comparing them with the Indian statuary style. They revealed that the Angkor Borei sculptures, called Phnom Da Style A&B, have a strong similarity in shape, form,

decoration and facial expression with the Indian style of Gupta (Boisselier 1955; Dupont 1955: 25-27). Most recently, Dowling (1999:54) investigated some of the statues recovered by the French during early part of the last century. She also agrees with Boisselier and Dupont (1955) that these sculptures reflect a strong influence from Indian art of Gupta and Post-Gupta.

In 1903, Paul Pelliot published his article, *Le Funan* which describes the supposed Funan kingdom as a center that provided foods, such as rice, fishes, honey, and other substances, to the foreign traders who visited its capital (Pelliot 1903; Coedes 1968:40-41). After carefully re-reading many Chinese documents, Ishizawa strongly suggests that Funan's economy was mainly based on agricultural production (Ishizawa 1995:15).

Pierre Paris examined aerial photographs of the Lower Mekong area, taken by Victor Goloubew, and argued that a canal ran from Angkor Borei to Oc Eo and possibly from Angkor Borei to Ba Phnom. He suggested that the canal was dug during the Funan period (Paris 1931; 1941). Henri Mauger, who restored the temple of Asram Maha Rosei, described the temple as a monument that embodied a strong influence from Indian arts and temple decorations at the Dieng Plateau in Indonesia (Mauger 1935a, 1935b: 49-51;

1936: 85-87). Coedès, in his *L'Inscriptions du Cambodge*, reported that the oldest ancient Old Khmer inscription that specifies a date (K. 600) found at Wat Koumnou in central Angkor Borei. The stelae dates to A.D. 611 (Coedès 1931: 1-21).

Louis Malleret's brief archaeological investigations at the site of Oc Eo during World War II provided some archaeological understanding of the Lower Mekong Delta (Malleret 1959; 1960; 1961). Malleret and his team spent approximately one year (February/ 1944-March 1945) excavating the site of Oc Eo and inventorying many other important mound sites around the base of Phnom Ba The, An Giang Province, southern Vietnam (Malleret 1960: 7-13).

At Oc Eo, Louis Malleret reported that the site comprised a rectangular wall measuring 3 km by 1.5 km, surrounded by five ramparts and four moats. The site covered an area of 450 ha. According to his report, Oc Eo was bisected by a large canal. Malleret identified some brick and stone structures that may have been the foundations of ancient temples. At this site he found material cultural remains, both domestic and exotic, including Roman coins belonging to the reign of Antoninus Pius (A.D. 138-161) and Marcus Aurelius (A.D. 161-180), jewelry of Mediterranean origin, Chinese mirrors, Iranian

coinage, glass beads, a rich ceramic assemblage, gold leaf stelaes, carnelian, agate, rubies, garnet, zircon, diamond and other artifacts (Malleret 1960: 100, pp. 294-298; 1962: pl. 10-75).

In his second volume, *La Civilisation Materielle d'Oc Eo*, published in 1960, Malleret briefly described Angkor Borei as a large site, containing many architectural features and surrounded by an earth wall. Pottery was abundant and scattered on the site surface (Malleret 1960: 91-93).

In the 1980s and 1990s, Vietnamese archaeologists conducted research in the area of Oc Eo and found artifact assemblages to Malleret's (Ha Van Tan 1986; Le Xuan Diem and Vo Si Khai 1995; Le Xuan Diem et al. 1995). They documented stone and brick structures, burials and dwellings (Ha Van Tan 1986: 96). Ha Van Tan (1986) also reported that both domestic and exotic cultural materials at Oc Eo were recovered (Ha Van Tan 1986: 95-97). Ha Van Tan (1986) divided the material cultures collected from Oc Eo into three categories, the objects imported from India, the objects in Indian style but produced at the site, and objects bearing Indian influence but partly mixed with local tradition (Ha Van Tan 1986:98). According to the reports by Vietnamese archaeologists, among the artifacts

of Indian origin or influence are Lingas, Buddha statues, Brahminist god statues, and figures on gold leaves (Ha Van Tan 1986: 98).

The rich variety of trade goods (Roman coins, Middle Eastern beads, and Chinese mirrors) found in this region prompted Malleret and subsequent scholars to suggest that the Mekong Delta served as a stopping point for Indian and Chinese traders. Angkor Borei was, perhaps, an inland capital of this Early Historic polity called "Funan" (Briggs 1951: 13; Coedès 1968: 68). Most recently, French archaeologists working near Oc Eo have called into question the temporal association between Oc Eo and Angkor Borei as being contemporaneous cities (Manguin 2000: 414; Manguin and Vo Si Khai 2000: 107). Angkor Borei seems to have been settled some 500 years earlier.

Vickery (1998) recently investigated many Pre-Angkorian inscriptions, Pre-9th century A.D. (some of which were found at Angkor Borei), and he suggested that the economy of the region was strongly dependent on agriculture; particularly rice production (Vickery 1998: 274-276). Fox and Ledgerwood (1999) conducted an intensive ethnographic survey at Angkor Borei concerning flood recession rice. They propose that rice has been the main staple of the region and that the method of practicing

flooded recession rice agriculture has been known to the area for more than two thousand years (Fox and Ledgerwood 1999).

Since the summer of 1995, the University of Hawaii, East West Center and the Ministry of Culture and Fine Arts, have organized archaeological fieldwork and survey at Angkor Borei, ushering in modern investigations of its material cultures, including temples, statuaries, human burials, and pottery (Stark 1998; Stark et al 1999; Stark 2000; 2001).

The University of Hawaii and the Ministry of Culture and Fine Arts of Cambodia archaeological project, now properly named the Lower Mekong Archaeological Project (LOMAP), is directed by Dr. Miriam Stark and H. E. Chuch Phoeurn.

The summer of 1995 field investigation mainly focused on mapping and reconnaissance of the site of Angkor Borei (Stark et al. 1999:12-15). In the 1996 summer field season, the Lower Mekong Archaeological Project team members returned to Angkor Borei to resume archaeological mapping and to conduct excavations at three different test units (AB3, AB4, and AB5). AB5 is a foundation of a brick temple. The dominant artifacts collected from AB3 & AB4 were potsherds (Stark et al. 1999:15-19). LOMAP also had field

seasons in 1999, 2000, and 2003, which concentrated on excavating the cemetery at Wat Kumnou and surveying in the vicinity of Angkor Borei. Paleo-environmental research by LOMAP involved analysis of a sediment core from the eastern baray and geoarchaeological investigations of the Paris canals (Stark et al. 2003; Sanderson et al, in press).

Few publications concerning Angkor Borei ceramics are yet available. A few articles for the later periods are published. For example, Sambor Prei Kuk is reported by Bernard Philippe Groslier (1981) in *Khmer Ceramic*, Roland Mourer (1986) in Doctoral dissertation on *Pottery Production in Cambodia*, and Miriam Stark in *Udaya* in 2000 and 2001. Earlier French researchers at the area only briefly described earthenware ceramics from Angkor Borei as similar as those found at Oc Eo (Malleret 1960: 91-92).

Although some publications have recently described Khmer ceramics (e.g., Frasche 1976; Guy 1989; Rooney 1990; Stock 1981; Tsuda 1998-1999; Fujiwara 1990), they primarily concentrate on ceramics from the Angkorian Period (after A.D. 802). An exception to this trend is Roland Mourer's (1986) doctoral dissertation about earthenware ceramics from Cambodian sites and Oc Eo (southern Vietnam). Still, little is known about Pre-Angkorian ceramics, and by

extension, early historic period ceramics (B.C 500 - A.D. 500).

In his description of Pre-Angkorian pottery, Mourer mainly adopted information from Malleret's publications during late 1950s and early 1960s (see Mourer 1986: 132-152). Based on his ceramic data recovered from archaeological excavation at Sambor Prei Kuk, Bernard Phillippe Groslier suggested that wheel-made pottery appeared at the end of 6th century A.D. (Groslier 1981: 14). Groslier noticed that most of the pottery he found during the excavations were more likely to be associated with a ritual cult, as evidenced by the absence of necks. He also suggested that some of the water pots were similar to the Oc Eo's wares that Malleret's team excavated (Groslier 1981:14).

Angkor Borei Today: People, Agriculture, and Economy

The town of Angkor Borei is inhabited by at least 5,000 people who are farmers, fishermen, and merchants. The population of Angkor Borei contains perhaps ninety percent Khmer, all following Buddhism. Another group in the area is Vietnamese, consisting of about five percent. The remaining five percent are members of the Cham ethnic minority (data from interviewing Honorable Head Monk at Wat Kumnou on October 23/2002).

Like Khmers elsewhere in Cambodia, Khmers at Angkor Borei build their houses on wooden stilts and cover them with sugar palm and coconut thatch, zinc panels, and ceramic tiles. Thatch is usually utilized by the poor and low income families who largely inhabit the southern side of the river. Rich families often cover their habitations with metal sheets and ceramic tiles. Cement houses only appear at the area around the Angkor Borei's market.

Vietnamese and Cham people do not construct permanent shelters on the land. They choose to reside in a floating settlement (erecting floating houses on the river bank) and mostly live on long boats. These kinds of residents are prohibited near the district's administration center. One can only find this type of habitation outside the city wall to the east. These people only came up to the market once every three days to buy to rice, spices, oil, kerosene and other kitchen needs.

Since 1998, because of political stability, the movement of people from and to Angkor Borei area is not so frequent. The population at Angkor Borei does not usually move from their homes to reside in other towns or cities. Farmers usually hire people from outside of their communities to transplant and to harvest rice from January to April or early May. The town center serves as a district

administration office and commercial center. It also has a market, a Buddhist temple, a health center, some elementary schools, a taxi station, and some ports.

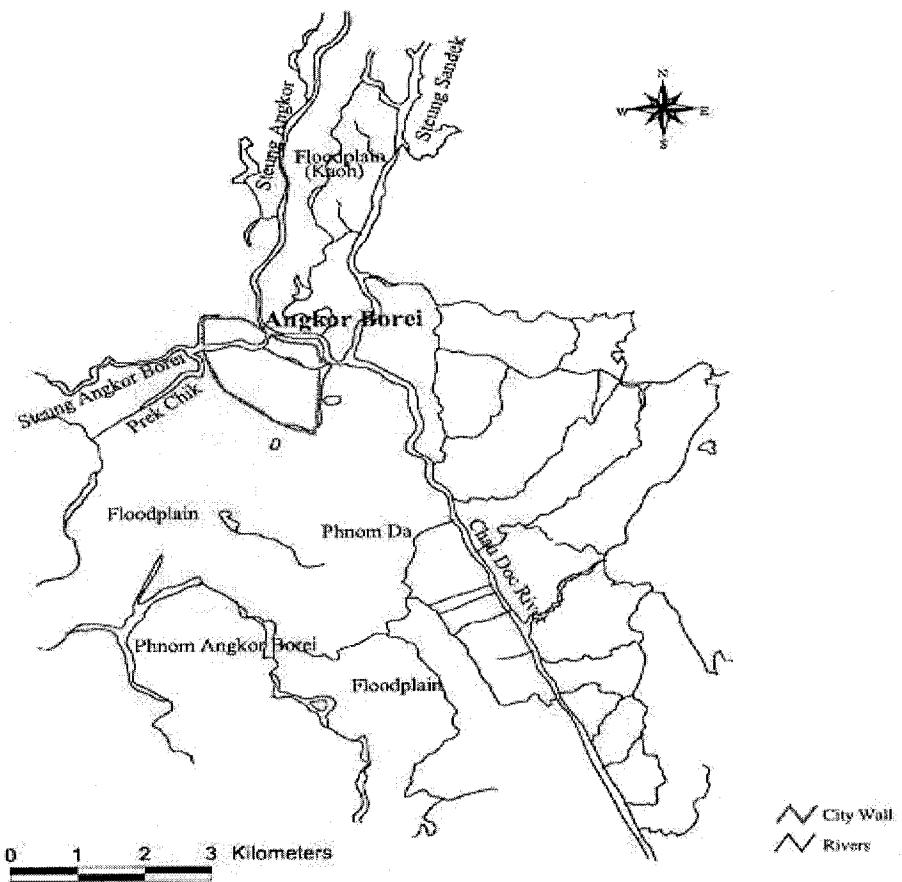


Figure 2.1: Angkor Borei Town and the Surrounding Area
(Adapted from Fox and Ledgerwood 1999: 41)

People at Angkor Borei usually only allow their children to study at elementary and junior high schools. Based on district office for education statistic (20001), most students drop out after completing junior high school, and fewer than twenty percent of the village's children

have the good opportunity to continue their education at the district High School. After leaving school, children are often assigned to work doing full-time laborer such as plowing rice fields, transplanting and harvesting rice, and fishing in the river.

Paddy farming is the main agricultural crop at Angkor Borei. Because of heavy annual flooding from the Mekong River and the monsoon rains, the water level of the Angkor Borei district and the surrounding area can rise to a height of two meters each raining season. Fox and Ledgerwood concur with Jean Delver (1961) that this farming method can be exclusively found at the basins of Angkor Borei and the basins behind the banks of Tonle Sap, and the depressions along the banks of the lesser and greater Tonle Thom River between Kratie and Phnom Penh (Delver 1961: 332; Fox and Ledgerwood 1999: 45).

According to Fox and Ledgerwood, every year the villagers start plowing their cultivated land after the first rain comes (late May or June) after which the soil is inundated for six months. Transplanting is carried out in December and January, when the water begins to recede to perhaps between 0.5 meter and 1 meter depth. Currently Angkor Borei farmers use a modern short period rice variety, called IR 36, that takes only 90 days to mature

making it ready to harvest in March and April (Fox and Ledgerwood 1999: 39 - 43).

Khmer farmers at Angkor Borei are peasants, and sell their rice crops each year. They export their paddy products by boat up the river to Takeo town and down to Vietnam. Pig production is also another important source of income for the population of the area. Pigs are only raised by Khmers and Chinese. According to Fox and Ledgerwood, villagers usually transport the pigs and chickens to Takeo town, Phnom Penh, and to Vietnam. People also raise cattle primarily for plowing (Fox and Ledgerwood 1999: 43).

The income of ethnic Cham is based exclusively on fishing along the *Stoeung* during the dry season (February through June) and rainy season. They bring fish to the riverbank every morning to sell to middlemen, who then bring them to the market. As for the Vietnamese, their income derives mostly from selling micro-enterprise products (such as kitchen utensils, slippers, buckets, and others) that are imported from Vietnam in exchange for foods and other necessities. These two population groups tend to move their boats back and forth along the river. Most of them have no registration records at a specific village and community.

Recently, PRASAC (European Association on Agriculture) has been digging canals to link the river to remote rice fields in order to support the development of new agricultural land. PRASAC has greatly improved agricultural production for people who live at Angkor Borei and the area surrounding Phnom Da and Phnom Borei.

CHAPTER 3
THE HISTORICAL RECORD OF ANGKOR BOREI

Information From Documentary Records

Early French historians, in attempting to understand the economic, political and cultural background of ancient Angkor Borei, relied heavily on sources that were primarily documentary records and oral traditions. These include data from Royal Chinese Records, from Sanskrit and Old Khmer inscriptions, and from legends of *Kok Thlok* (*Prah Thong* and *Neang Neak*), *Kaudinya* (*Houen-T'ien* and *Lieou-Ye*, and *Kambu* and *Nagi Soma* (Coedes 1968; Pelliot 1903; Vickery in prep.).

The *Royal Chinese Chronicle* is one of the main data sources concerning the lifestyles and cultures of the royal families, dignitaries and commoners. The earliest Chinese documents that report the life ways and the nature of the Funan polity dates as early as the third century in the Christian era. Written, or reported, by the Chinese ambassador, *K'ang T'ai* and his assistant, *Chou Ying*, the document chronicles their visit to Funan in A.D. 245 (Pelliot 1903). Although *K'ang T'ai* and *Chou Ying's* book was lost, many portions of their text appeared in later Chinese history books. Later documents concerning the kingdom of Funan are mostly history books and a traveler's observation by the Chinese pilgrim *I-Tsing*.

Most of the Chinese historical books about Funan were written by government officials between A.D. 265 and A.D. 906 (Stark 1998: 179-180; Chatterji 1965). They are the result of the emperors of China officially sending officials to Funan to be ambassadors and to seek new trading routes and religious ideologies. According to Pelliot (1903), these Chinese documents include the *History of Ch'i Dynasty*, the *History of Liang*, the *History of Sung*, the *History of Southern Ch'i*, the *History of Souei*, the *New History of T'ang* and the description by I-tsing, who traveled to the Funan during the late 7th century A.D (Coedes 1968).

Sanskrit and Old Khmer inscriptions provide valuable information regarding religious practices, the division of labor, ownership of cattle and land, and the royal families' genealogies (Vickery 1998: 2-3). Some inscriptions contain specific dates, usually using the notation of the *Saka Era*. The *Saka era* began ca. 78 years prior to the Christian era. The change of each *Saka* year begins in March - April (Vickery 1998: 92). The inscriptions created in the pre-9th centuries were often inscribed in both the Sanskrit and the Old Khmer languages. The Sanskrit texts always describe ritual and ceremony, such as gods, kings, princes, and Brahmans. The contexts of the Old Khmer inscriptions have more to deal with local chiefs, local genies, and common people. Professor Michael Vickery suggests that the Old

Khmer inscriptions contain more information on lifestyle, economy, and civil society than do those in Sanskrit language (Vickery 1998: 83).

As for Khmer folk history, most of the stories relate to the origins of Funan and the Angkor Empire, and they often contain specific dates as early as the beginning of Christian era, even though the legends were written centuries after the events. These folktales come from two different sources: 1) Oral traditions (ancient stories) that elderly people, Acharya (Buddhist priests) and monks usually transmit at home and in the temples; 2) Legends that were recounted in the Chinese chronicles in Funan days, and those of Khmer and Champ inscriptions during the late Pre-Angkor and early Angkor period (Coedes 1968: Briggs 1951).

Legends Relating To The Origin Of Funan

Many of the Chinese documents mentioned different legends concerning the origins of Funan (Chatterji 1964; Pelliot 1903). *K'ang T'ai's record* described the king of Funan, named *Houen Tien* (*Kaudinaya*), who came from either India or somewhere in the Malay Peninsular or the southern islands. He was married to the Queen *Lieou-ye* during the latest part of the first century of Christian era (Pelliot 1903; Briggs 1951:17). The story tells us that, at night, *Houen T'ien* dreamed that a god offered him a bow and ordered him to sea on a boat. Early in the morning, *Houen T'ien* went

to the god's temple and found a bow. He then embarked on a junk and sailed to Funan. *Lieou-ye*, the queen of Funan, saw the junk offshore and led her armies to rob it. *Houen T'ien* shot an arrow, which passed through her boat. The Queen was terribly afraid of the power of her enemy's weapon and decided to surrender to *Houen T'ien*. *Houen T'ien* wrapped her in a piece of cloth, because she had no dress, and afterwards married her. One may infer that *Houen Tien* worshipped the spirits or the "genie" that Chinese referred to the gods of *Brahmanic* religion (Pelliot 1903: 256; Chatterji 1964: 11).

A Champa inscription, dated A.D. 658, also inscribed a legend that may refer to the origin of the king of Funan (Chatterji 1928; Finot 1910: 32). *Kaudinya* who stayed in the capital of *Bhavapura* is that king. The inscription described *Kaudinya* as the greatest of the Brahmans who hurled his javelin onto an island. *Soma*, daughter of the *Naga King* who founded his royal lineage on the island, met the great Brahman and agreed to marry him. This story may have spread from Funan to Champa after the marriage of the princess of *Kambuja*, daughter of *Isanavarman*, and the prince of Champa *Sri Jagaddharma* (Finot 1910: 32; Chatterji 1928).

Concerning the origin of Funan, another *Kaudinya* legend appeared again in the *History of Liang* during the 5th century A.D. The legend described *Kaudinya* as a Brahman who

came directly from India to Funan. He had heard a supernatural voice telling him that he must go and reign in Funan. Kaudinya followed the instructions and finally reached Funan. When the people heard about his arrival, everyone in the land was full of happiness, and they chose him as king. According to the legend, the new king introduced Indian or Brahmanic rules, replacing the existing customs (Pelliot 1903; Briggs 1951).

The Baksei Chamkrong inscription of Angkor Period, dated A.D. 947, mentions the story of Kaudinya. The inscription described the *Hermit Kambu Svayambhuva* and *Apsara Mera*, who descended from the solar and lunar races. It also mentioned the close ancestor of *Hermit Kambu* was the king Rudravarman, who had his origin from Kaudinya and Soma (Coedes 1968: 111-113; Briggs 1951).

The legend *Prah Thong* and *Neang Neak*, is mentioned in the Khmer Royal Chronicle during the 18th century and it is known to many elderly people in Cambodia, especially villagers at Angkor Borei. The legend describes the country of *Kok Thlok* (the land of Thlok tree) as formerly ruled by the *Naga-raja* (Naga-king) who had a beautiful daughter, *Nagi*. *Prah Thong*, a prince from India (Indraprastha or Delhi), arrived at the *Land of Thlok Tree* and met with the princess *Nagi*. He fell in love with the princess and was married to her. To expand the territory for his daughter and

son in law, the king Naga-raja drank the water that flooded the kingdom and built a capital for them (Chatterji 1964). The country was then changed to *Kambuja*. According to the oral tradition, the event took place as early as the first century Christian era. Segments of Khmer wedding ceremonies at present still follow the rites as told in the story of *Prah Thong* and *Neang Neak* (Treng Ngea 1973; Chatterji 1964).

In his latest research on Chinese texts about Funan, Paul Pelliot (1925:247-248) suggested that Kaudinya did not come directly from India, but somewhere in the Malay Archipelago that had the walled cities, jewels and customs the same as in India. The Chinese called the place *Heng-tie* or *Mo-fou*, as regard it as located south east of Yeou-po. Pelliot identified Heng-tie or Mo-fou as the Malay Archipelago and Yeou-po as Java (Pelliot 1925: 247 - 248).

The story of the king and a spirit of *Nagi* appeared again during the Angkor Period when *Chou Ta-kuan*, Chinese ambassador, was sent to stay at Angkor in A.D. 1296 - 1297. According to Chou Ta-Kuan, every night the spirit of *Nagi* appeared in a form of woman. The king had to sleep with her first before he could sleep with his principle wives and other concubines. If the spirit of the *Nagi* did not present itself, the failure was regarded as sign of the king's immanent death (Chou Ta Kuan 1993).

In summary, the story *Houen T'ien* and *Lieou-yi* are mainly known to historians from the Chinese records originating in the mid third century of the Christian era.

Kaudinya and *Soma* first appeared in the Angkorian inscriptions some centuries later. *Preah Thong* and *Neang Neak*, however, cannot be found in either Chinese documents or Khmer inscriptions during the periods of Funan, Chen-la and Angkor (Vickery in prep, 1).

Michael Vickery believes that the story *Preah Thong* and *Neang Neak* was only known to Khmer after the 14th century. Then, how significant is the story of *Houen T'ien* and *Lieou-yi*, *Kaudinya* and *Soma*, and *Preah Thong* and *Neang Neak* to the history of Funan and Angkor and later Khmer society? So far, there has not been a clear explanation to the significant and important of the Funan legends yet. Some scholars like Pelliot (1903) and Coedès (1968: 37-38) believe that the events depicted in the stories happened during the Funan period. They assume that *Houen T'ien* originated from somewhere in the Malay Peninsular.

In contrast, Indian scholars like Chatterji (1928) strongly argue that *Houen T'ien*, *Kaudinya* and *Preah Thong* came from India. They only focus mainly on the influence of Indian religion and other cultural forms to Funan and Angkor empires (Chatterji 1928).

Among these three different legends, only one story depicted human characters, king Houen Ti'en and Lieou-ye. Houen T'ien a Brahman came from India and Lieou-ye was a queen of Funan. On the other hand, other two legends recorded the princess of Naga, Nagi, who is the daughter of a serpent king rather than a human. Why was Naga or the spirit of Nagi important to Funan, Angkor, and later Khmer society?

Some researchers (Briggs 1951: 14; Chatterji 1964) suggested that the Naga is a symbol or a spirit of the water that the population of Funan and Angkor used to irrigate their agricultural land, and that the empires were heavily dependent on the water for rice cultivation. At present, no ancient document relates the Naga or spirit of Nagi to the water and agriculture has been found.

Ancient Angkor Borei and the Chinese Documents

According to Chinese records, *The History of Liang* (A.D. 502 - 556 A.D.), the capital of Funan was named "t'e-mu" and it was located approximately 500 li from the sea. George Coedes calculated 500 li to about 200 kilometers. Coedes correlated the name "t'e-mu" as "Vyadhapura." In Sanskrit the word means "the city of hunters" while in Khmer it translates "dmak or dalmak". He wrote that the Chinese record inscribed the Funan capital as "T'e-mu," a

mispronunciation of word *dmak* or *dalmak* (Coedes 1968: 36 - 37).

Based on these analyses, Coedes speculated that the location of the Capital of Funan was situated at either villages around the now *Ba Phnom* hill or the village of *Ba Nam*. Both sites are in Prei Veng province (Figure 6). He suggested that this is the probable distance from Oc Eo to *Ba Phnom* (Coedes 1968:37).

In contrast, Aymonier, Pelliot, Vickery, and other scholars believed that the capital of Funan, *Vyadhapura*, was situated at present day Angkor Borei (Aymonier 1990; Pelliot 1903: 290; Wheatley 1983: 132; Vickery 1998; in prep.). Coedes, however, thought that Angkor Borei was the later capital of Funan, important during the second half of the 6th century A.D. At this time, the King Bhavavarman I and his cousin Citrasena attacked the polity. As a result of the invasion, the king of Funan decided to move the capital from *Vyadhapura* (*Ba Phnom*) to *Naravaranaagara* or Angkor Borei. The *History of the Ch'i Dynasty* (A.D. 265 - 419 A.D.) described the country of Funan as large as 3,000 *li* in width, approximately 1,200 kilometers. Walled cities, palaces, and houses were reported (Pelliot 1903). Figure 3.1 illustrates locations of possible ancient cities of Funan, including Angkor Borei and *Ba Phnom*.

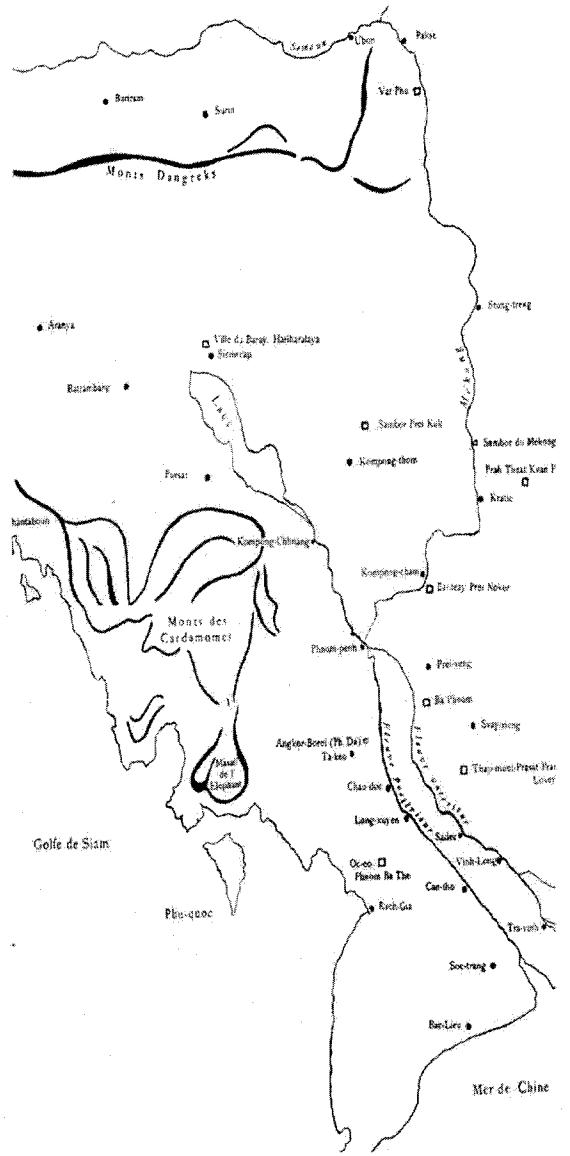


Figure 3.1: Map showing the location of Ba Phnom
(Adopted from Pierre Dupont 1955, front page)

Based on the report of the preliminary archaeological survey at Ba Phnom (Prey Veng province) made by the Faculty of Archaeology, Royal University of Fine Arts, in March 2000, the team suggests that Ba Phnom is an important archaeological site that contains many small mounds, abundant 7th and 8th century inscriptions, and brick temple

foundations, but there was no walled-city identified at the site. To compare the geographical situation and archaeological features at both Angkor Borei and Ba Phnom, Angkor Borei was more likely the former capital of Funan.

The Kings Of Funan

As early as the beginning of the first century A.D., different Royal Chinese Chronicles noted that many kings ruled the kingdom of Funan (Coedes 1968; Briggs 1951; Vickery 1994). Unfortunately, most of the kings' names were written in Chinese pronunciation. Therefore, it is difficult for historians to define the specific names in Sanskrit and Old Khmer. According to the Royal Chinese Chronicles, the first king who ruled the kingdom of Funan was *Kaudinya* (*Houen T'ien*) and his wife, *Queen Lieou-ye*, dated to the late first century Christian era. One of their successors was *Houen P'an-houang* who reigned during the second century and died at the age of 90. His son, *P'an-P'an*, succeeded to the throne with the help from General *Fan-man* or *Fan-che-man*. *P'an-P'an* died after a short rule of three years (Chatterji 1964).

The History of Liang says that the General *Fan-shih-man* was appointed to be the king of Funan after the death of king *P'an-P'an*. King *Fan-Shih-Man* died sometime around A.D. 225. *Fan-Man* was the greatest king of Funan. He conquered most of the territories in mainland south East Asia. Coedes

thought the name of Fan-Shih-Man came from the Chinese transcription of the king *Sri Mara*. The king Sri Mara was mentioned in the Sanskrit inscription found at Vo-Canh in the region of Nha-trang (Coedes 1968: 40). Based on characteristic of the script, Coedes and Finot argued that the date of the text was no later than 3rd century Christian era (Briggs 1951).

Another General, *Fan-chan*, usurped the throne and murdered the legitimated prince, *Chin-Cheng* (Coedes 1968: 40). *Fan-chan* was the first king who instituted direct diplomacy with the imperial India. According to the records, the king *Fan-chan* sent one of his close relatives, *Su-Wu*, to India between A.D. 240 and A.D. 245 (Pelliot 1903: 292; Chatterji 1928; Coedes 1968: 41). After the death of king *Fan-chan*, perhaps in A.D. 244, the country was in chaos for a period of time.

Fan-Hsun was finally able to assume the throne in the late third century A.D. He made a diplomatic exchange with the kingdom of Champa in A.D. 287. Almost a century after the death of *Fan-Hsun* is a blank in the records. No document mentions the king's name needed to fill this gap. Another *Kaudinaya* reappeared in the history of the Funan kingdom in the late 4th century Christian era, but no clear information about leadership in the country is known. The *Kaudinaya* document briefly mentions the exchange of diplomacy between

Funan and India. Coedes believed that foreigners colonized the kingdom of Funan during this time, possibly a prince from India, around A.D. 357 (Coedes 1968:46 - 476).

The History of Sung Dynasty described a king of Funan named *Sh'i-li-t'o-pa-mo*; many scholars identified *pa-mo* as *varman* (Pelliot 1903; Chatterji 1968). Coedes referred the name to *Sri Indravarman* or *Sresthavarman* (Coedes 1968: 56). Chinese documents inform us that the king *Sh'i-li-t'o-pa-mo* frequently sent envoys to Chinese imperial court after A.D. 434. During the late 5th and the very beginning of the 6th century A.D., the *History of Southern Ch'i* stated that one of *Sh'i-li-t'o-pa-mo*'s successors as one whose personal name was *She-yeh-pa-mo* and *Chiao chen-ju* as his family name. Coedes identified *She-yeh-pa-mo* as *Jayavarman* and *Chiao Chen-ju* as *Kaundinya*. In this case, the king's name would be *Kaundinya Jayavarman* (Codes 1968: 57). *Kaundinya Jayavarman* had sent merchants to trade in Canton in A.D. 478. He died in A.D. 514.

Rudravarman, a son of *Jayavarman* by a concubine, usurped the throne and ruled it until approximately to the mid of 6th century A.D. Chinese documents recorded that *Rudravarman* was the king of Funan who in A.D. 539 sent the last embassy to China. After this time, Chinese Annals recorded the events of a new kingdom from North of the Mekong River, *Chen-la*.

The People and Culture

After the arrival to the kingdom of Funan in A.D. 245, K'ang T'ai and Chou Ying observed that "the kingdom indeed is beautiful but it is strange that the men are so indecent. Men did not wear any clothing and the women only used a small piece of fabric to wrap themselves (Pelliot 1903: 252-253).

The History of the Ch'i Dynasty described the Funanese men as ugly and black, with curly hair. They went about naked and bare-footed. They were honest and did not steal. Agriculture was their main activity. They were fond of engraving ornaments and of chiseling stone. Many of the utensils, which they used for taking their meals, were of silver. Taxes were paid in gold, silver, pearls and perfumes. They had books and archives. Their alphabet resembled that of the *Hou* (a Central Asiatic tribe which had the Indian alphabet). Their marriage and funeral ceremonies were the same as *Lin-yi* (Champa) (Pelliot 1903:254). It is believed that the writer of the *History of the Ch'i Dynasty* based his description on K'ang T'ai's earlier book (Pelliot 1903; Coedes 1968; Stark 1998).

Later, *the History of Southern Ch'i* (A.D. 479 - A.D. 501) recounted that the people of Funan, had gold, silver, and silk. Persons from high status families dressed themselves in brocade. The people made rings and bracelets

of gold and vessels of silver. They built their houses of wood. The king lived in a pavilion of several stories. Common people lived in houses raised from the ground. When the king went out he rode on an elephant. Cock and pig fighting was popular. There were no prisons. In the case of dispute, golden rings and eggs were thrown into boiling water, and the disputants had to take them out by hand. The innocent would be unharmed, the guilty burned (Pelliot 1903).

In terms of religion and funeral ceremonies, the *History of Liang* (A.D. 502 A.D. 556) reported that people adored the genie of heaven, which was the image of their god, and was made of bronze. Some gods had two faces and four arms, and other images had four faces and eight arms, and carried objects in the hands. For mourning, the custom was to shave beards and hair. There were four methods of disposal of the dead: 1) Throwing the dead body into the flowing stream; 2) Burning it to ashes; 3) Burying it in the ground; 4) Dispensing it to the animals and birds (Pelliot 1903).

The History of Southern Ch'i clearly documented that the king Jayavarman worshipped the god *Mahesvara* (Shiva), and *Shivaism* was the main religion in the country, but some people practiced Buddhism at the same time (Coedès 1968:58, 61).

Politics And International Relations

The History of the Liang (A.D. 502 - 556 A.D.) states that the king of Funan *Fan Chan* sent an envoy to India between A.D. 240 - A.D. 245 (Pelliot 1903:292). According to the record, between the period of mid third century A.D. and the fifth A.D., the India and Funan had exchanged their envoys three times, e.g., A.D. 240, A.D. 357, and A.D. 434 (Chatterji 1962: 19).

During the Wu dynasty, King Souen K'iuau, who reigned from A.D. 222 to A.D. 251, sent ambassador K'ang T'ai and his assistant Chou Ying to Funan from A.D. 245 to A.D. 250 (Pelliot 1903:303). The same record states that King Fan Chan also sent an ambassador and musicians to China to see the king in A.D. 243. *The History of the Song* (A.D. 420 - A.D. 478) mentioned that the king of Funan, whose name was Che-li-pa-mo, had sent many subsequent diplomatic officials to China after A.D. 434. Historians referred *pa-mo* to varman (Pelliot 1903, Coedes 1968, Chatterji 1960:20).

In A.D. 287, the king Fan Hsun also sent an embassy to Champa (Lin Yi) to restore diplomatic relationships between the two kingdoms that had fought each other for centuries.

The relationship between Funan and China was more related to commerce than other domains. For example, in A.D. 478, the *History of Tsi* reported that the king of Funan, Kaudinya Jayavarman, sent merchants to trade in Canton.

Unlike China, the connection of Funan with India was more ecclesiastical, and it concerned Brahmins, monks, and other religious matters. For example, during the late 5th century (A.D. 478 - A.D. 481), the Indian monk Nagasena visited Funan and met the king Kaudinaya Jayavarman. The exchange of embassies between Funan and Champa focused mostly on political matters and territorial integrity (Coedès 1968; Briggs 1951; Pelliot 1903).

The last two Chinese records that predate the 9th century reported that the kingdom of Funan was under threat by another kingdom that used to be one of its vassal states. The *History of Souei* (589 - 618) mentioned that the political situation of Funan was one of turmoil and that an invasion by a kingdom from the north was threatened. This kingdom was located southwest of the Lin-yi kingdom, and was called Chen-la (Briggs 1951; Coedes 1968; Chatterji 1964).

The *New History of the T'ang* (A.D. 618 - A.D. 906) was the last document to talk about the kingdom of Funan. According to that document the capital of Funan was suddenly seized by *Bhavavarman*, the king of Chen-la, and he forced the king of Funan to abandon his capital and to move further south to the town of *Na Fu Na*. Coedès identified the term *Na Fu Na* as *Navaranagara* (Coedès 1968: 68). Was the kingdom of Funan really under invasion by the kingdom from the north, Chen-la? The records are uncertain. *I-tsing*, who traveled

to Funan during A.D. 671 - A.D. 695, described the country of P'an-p'an, formerly called Funan, where the people once worshipped many devas, and then later the law of Buddha prospered and expanded. I-tsing recounts that a wicked king completely destroyed the Buddhist religion, and no more monks existed. Coedes named the wicked king as *Bhavavarman* (or his cousin *Citrasena*), as they were ardent worshipers of *Shivaism* (Coedès 1968: 67-68).

After the 7th century A.D., no document mentions the Funan polity. Hypotheses have been posed to seek the origins of Chen-la and its kings, its geographic location, and relationship between Funan and Chen-la (Vickery 1994; Jacques 1979; Briggs 1951).

To understand this, George Coedès investigated two different sources: 1) Chinese documents, in particular *the New History of T'ang* and *the History of Souei*, and; 2) inscriptions left by later kings during the Angkor period. Based on data from these documents, Coedès revealed that *Bhavavarman* was a grandson of the Funan king *Sarvaphauma*, and *Bhavavarman* himself was also linked to Chen-la through his marriage to the princess *Kambujarajalakshmi* of the maternal family of *Sresthavarman* of the Chen-la kingdom. He ascended the throne of Chen-la upon the marriage with the princess *Kambujarajalakshmi* (Coedès 1968: 66-67).

According to Coedes, there is no term in Sanskrit or Old Khmer for Chen-la. The original name of Chen-la was directly from the Chinese record, *the History of Sui*, namely *T'sien-lap* (Coedès 1968: 65).

The History of Sui inscribed before A.D. 589 tells us that the capital of Chen-la had a high mountain named *Ling-chia-po-p'o*. A sacred temple was constructed on the summit of this hill to house the spirit of god *P'o-to-li*. Thousands of soldiers guarded the foot of the mountain (Pelliot 1903: 272). Based on this text, Coedes suggested that the capital of Chen-la situated at *Wat Ph'u*, in today's southern Laos (Figure 3.1). The adjacent mountain is *Lingavarpata*, and the associated god spirit of *P'o-to-li* was *Bhadresvara* (Codes 1968: 66).

Welch proposed that the Khorat Plateau in Thailand was the cradle of Chen-la civilization (Welch 1985). Vickery argued that the center of Chenla was always at Sambor Prei Kuk, in central of Cambodia (Figure 8). Vickery strongly suggests that the mountain *Ling-chia-po-p'o* in the Chinese records is Phnom Santuk, a hill that is located near the capital city Sambor Prei Kuk (Vickery 1994).

Concerning Funan and Chen-la, a question arises. How did the power shift from the Funan king to Chen-la king during the 6th century? In other words, how was Rudravarman replaced by Bhavavarman? Coedes proposed that the

transference of power was possible for two reasons: 1) Rudravarman was not a legitimate king, 2) Bhavavarman, a legitimate prince, was a grandson of the Funan king who married a princess of Chen-la.

Jacques and Vickery seem to support Coedès's second explanation by proposing that a term "reunification" to call the situation of Funan and Chen-la during the 6th century. They believe that the king of Funan and Chen-la descended from the same ancestor.

If one has to judge the political issue between Funan and Chen-la from the linguistic and culture perspectives, it makes sense to suppose that Rudravarman (Funan) and Bhavavarman (Chen-la) spoke the same language and had similar traditions and that caused the transference from Funan's king to Chenla's king.

The transfer of power would have been easy and in keeping with local patterns of succession. From this point of view, the change of regimes from Funan to Chen-la seems to affect the leaders of the country more than the common people. But, why did the king move the capital from south to north of the Mekong River?

Vickery speculates that several factors could be involved, such as finding a new trade route, a better location for building a new capital, and a need for good agriculture land may have prompted the king (Bhavavarman)

during the 6th century to move his capital from the south, (Vyadhapura or Angkor Borei, to north, Isanapura, Sambor Prei Kuk (Figure 3.1) (Vickery 1998: 21).

Because a new city was built and given a new name, Chinese writers and travelers may have failed to recognize the reality of the Funan and Chen-la as essentially the same kingdom.

Information From Pre-Angkor Inscriptions

Available data from inscriptions in Sanskrit and Old Khmer that illuminate the Funan and Chen-la periods are extremely limited. It is even more difficult for historians to extract data from the inscriptions dating between the third and fifth centuries of the Christian era because few exist. The majority of these Sanskrit and Old Khmer inscriptions contain no specific dates. Scholars have determined the age of the inscriptions using paleography (i.e., comparison of script styles) (de Casparis 1979: 81-82).

Epigraphers' knowledge of the social and political organization of the Funan state (A.D. 1st - A.D. 6th century) is mainly based on inscriptions dated to the Chen-la period (late 6th - 8th century). There are only a few inscriptions dated Pre-6th century (Briggs 1951; Saveros Pou 1989).

L'Ecole Française D'Extrême Orient published the translation of 1050 inscriptions that related to Pre-Angkor and Angkor Periods. George Coedes translated most of these ancient texts. Among the total 1050 there are 140 inscriptions are considered to date to the Pre-Angkor period, and only 134 texts were published by the *Ecole Française D'Extrême Orient*. Out of 134 inscriptions, 54 texts contain dates in *Saka era* (Vickery 1998: 84). Philip Jenner, who has spent most of his life compiling Old Khmer words, argues that vocabularies from the inscriptions are very limited and almost half of the words are personal names (Jenner 1981; 1982; Vickery 1998).

Since 1991, the recent works by the Ministry of Culture and Fine Arts, Royal University of Fine Arts, *Ecole Française D'Extrême Orient* and other international research teams and the local authorities based in the provinces have discovered at least 100 additional inscriptions. Some of these stelae are now stored in the National Museum in Phnom Penh and the others are preserved by local villagers in the Buddhist temples (Long Seam 2001; Vickery 1998: 91). They are not yet fully transcribed and translated. Continuing Coedes's works, Saveros Pou published four volumes of new inscriptions in the *Bulletin De L'Ecole Française D'Extrême Orient* (Saveros Pou 1989; 1996; 2001).

Some of the inscriptions were badly damaged and it is not possible for historians to extract any information for social and historical contexts (Vickery 1998: 92). The most archaic form of inscriptions in Cambodia occurred in both Old Khmer and Sanskrit. Coedes and Vickery revealed that sometimes the Old Khmer text is the translation of the Sanskrit or that both texts have different meanings.

The persons who inscribed the stelae texts were skilled and knowledgeable concerning Sanskrit literature. The stylistic and grammatical accuracy, and the poetic forms, of the Sanskrit texts appearing in the stelae is strong evidence on that matter. (Coedès 1968: XVI; Sharan 1974). Following Barth's (1885) comments on Sanskrit inscriptions in Cambodia, Vickery added that the writers of Sanskrit inscriptions in Cambodia did not seem to learn the language from Indian teachers in Cambodia. They must have been in a direct contact with Indian scholars (Vickery 1998: 83-84). This suggests that ancient Khmer scholars may have gone to India to learn the Sanskrit language.

Administration And Social Structure After Inscriptions

The inscriptions dated from the second century A.D. suggest that the Funan and other Pre-Angkor states were strong political hierarchies with kings, princes, ministers and local rulers whose duties were to implement the king's decrees (Coedès 1945: 69-70; Briggs 1951).

By analyzing early inscriptions in Sanskrit and Old Khmer languages, Sharan and other scholars suggest that the Funan kingdom had a system of selection of its high ranking officials that was based on their knowledge in *Sastra* (literature) and loyalties to the king (Briggs 1951; Coedes 1968; Sharan 1974: 149-151; Vickery 1998).

Pre-Angkor period society contained many elements such as the king's *guru* (advisor), Brahman priests, ministers, chief of treasury, provincial chiefs, district administrators (*kron*), and *acarya*, or local religious priests who were capable of performing ritual for the villagers (Jacob 1979: 406-412; Vickery 1998: 177-241; Sahai 1970).

Vickery, by carefully analyzing the terminologies used in the Sanskrit and Khmer inscriptions, suggests that kings had title in Old Khmer "vrah kamratan an" and "raja" in Sanskrit. "Vrah kamratan an" was also used to refer to god (Vickery 1998: 177). The king's children carried titles according to their hierarchical rank, either "maharaja" or "pon". Female members of the royal family were referred to as "ge klon" (Coedes 1952).

The high officials, whose rank was immediately below the king, had the titles "pon" and "mratan". Vickery believes that these two titles had the same rank and function in the government. In addition, he suggests that

pon and *mratan* referred to highly ranked male officials and elite family members close to kings. In the inscriptions, *pon* or *mratan* was usually written before the personal names of regional and local rulers. For example, inscription of Angkor Borei (K 600, Wat Koumnou) stated that *pon Uy* offered personnel and animals to the *Kpon mratan an* (Vickery 1998: 191). From the inscriptions from *Kdei An* and *Wat Koumnou*, it is clear that both titles *pon* and *mratan* were exclusively used for highly ranked officials and members of elite families, and never appeared with the king. Vickery states that local chiefs also had a title of *pon*, but the other titles, such as *Kurak*, *gajapati*, *acarya*, *jun glann*, etc., seem to have lower rank than *pon* and *mratan* (Vickery 1998: 199-200).

The king of Funan had absolute power and the orders made by king were considered to be the words of god (Briggs 1951; Vickery 1998). He claimed to be an incarnation of god or descended from the god. The king was the supreme chief (Chatterji 1964; Vickery 1998). He had a principal queen, who also descended from the pure royal family, and several wives and concubines.

The legitimate prince to throne had to be the offspring of the king and queen. The children of the king by other wives and concubines were not legitimately assigned to rule the kingdom. For example, Coedes and Briggs thought that

Funan's king Rudravarman was easily overthrown by Bhavavarman (Chen-la) because he (Rudravarman) was a son of the king Jayavarman and a concubine and, therefore, he was not a legitimate king (Briggs 1951: 29-30, 48; Coedes 1968: 60-61).

Kings of Funan were actively involved in such activities as the consecration of new temples, gods' statues, water tanks and charity acts (donation of god statues, foods and land to local ruler and acharya). For example, the inscriptions of Han Chey, Phnom Bayang temple, Prasat Pram Loveng, Ta Prohm (Sanskrit version), Thmor Krê, Veal Kantel, and Phnom Bantay Nan mentioned the inauguration of Sivalinga, Visnu statues, and new water tanks by the kings (Coedes 1937; Sharan 1974: 81-146). Early inscriptions, however, seem to neglect to describe the interaction between kings and public.

Most of data about the relationship between kings and the public during the Funan period exclusively derived from the Royal Chinese historical records, K'ang T'ai, the History of Southern Ch'i and the History of Liang, and later by Chou Ta-Kuan. Based on these records, it is known that the kings met with ordinary people twice a day to discuss some situations and to solve particular problems. The king allowed the common people to see him if they wanted to file complaints against their local rulers (Pelliot 1903).

Many inscriptions support the view that kings were the only ones with power to appoint the kingdom's high ranking officials, such as *pon* (provincial or regional chief), *mratan* (major ruler), *mratan klon* or *kurak klon* (ruler of a major town), *klon* (chiefs), *tan* (temple official) and *kurak*. In a few exceptions some high officials inherited power from their family lines (Sahai 1970; Sharan 1974: 154-155). Vickery thinks that the position of *pon* could be inherited from family and *mratan* was a post that was appointed by the king (Vickery 1998: 249-250).

There is not sufficient data from inscriptions to report the regional and provincial divisions during the Funan period (Figure 3.2). According to Chinese documents K'ang T'ai), the Funan state consisted of 30 provinces. Kings usually appointed their children and other close relatives to be *mratan* or governor of the provinces. For example, during the 6th century, king Bhavavarman appointed his younger brother Citrasena to serve as the chief of the army. Another example, in inscription K.54, asserts that the king Isanavarman had two sons, *Bhavavarman II* and *Sivadatta* (older brother). Isanavarman appointed Sivadatta to rule several cities and to bear the title *pon* (or *svamin* in Sanskrit) (Vickery 1998: 185).

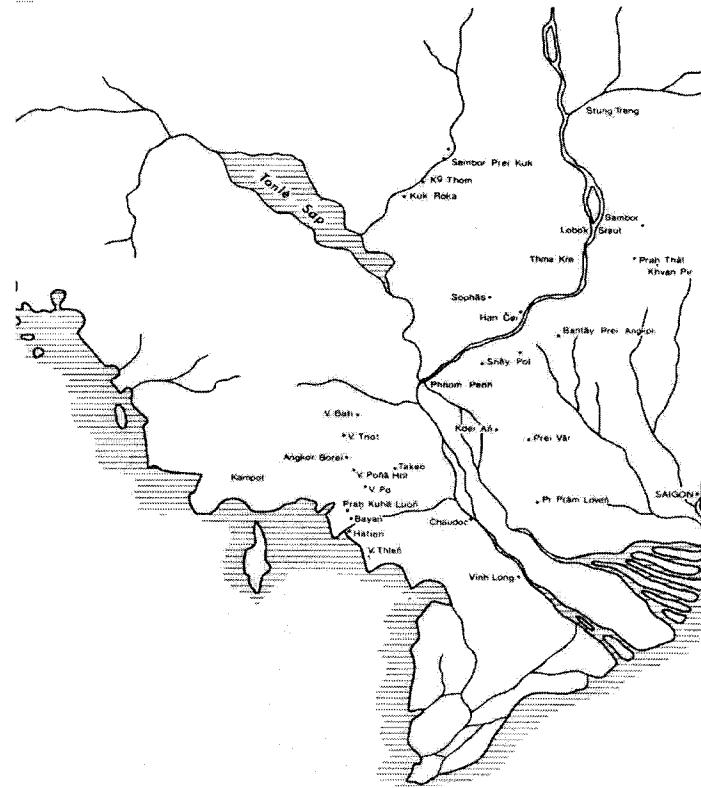


Figure 3.2: Locations of Pre-Angkor inscriptions
(from Vickery 1998:110)

The role of these high ranking officials entailed the right to interfere in all kinds of administrative affairs and to resolve disputes relating to property, animals and inheritance. They were also required to regularly give accounts of their territory to central governmental officials and especially to the king (Chatterji 1964; Vickery 1998; Briggs 1951).

Below regional and provincial chiefs, there were local chiefs, chiefs of village, chief of *Travan* (water tank), chiefs of rice, chiefs of temple, chiefs of weaving, chiefs

of elephants, and *Knum* (personal servant). For more details about the term "*knum*", see Jacob (1979: 406-426) and Vickery (1979: 217-231).

By combining data from inscriptions (Sanskrit and Old Khmer) and Chinese historical records, we see that the kingdom of Funan had a strong social hierarchical structure. Power was delegated from the king to the common population through regional and provincial chiefs, and down to domestic chiefs, and to commoners. Each village was composed of a headman, the *acarya*, artisans, musicians, and personnel servants. The headman had full authority to administer and manage some domestic affairs. Vickery and other scholars maintain that the power must have been conveyed to local village heads from the provincial ruler (Vickery 1998; Jacob 1979; Sharan 1974: 161).

Economic Basis of the Funan Period

There is still a debate on the economic foundation of the Funan kingdom. By investigating many Chinese documents, some scholars believe that the economy of the state rested on trade and international exchange with merchants from China, India, and other kingdoms in the Malay Peninsula (Hall 1982, 1985). Oc Eo may have been Funan's international port, an *entrepôt* and food supply center for foreign merchants (Pelliot 1903; Hall 1985; Codes 1968; Wheatley 1983). Other researchers argue that the economy was based on

agriculture, rice and other crops (Ishizawa 1996; Vickery 1998; Fox and Ledgerwood 1999).

In the past, many epigraphers and historians overlooked important information from inscriptions that relate to the state's economy and concentrated instead on royal genealogies, gods, and religions (Bergaigne 1854; Coedes 1942; 1953; 1954; 1957; Chatterji 1968). Recently, Vickery, by examining most of the inscriptions of the Pre-Angkorian period, has discovered an abundance of information about the economy of ancient Funan society (Vickery 1998: 276-277). Data suggests that the economy of ancient Funan was heavily dependent on land, cattle, and agriculture, e.g., rice paddy, vegetable, and fruit.

Inscriptions of Vat Sabab, Phnom Bateay, Baset, Angkor Borei, Vat Prey Va, Toul Kok Preah, and many other early texts record that the king and princes, the state officials, and local chiefs donated rice fields, land, cattle, rice grains, medicines, elephants, clothes and fabric, *knum*, and personal wealth to temples and gods (Sahai 1974; Jacob 1979).

Besides agricultural products, Funan society also produced domestic ornaments, tools, utensils, and other crafts for home and temple uses. For example, the inscription at *Preah Ko* gives an account of king *Jayaviravarman*, who organized an association of craftsmen

(Sharan 1974: 206). Based on the same inscription, goldsmithing was a popular occupation. Ornaments made of gold and other precious metals were in great demand. Chinese documents also recount the importance of gold and pearls that the Funanese population used for ornaments as well as to pay taxes or tribute to the state (Pelliot 1903; Chatterji 1964).

In comparison to Chinese information, epigraphers and historians have not been able to draw any knowledge of the use of money or currency for domestic market use (Vickery 1998: 257). Vickery notes that there are terms used for market and exchange. For example, he notes such vocabularies as *duñ* (to buy), *lak* (to sell), *jāv/jnāhv* (buy), and *dār* (to collect money or things that other people owe). Drawing from these vocabularies, Vickery speculates that exchange of goods was practiced (Vickery 1998: 257-258, 307-308).

Many scholars agree that a system of formal currency appeared late in Funan (Vickery 1998; Sharan 1974).

Inscription at Tuol Ang Srah, Thnal Totung district, Kandal Province, stated that *mratan Anantasvami* donated rice, coconut trees, areca trees, bronze, and money to *Vrah Kamratan an Sri Kadaresvara*. The texts also mentioned that conch-shells were equivalent to a specific unit of value (Coedes 1953: 39-40). People could use conch-shells to purchase rice fields, fabric, fruit, and plants.

Most of the donations, (e.g., land, wells, cattle, rice field, race grains, conch-shell, and fabric), contributed by the royal family and high ranking governmental officials, were sent to gods and temples. There were lists of Brahmans, priests, musicians, labors and *knum* (personal servant) whose were required to maintain and perform ritual at the temples. These shrines' organizers and *acarya* played an important role in management of the wealth that was owned by gods and temples. The Pre-Angkorian texts repeatedly recorded donations and offerings to gods and shrines.

Religion During the Funan Period

A majority of the texts from the Sanskrit inscriptions, in combination with some of the Old Khmer corpus, make reference to the construction of gods' shelters, rituals, and the consecration of new temples and gods' images. Inscriptions also recorded that members of royalty, high dignitary families, and local chiefs donated land, personal wealth and servant, and cattle to temples (Briggs 1951; Sharan 1974).

These texts listed some principal names of Hindu and Buddhist gods and goddess, including Shiva, Visnu, Durga, Brahma and Buddha. Many scholars accepted that these Indian gods and goddess were mainly known to royal families, to the elite, and other high ranking classes. Common citizens prayed their own local gods, i.e., ancestral spirit, *neak*

ta, and other supernatural powers (Vickery 1998: 143-144; Sahai 1970; Kamaleswar 1961).

No inscription reveals Kaudinya's religion. According to Chinese documentaries, he worshipped Hindu deities. The primary religions found in inscriptions, left by later kings, are Hinduism and Buddhism. Hinduism contains three different practices (sects) Shavaism, Visnuism and Brahmanism. Each Funanese king worshipped his favorite god. A god was called "vrah" and "kpon". Vickery and Jacob defined *vrah* as a male god and *kpon* as a goddess (Vickery 1998; Jacob 1979). Through investigation of many texts, they discovered that all gods, during Funan and Chen-la periods, were named by the indigenous term *vrah kamratan an*, *vrah kamratan jagat* and *kpon*. The term "*kamratan an*" was also applied to the king.

Evidence of inscriptions from late Funan period indicated that there were many local gods. For example, there existed gods of the road, ancestral gods, gods of earth, old and young gods (inscription from Kampot and Prey Veng provinces) and gods of food (Vickery 1998). Vickery and Jacques maintain that all of these autochthonous gods had existed in ancient Funan since prehistoric times, and prior to the arrival of Indian religion to Southeast Asia. These protective spirits can be referred to present day *Neak Ta* (Vickery 1998: 143-145; Jacques 1979; Chandler 1983).

Although the members of royal and high ranking families primarily focused on exogenous Hinduism and Buddhism, they still tolerated other secondary gods and indigenous deities. Evidence from inscriptions inform us that kings, minister, regional and provincial chiefs and members of elite families offered rice and many valuable objects to local gods. The lower class population was freely allowed to worship their indigenous gods (Chatterji 1964; Vickery 1998).

Hinduism, through the god Shiva, was the state religion of Funan for centuries. The religion in ancient Funan never became extreme (no single cult dominated), and no trace of conflict is known from the documentary records. Inscriptions and Chinese records often state that harmony prevailed among the religions in ancient Cambodia. For example, the Sanskrit inscription of Ta Prohm at Bati, Bati district, Takeo province, inscribed during the reign of Rudravarman (6th century) reported that although the king (Rudravarman) was very fond of Buddhism, but he still intentionally preserved *Shivaism* as the state religion (Briggs 1951: 31).

The local religion and ritual practices during the Funan period had deep roots and existed in the society long before the arrival of Indian religion. The existence of this pre-Indian religious can be traced through many Sanskrit and Khmer texts that frequently listed names of domestic gods,

the worship of supernatural beings such as spirits of the land, rice, water, mountain, forest, and ancestors.

Although the Chinese and ancient Khmer documents described different religious practices among members of the royalty and the common population, Vickery argues that they share a common concept "punya", or work of merit (Vickery 1998: 158-163). The evidence of the efforts made by central administrators and local commoners to fulfill the gods' desires can be seen through works of art. These include brick and sandstone sanctuaries, Buddhist and Hindu sculptures, and Lingam.

Art Historical Research At Angkor Borei

Besides the information from the written documents, such as Chinese and Sanskrit and Old Khmer, the temples and statuary are also a vital tool for understanding ancient Angkor Borei. During the French colonial period in Indochina (A.D. 1884 - A.D. 1953), French officials identified and mapped many brick and sandstone religious monuments in Cambodia. They also collected thousands of religious objects that were stored in two places: Cambodia and France.

French administrators and intellectuals became interested in studying the statuary, figurines, and architecture. They have spent more than a century investigating characteristics of architecture (e.g., temple's form and decoration), evolution of statuary, and

stylistic changes since the earliest times. The contribution of the early art historical research to the present knowledge of Angkor Borei is large. Based on their characteristics and art trends, temples and statuaries discovered from the Angkor Borei and other sites in the lower Mekong Delta were categorized into the initial style, officially called the "*Phnom Da*" style (Boisselier 1955; 1989; Lee 1969; Dupont 1955; Parmentier 1927).

Architecture Of Funan

No ancient residences of the common people or royalty and noble families remain. Inscriptions do not mention the residences of people. Chinese documents suggest that the king's palace and nobles' residence were constructed of wood, that architects utilized woods to make floors, pillars, and walls. The difference between residences of nobles and common population may have been most striking in the roof. The commoners used thatch to cover their houses. Royalty's and officials' habitations were covered by ceramic tiles (Pelliot 1903). Because of the tropical climate, those wooden palaces and houses left little evidence in the archaeological (Parmentier 1927; Briggs 1951). Figure 3.3 illustrates location of possible Funan's sites.

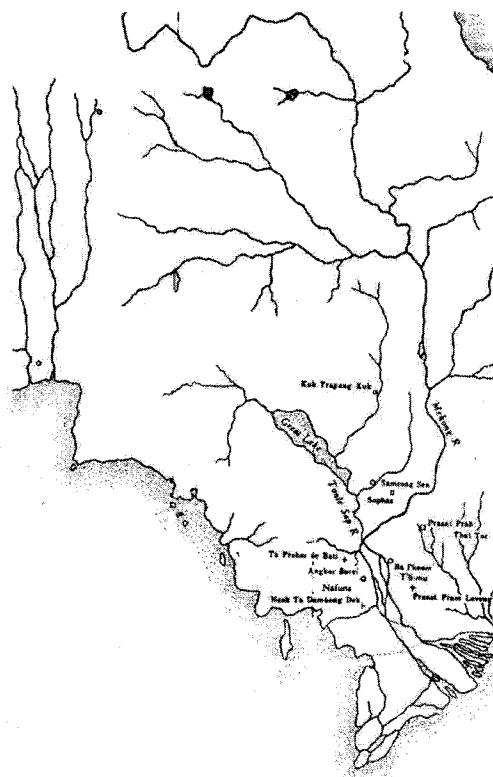


Figure 3.3: Locations of late Funan's sites
(from Briggs 1951:31)

Many scholars (Briggs 1951: 32-33; Boisselier 1989; Groslier 1966) agree that ancient Khmer architects employed laterite, bricks and sandstone to build gods' shelters, or temples, at the end of Funan Period. These construction materials were never used for human residences. There is no evidence of religious architectures made of brick and stone left from early period of Funan. Due to the absence of the

religious edifices, scholars speculated that architects also utilized wood to make temples and other sacred places.

The remains of monuments from the late Funan period are now found scattered throughout the lower Mekong delta, around Tonle Sap, and at the area between Mekong and Tonle Sap. Monuments temporally assigned into this period are Prasat Preah Theat Toch (situated within the citadel of Bateay Prei Nokor, Kampong Cham Province), Prasat Kuk Trapeang Kuk (Near Stung Sen River, Kampong Thom Province), Sophas (located between Kampong Cham and Kratie), the Grotto at the foot of Phnom Da, Dambang Dek (near Phnom Andong Svay, Kampong Cham Province), Trapeang Kuk, Han Chey, and Sophas (Figure 10). Parmentier considered some temples, i.e., Asram Maha russei, Prasat Preah Theat, edifice N 19 of Sambor Prei Kuk, to reflect an intermediate (transitional) period between Funan and Chen-la that dated between late 6th and early 7th century A.D. (Parmentier 1927: 188-244; Rémusat 1951).

Religious architecture remaining from the Funan period is characterized by a simple square or rectangular plan. Usually, brick and sandstone monuments in this period contain only a single tower (Figure 3.4).

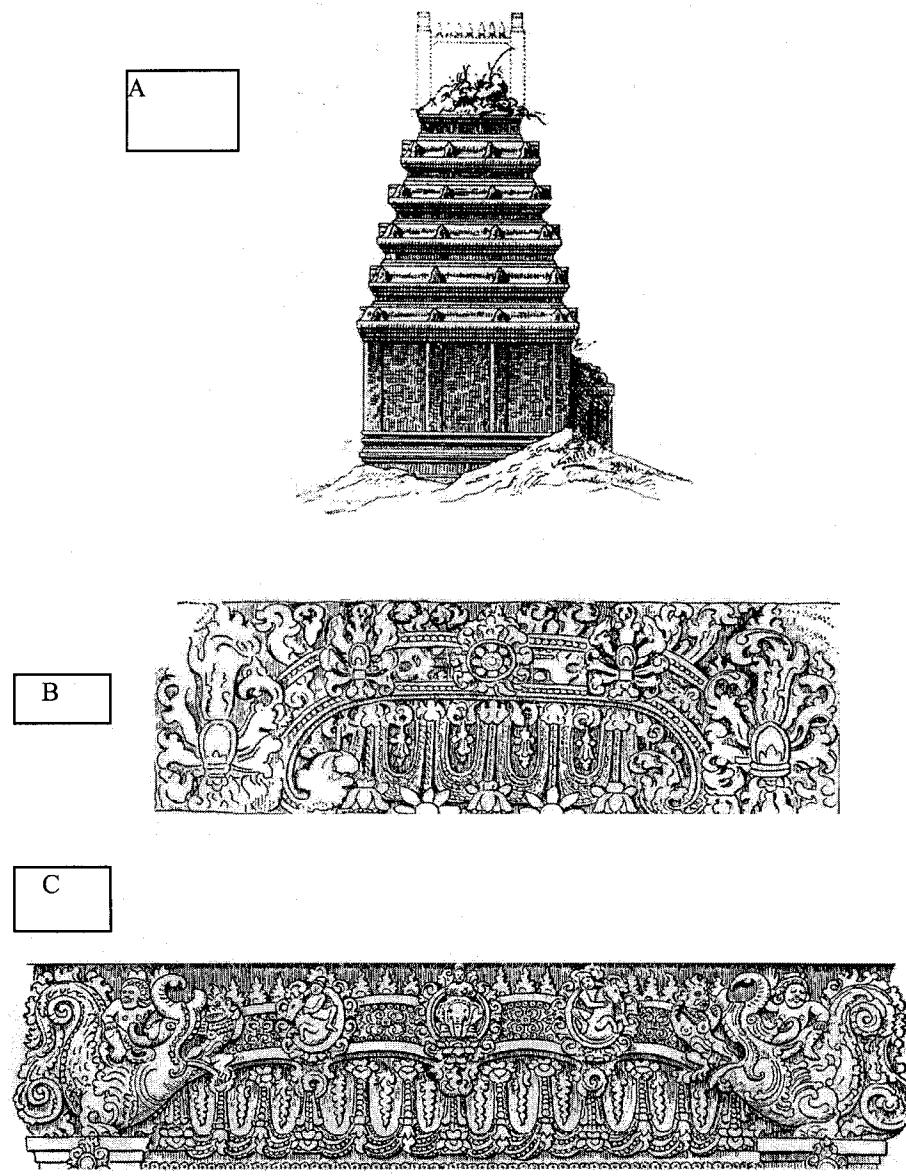


Figure 3.4: Temple and lintels of Pre-Angkor

The temple wall did not have any decoration, except the pilasters and sometimes the vestibule. Lawrence Palmer Briggs (1951:31) described the temple architecture of Funan as a single tower with many small storeys, often reduced to a simple vertical face, which carried a "terrasson in cyma",

ornamented with little niches with heads, like those of the Pallava Kudu. Parmentier also called the decoration form the *Pallava Kudu*. The door colonettes are round. Lintels carry an image of *Makara* (Figure 12 & 13). When discussing the art of Funan, many art historians frequently define the architecture as a simple form and similar to Indian temples and to the temples at Diang Plateau in Indonesia (Parmentier 1927; Groslier 1966; Mauger 1936).

Sculpture of the Funan Period

Ancient Funan society produced gods' images sometime before the 4th and 5th century A.D. By the 4th century, Chinese officials reported seeing the religious figurines, or statues, in the kingdom.

The document written by *San-Kuou-Shi* during the third century Christian era reported that the people of Funan loved to carve ornaments and to chisel. When the monk *Nagasena* was sent from Funan to meet the Chinese Imperial Court, he presented the emperor a golden image of *Nagajara*, a sandalwood elephant, and two ivory stupas. In 502, Chinese texts recorded that king *Jayavarman* sent the emperor a coral image of Buddha. The *History of Liang Dynasty* documented that the king *Rudravarman* presented the emperor an image in Indian sandalwood (Pelliot 1903; Chatterji 1964). During early 6th century, Chinese records also described the genie of the skies, one bronze sculpture that had two faces with

four hands and another that had four faces with eight hands. Each hand held symbolic object (Pelliot 1903: 254, 269).

Briggs correlated the genie of the skies with the Brahmanical deities and the four-face god with eight hands as *Brahma* or *Shiva*. Following Paul Mus's conclusion, Briggs defined the two-face god with four hands as *Harihara* (Briggs 1951: 34).

No sculptures older than the 6th century have been discovered yet. The first evidence of statuaries to be found dated to the end of the Funan period (late 5th to 6th century Christian era). This leads one to speculate that Funanese artists made sculptures of wood and bronze, and other metals that are vulnerable through times and climate. The remains of the sandstone statues come from late Funanese period (Groslier 1962; 1966; Boisselier 1955; 1966; Dupont 1955).

The majority of the late Funanese statuaries were collected from Angkor Borei region, especially those from Prasat Phnom Da, Phnom Da's cave, and Prasat Asram Maha russei, Wat Romlok, and Wat Koh. These statues include *Rama*, *Paraçurama*, *Vishnu*, *Krisna Govardhana* and Buddha images from Wat Romlok and Ba srê (Boisselier 1955: 22-25). Hindu statues of the Funan period are characterized by cylindrical coiffures or miters, metal supports attached to back torso or hands, and slim bodies.



Figure 3.5: Headdress of late Phnom Da's statue
(Adapted from Boisselier 1966: 236)

Dresses are represented by short wrap around slants or *sampots*. Drapery is carved in low relief (Figure 3.6) (Boisselier 1955).

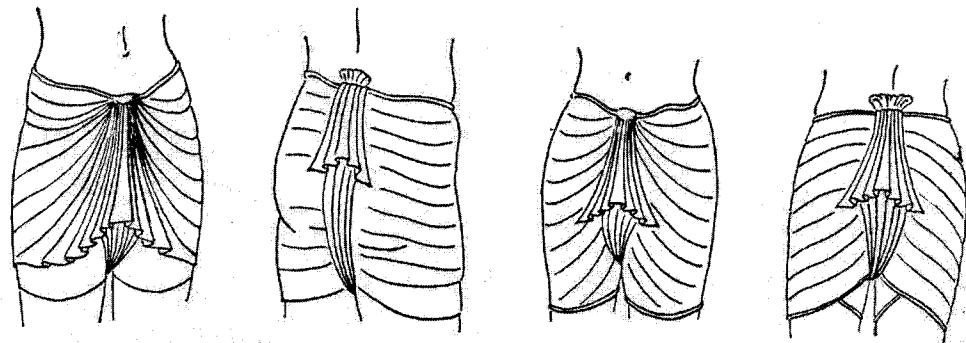


Figure 3.6: Sampot of Late Funan's Statue
(Adapted from Boisselier 1966: 236)

Torsos are expressed with Indian hip movements, (sway hip). The body surface of the statues in this period are usually polished. Hindu statues in this class have wide oval faces, strong arched noses and narrow eyes. Facial expressions are wide-lipped smiles. The collarbones, elbows,

knees and ankles are well rendered and elegant in profile and detail. Legs and ankles are slim.

George Groslier and his colleagues collected most of Buddha sculptures from the Angkor Borei region in 1923 (Briggs 1951). He then named these statues the "Angkor Borei Group". The characteristics of Buddha figurines from this period include standing in different postures, the *Ushnisha* transformed into a protuberance (not a chignon), curly hair, and an elegant and elongated face (Figure 3.7).

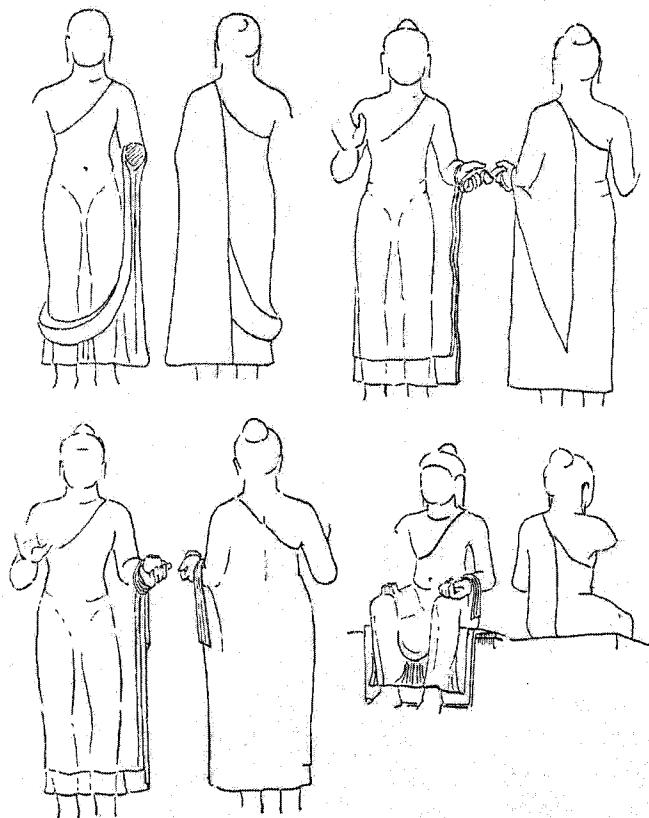


Figure 16: Buddha sculpture of late Funan
(Adapted from Boisselier 1966: 269)

The standing position is dominantly typical for Buddha statue in this group. There is only one icon known in a seated position (Groslier 1925; Parmentier 1927: 118-119).

In sum, art historians suggest that the remains of Funan images, both Hindu and Buddhist, carry a strong similarity with Indian art of the Gupta and Post-Gupta periods (Boisselier 1955; 1989; Dupont 1955). George Groslier believed that the Funan sculpture had strong characteristics of Indo-Greek statues of the Mathura school (Groslier 1925). Besides the Chinese annals, Sanskrit and Old Khmer inscriptions, religious constructions, and statuaries, the archaeological data is also important for scientists who seek to understand the social development of Angkor Borei during the early Christian era. Among this archaeological data, ceramics are a powerful tool for understanding aspects of the social and economic organization during early historic period. Southeast Asian archaeological ceramic studies use typological approaches that focus on seriation, or qualitative descriptions of stylistic attributes (e.g., Frasche 1976; Richards 1995; Stock 1981).

Some previous archaeological studies of Cambodian ceramics have focused on kiln sites and their contents (Aoyagi 1998; Guy 1989; Rooney 1990, Ea Darith 2001), rather than on characteristic of ceramics produced in certain

locations. Anthropological archaeologists have developed several strategies in recent years as alternatives to the art historical approach in understanding ancient Southeast Asian ceramics (Stark 2000; Miksic and Yap 1992). For example, archaeologists often pay much attention to carefully investigating the paste of ceramic itself in order to learn about its fabric and production technology (Miksic and Yap 1990; 1992).

The next chapter describes of ceramic data from the early historic period from different regions of mainland Southeast Asia.

CHAPTER 4
PREVIOUS CERAMIC STUDIES IN CAMBODIA, THAILAND, LAOS, AND
VIETNAM DURING EARLY HISTORIC PERIOD (500 B.C - A.D. 600)

Archaeologists aim to understand the development of societies through the interpretation of artifacts from the archaeological record. By studying these remains, scientists are able to gain insights into the economics, social structure, division of labor, and ecological setting of the society that holds the interest of the moment. Ceramics, and the data inherent in ceramics, are a common and valuable source of information. Ceramic analysis will be the means by which the research in this dissertation will increase our knowledge of ancient Angkor Borei.

Ceramics discovered from archaeological sites are of several kinds: roof tiles, bricks, clay pellets, spindle whorls, various other artifacts, and, most importantly, clay pottery. Whole ceramic vessels and potsherds comprise this class of data. The usefulness of clay pottery in the past society was large compared to the present. With the onset of the Neolithic and the rise of need for new forms of storage and cooking, fired earthenware pottery became ubiquitous. During the Bronze and Iron Ages, ceramic technology was also used in the procurement and processing of copper, bronze and iron ores. Archaeologists uncovered abundant clay moulds,

chimneys and furnaces at the iron production and mining areas (Higham 1989: 182-227).

The use of ceramics remained popular during the later part of the Iron Age and early historic period (500 B.C - A.D. 500), the context in which we are primarily concerned. The Funanese people utilized earthenware ceramics for drawing water from rivers and ponds, for cooking, for storage, and for holding votive offerings at sacred places.

The remains of early historic period localities can be found today in Cambodia, Thailand, and Vietnam. Data from archaeological research suggests that the end of the Iron Age and beginning of the early historic period in many major centers in Mainland Southeast Asia were linked to one another through exchange of goods.

Ceramics unearthed from Cambodia, Thailand, Laos, and Vietnam during 500B.C - A.D. 600 are relatively similar in form, shape, and decoration style. Still, variation over time and geographic space are important and need further exploration. The following section of this chapter discusses the ceramic data from Cambodia, Laos Thailand, and Vietnam, dating from the Iron Age to the end of early historic period, 500 B.C. - A.D. 600 (Figure 4.1).

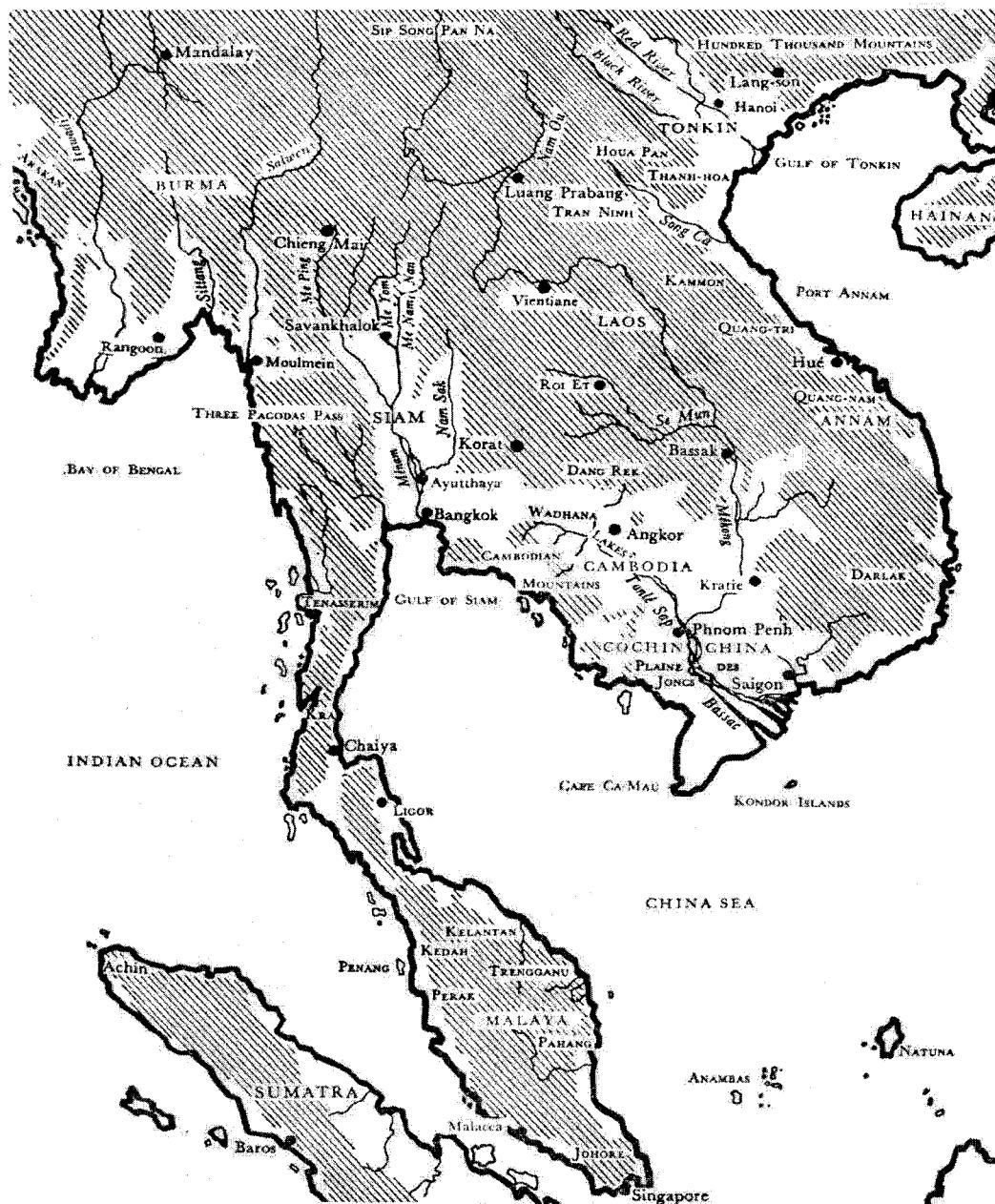


Figure 4.1: Laos, Cambodia, Thailand, and Vietnam
 (Adopted from Groslier 1962: 14)

Cambodia

Ancient Khmer civilization, as seen in its magnificent religious construction, statuary, water reservoirs, and inscriptions, overwhelmed early French researchers. They seem to have neglected other material cultures, such as

lithics and ceramics, especially those remaining underground. Prehistoric sites such as Samrong Sen, Mlu Prei, Laang Spean, and circular earthwork sites were known as early as the late 19th century, but there were only a few scholars interested in studying material cultures from these sites (Noulet 1879; Mansuy 1902; 1923).

The results of historical research of Khmer ceramics only began to be published in the late 1970s and early 1980s by a new generation of French archaeologists, B.P. Groslier and Roland Mourer. The field of ceramic study in Cambodia has increased rapidly since the return of the Kingdom in the 1990s, but a majority of archaeologists have been more interested in the ceramic collection from the historic or Angkorian, period (Darith 2001; Aoyagi 2001). Only a few researchers have undertaken investigation of the pottery of the Prehistoric and early historic period (Groslier 1981; Mourer 1986; Stark 2001; 2002). Below I review the significant sites and their ceramic components.

Laang Spean

Laang Spean, a limestone cave, is situated on the top of Phnom Teak Treang about 38 kilometers from Battambang Province. The dimensions of the cave are 42 meters by 20 meters and more than 20 meters high. Roland and Cecile Mourer conducted archaeological test excavations in the cave in 1966, 1967, and 1968 for three weeks. The Mourers and

their Cambodian team excavated two test units in the central area and at the entrance of the cave. Approximately 15 square meters (Roland and Cecile Mourer 1970: 128; Mourer 1986: 80) were excavated.

The Mourers and their team reported five cultural layers containing a variety of artifacts such as ceramics, micro-fauna, macro-fauna, especially mollusks, and charcoal, stone tools, and marine shells. Radiocarbon samples recovered from Laang Spean indicated that the first settlement began ca. 6800 B.C and continued to the 9th century A.D. (Mourer 1970; Mourer 1986).

It is not necessary to mention artifacts and other finds from the first three cultural layers (1-3) in detail here because the date is much older than the relevant subject, 500 B.C. Cultural layer four corresponds well to early the Iron Age that began about 500 B.C and carried on into the Christian era. The Mourers reported that cultural objects uncovered from cultural layer four consisted of less stone and faunal remains, but an increased number of pottery fragments. Potsherds from Laang Spean bore two kinds of surface treatment, impressed decoration (incision, narrow grooved bands, cord impression), and applied decoration.

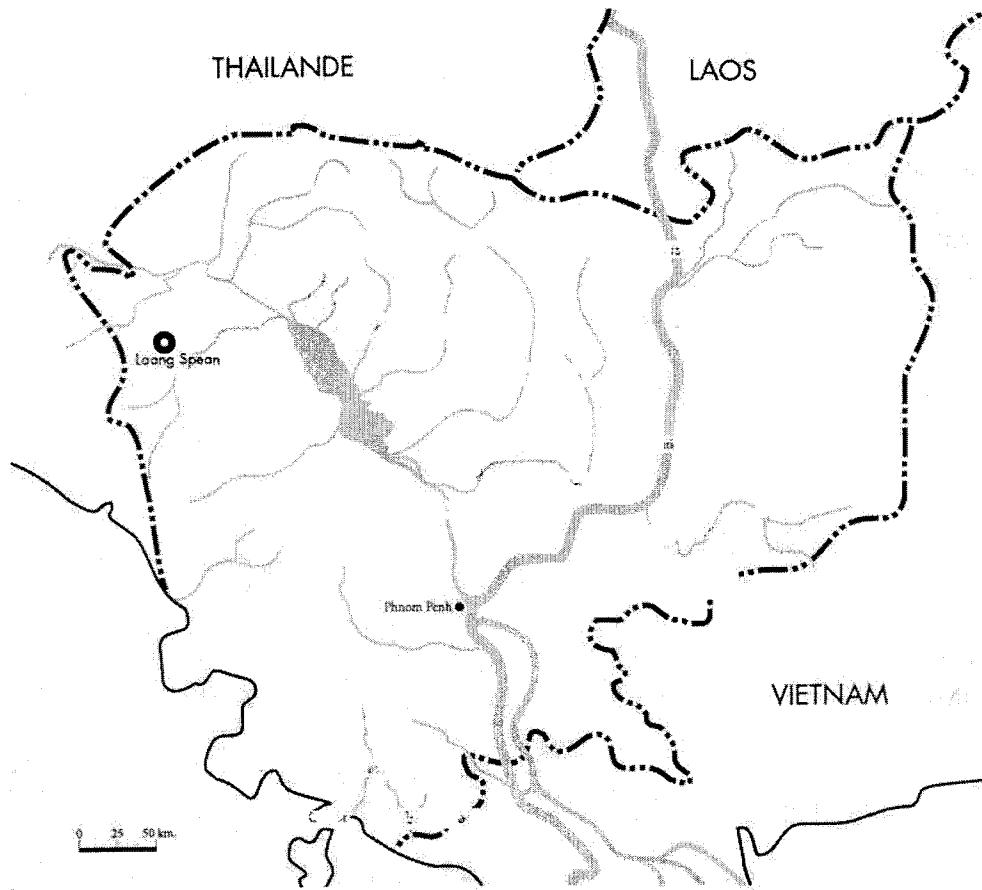


Figure 4.2: Map shows the location of Laang Spean
(Adapted from Mourer 1994: 145)

From the potsherd collection, the Mourers identified five rim types that varied from straight and thin to thick and flat rims (Mourer 1970: 139-141; 1986: 99-107). Based on Mourers' publications, no complete vessel was gathered from their archaeological test excavation (Figure 4.3, 4.4).

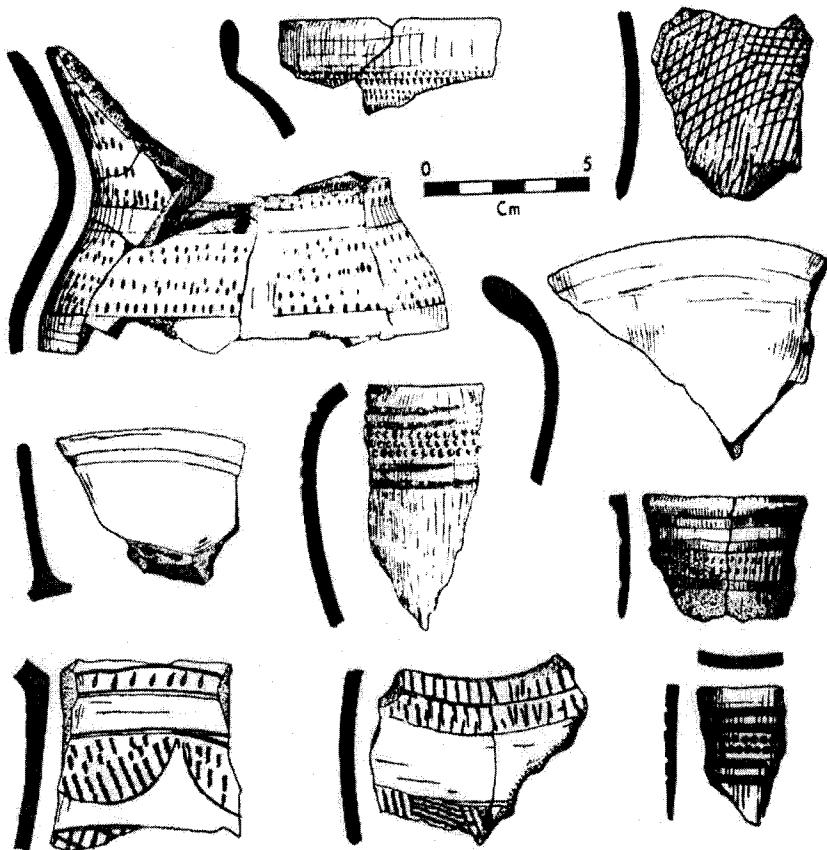


Figure 4.3: Potsherd from Laang Spean
(Adapted from Mourer 1994: 138)

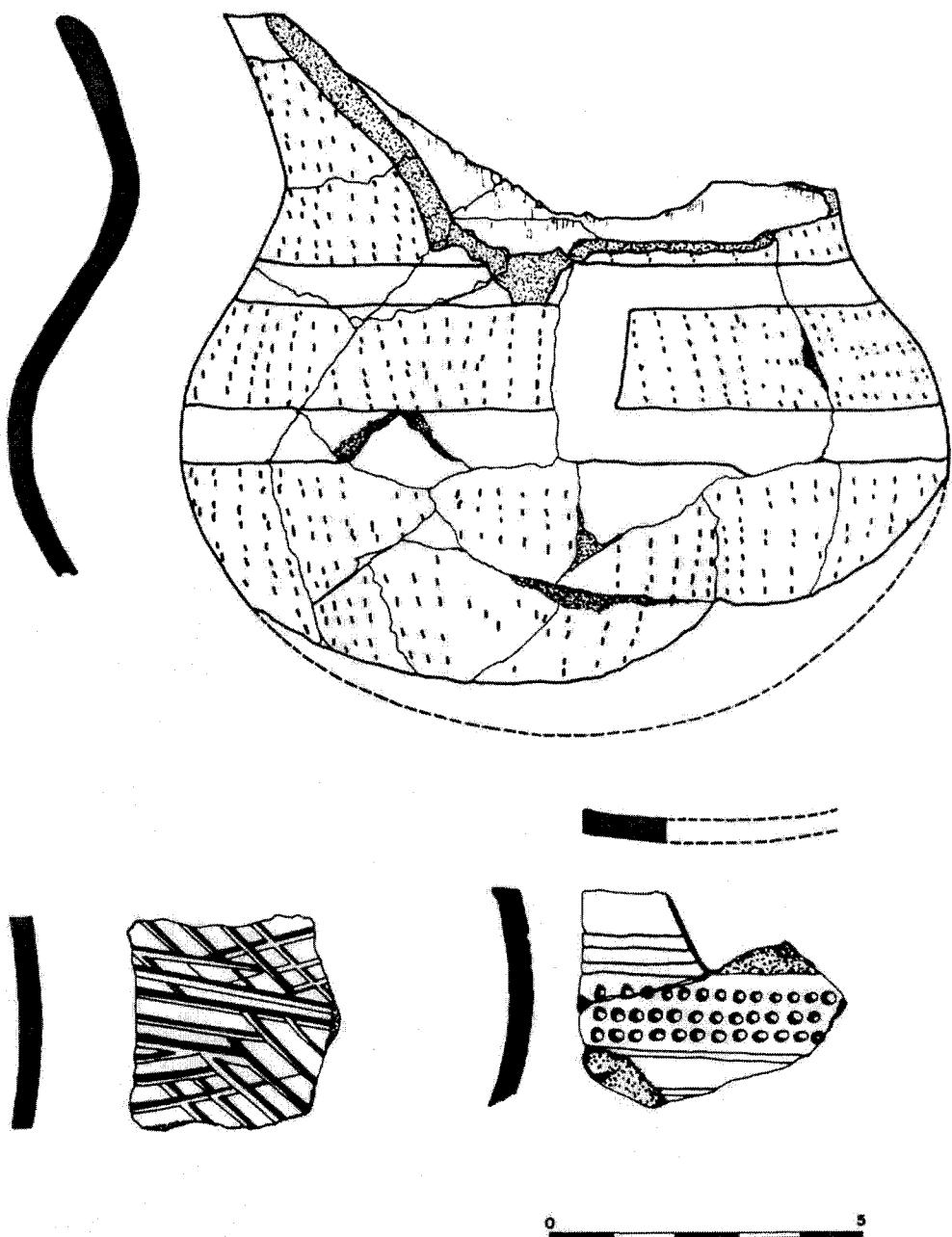


Figure 4.4: Reconstructed ceramic ware from Laang Spean
(Adapted from Mourer 1994: 191)

Samrong Sen

Samrong Sen is first known to archaeologists for its shell-midden and human skeletal remains. The site is situated approximately 30 kilometers north of the confluence of the Great Lake of Tonle Sap and Steung Chinit, or Chinit River, in Kampong Leng district, Kampong Chhnang Province. The most recent excavator, Ly, located Samrong Sen at 12° 20'N and 104° 50'E (Mourer 1986: 87; Ly 2001: 47) (Figure 4.5).

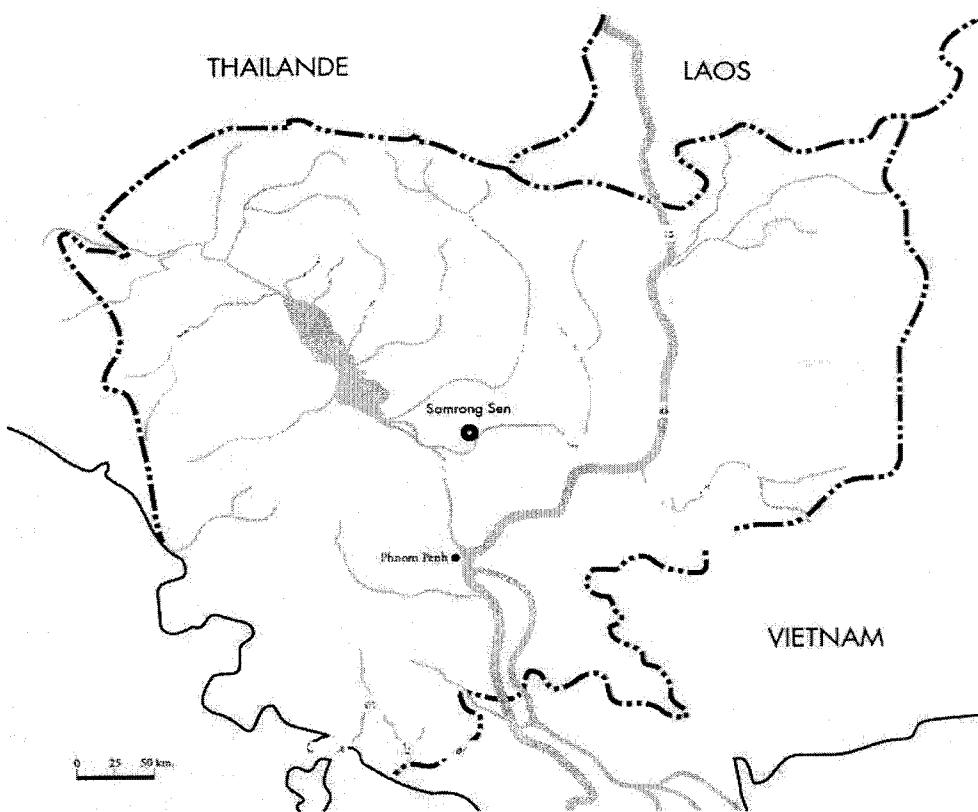


Figure 4.5: Map showing the location of Samrong Sen
(Adapted from Mourer 1994: 145)

The first description of Samrong Sen was made by Corre in 1879. Noulet published an article on the analysis of bronze artifact from Samrong Sen in the same year. Henri Mansuy was the first French archaeologist to direct the archaeological excavation at Samrong Sen. Mansuy published the result of this excavation in 1902 and 1923 (Higham 1989: 20 - 21). Early works by Noulet and Mansuy were mainly based on identification of stone tools and description of pottery collected from Samrong Sen. In 1998 and 1999, Ly excavated two test pits at Samrong Sen.

Mourer, in his doctoral dissertation in 1986, based on Mansuy's reports, states that four cultural layers were uncovered at Samrong Sen. Each stratigraphic layer contained potsherds, shells, animal and human bones, and stone tools (Mourer 1986: 87-88). Only a few vessels were found *in situ*, if the data are properly understood. Many potsherds, analyzed by Noulet and Mansuy, were procured from surface collections and shell midden (Mourer 1986). The majority of the artifacts that were studied by Noulet and Mansuy had no record of stratigraphic provenance, but data from these early researches is considered to be an important guide and useful for future research.

Between 1876 and 1923, French archaeologists haphazardly collected many potsherds and some whole vessels from Samrong Sen (Noulet 1879; Corre 1979; Mansuy 1902;

1923). Mourer classified these ceramic vessels into two groups: 1) Vessel with pedestal foot, 2) Vessel with convex and flat base (Mourer 109-114).

Vessel in the first category consists of pedestal cup and bowls, decorated with circular incising and parallel lines. The zigzag line decoration encircling the cup is one the characteristics of ware from Samrong Sen. Surface traces include red slipping, cord-marking, and oblique and angular lines. The pottery foot includes a pedestal, and ring and conical bases. The characteristics of vases in the second category include brown bowls with conic bases and incised zigzag decorations on the bodies and black vessels in black color with narrow necked, flared shoulders and rims, and globular-shaped pots. Cord-marked decoration was also noted on vessels in this group (Mourer 1986: 112-114).

In recent archaeological reports on the Samrong Sen site, Ly reports that he identified nine cultural layers. During the test excavation, he collected univalve and bivalve shells, potsherds, freshwater turtle shells, animal bones, fishbones, bangles of clay, stone and bronze, metal slag, antler, and charcoal samples (Ly 2001: 49-52).

By analyzing potsherds from his test excavation, Ly discovered that there were sixteen different types of rim forms and five types of footed vessels. Ly reported numerous

varieties of surface decoration, including impression, incision, combing, roller-stamping appliqué and coating slip (Ly 2001: 59-64).

Due to the geography of Samrong Sen, located in a lowland and swampy area around the Great Lake, retrieving good C14 samples *in situ* is difficult. Ly hesitated to link each pottery type to a specific time frame.

Henry Mansuy also mapped other similar shell midden sites, including Anlong Prao or Anlong Phdao in 1902. They contained cultural objects that were said to be identical to those of Samrong Sen. Mansuy only provided a short description of Anlong Phdao, and gave it the same age as Samrong Sen (Mansuy 1902; Mourer 1986). Following Jammes, Noulet, and Mansuy, Mourer argued that Samrong Sen was first settled at the end of the Neolithic Period and the early Bronze Age. Dates obtaining from C14 sample indicated that the earliest evidence of settlement began in 1280 B.C (Carbonnel and Delibrias 1968: 1433).

Based on the result of the compositional analysis of bronze artifacts from Samrong Sen, Higham suggests that the objects were cast sometime during the Iron Age that began around 500 B.C (Higham 1989: 172). Figure 5.6 illustrates ceramic artifacts from Samrong Sen.



Figure 5.6: Ceramic from Samrong Sen and Anglong Phdao
(Adapted from Mourer 1994: 193)

Mlu Prei

Information about Mlu Prei derives exclusively from the archaeological survey and excavations by Paul Levy in 1938. According to Levy's report in 1943, Mlu Prei is located north of Samrong Sen, near Steung Sen (river) in Kampong Thom Province (Figure 5.7).

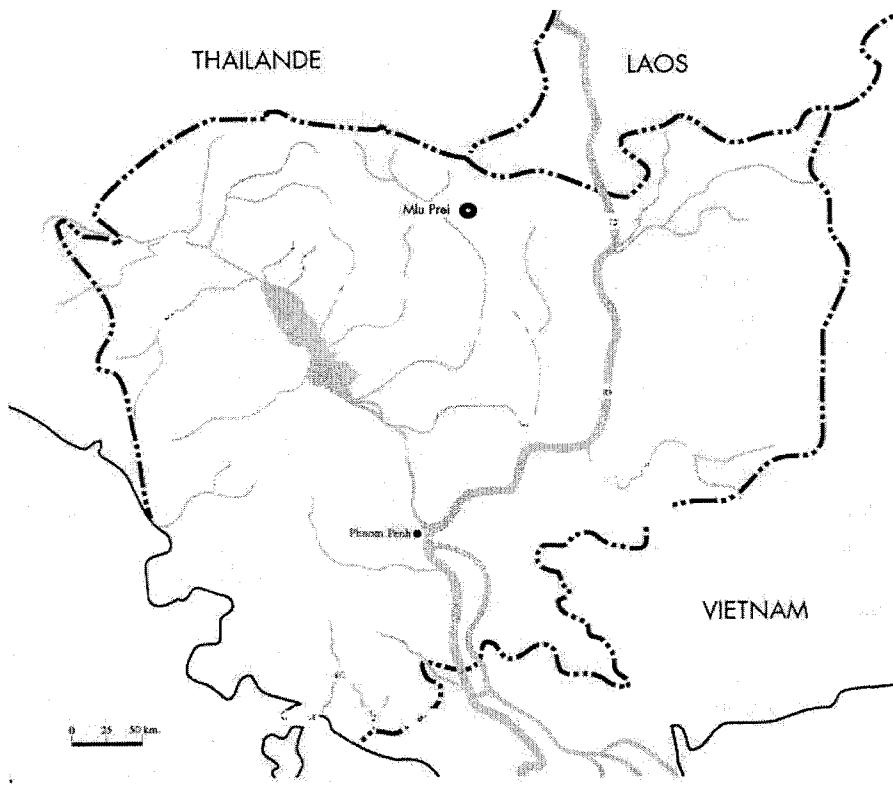


Figure 5.7: Location of Mlu Prei
(Adapted from Mourer 1994: 145)

Mlu Prei consists of three different sites, O Yak, O Pican, and O Nari. Levy collected many potsherds, including rims, shoulders, and bases, from the site during his survey, but no complete vessels were found. By studying all the potsherds collected from the field survey, Levy

suggested that cups and other vessels with round bases were dominant at Mlu Prei, and only a small sample of footed vessels was present. Surface decorations include wavy lines, zigzag lines, incising pattern (Rooney called these "X design"), horizontal bands of crescent- shaped strokes, and cord-marking (Levy 1943: 52-64; Mourer 1986: 118-121; Rooney 1984: 42).

No radiocarbon samples are available from Mlu Prei because Levy's work preceded the radiocarbon revolution that began in 1950 and no archaeologists have returned to this site to continue research.

Based on the comparison of artifacts (sandstone moulds, pottery styles, bronze ornaments, spearheads and axes, and bracelet, Mlu Prei may be contemporary with Samrong Sen and other prehistoric sites in Dong Nai valley (Mourer 1986: 124-127; Higham 1989: 69; 1996:208). Figure 5.8 illustrates ceramic artifacts, including stone, ceramic, and bones, recovered from Mlu Prei.

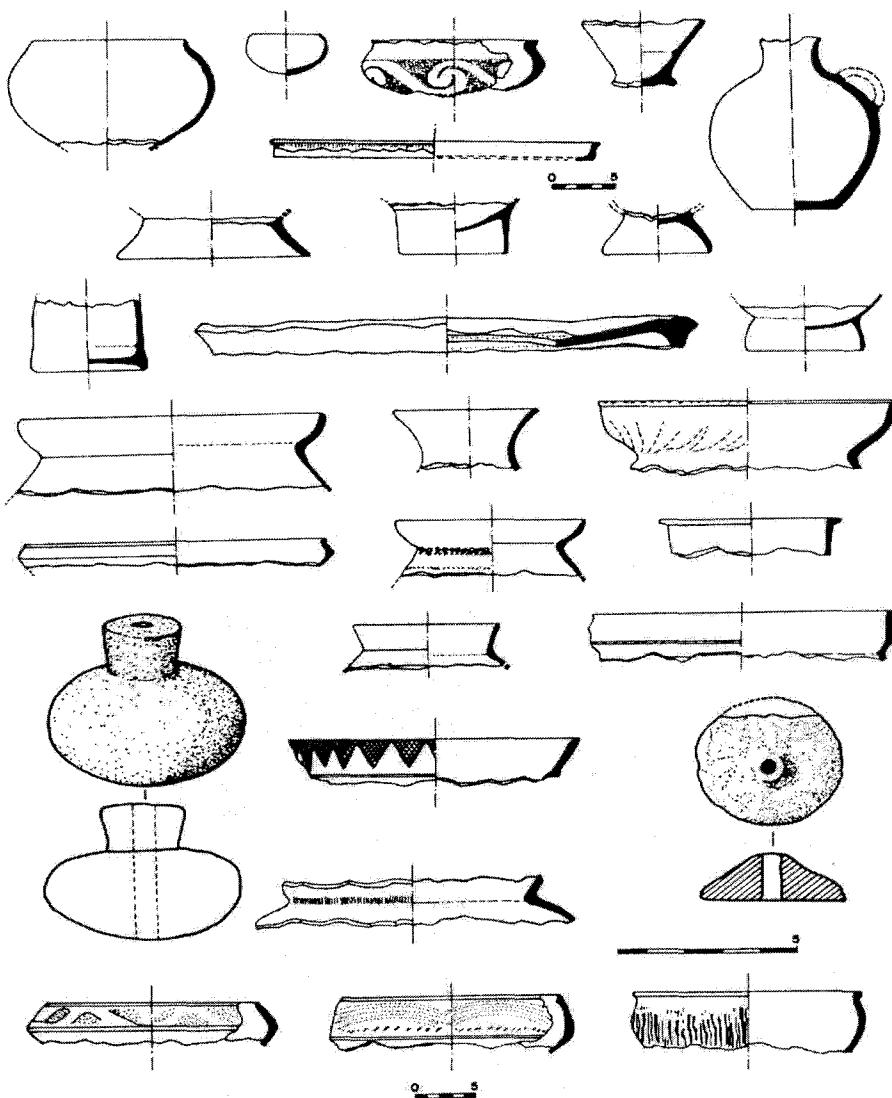


Figure 5.8: Ceramic artifacts from Mlu Prei
 (Adapted from Mourer 1994: 195)

Circular Earthwork Sites

Mouller and other early archaeologists used the term "les sites des terres rouges", (sites in the red soil region), to refer to all the circular earthwork sites in

Kampong Cham, Cambodia, and Song Bé, Vietnam. They defined the site type as an ancient fortress (EFEO 1930; Malleret 1959). Carbonnel described the circular sites as ancient tumuli (Carbonnel 1970). In Kampong Cham Province, the circular sites can be found in such regions as Krek, Memot, Chlong, and Peam Cheang (Figure 5.9) (Mourer 1986: 93).

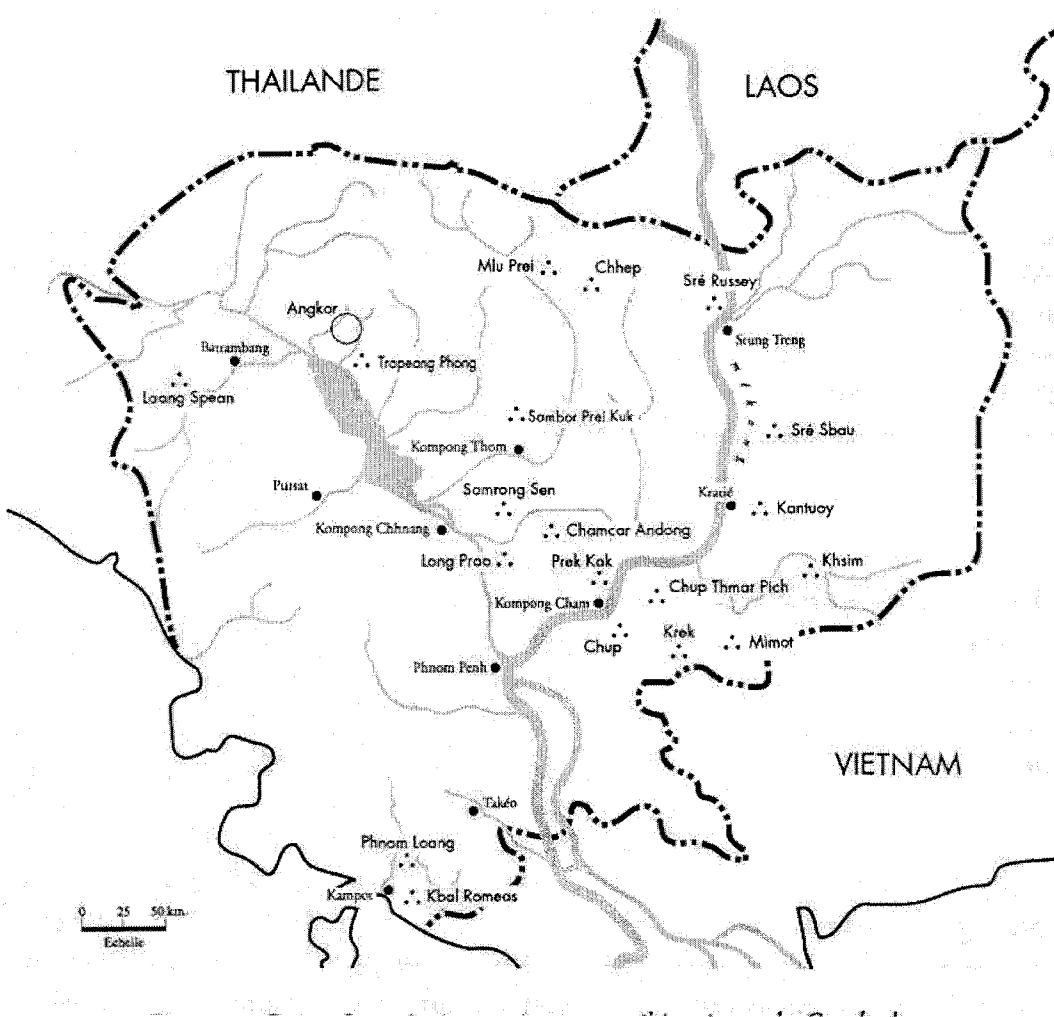


Figure 5.9: Map shows circular sites in Cambodia
(Adapted from Mourer 1994: 145)

Malleret states that the sites have a double wall surrounding a large platform in the middle, and rang from 100 to 200 meters in diameter (Malleret 1959). Bernard

Philippe Groslier undertook archaeological excavation at a circular earthwork site near Memot in 1962. He provided a short description of the site as "occupying the top of an isolated hill and consisting of a continuous circular earthwork surrounded by an external ditch" (Groslier 1966: 195). Since 1996, many archaeologists have resumed archaeological survey and excavation of circular sites within Cambodia (Kojo and Pheng 1997; 1998; Dega et al. 1997; Dega 1999; Albrecht et al. 2000).

Groslier reported that he identified fourteen levels in more than three meter-thick deposits. During his excavations, he retrieved thousands of stone objects and potsherds (Groslier 1966: 195). Albrecht and his team have documented many new circular sites in Kampong Cham province. During their pilot study, they collected potsherds, spindle whorls, stone tools and objects, beads, and pieces of bronze objects (Albrecht et. al.2000).

The archaeological investigation made by Dega also uncovered a variety of finds including lithic tools, ceramics, and ornamental objects (Dega 2001). The circular sites' ceramic vessels' decorations include impressions (cord-marked and stippling), incising (combed, parallel, and incised geometric patterning), and punctate patterns (S shaped marking) (Figure 5.10, 5.11)) (Dega 2001: 246; Albrecht 2000: 39-40).

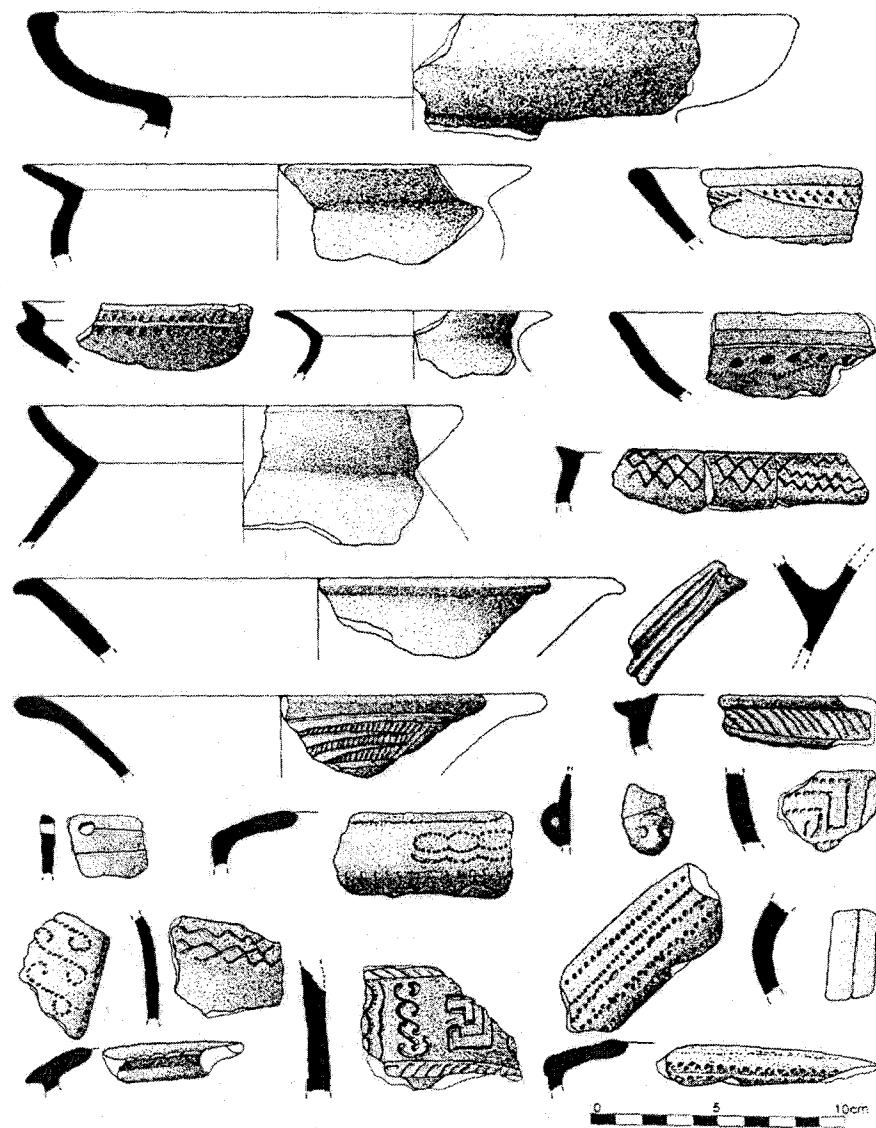


Figure 4.10: Ceramic sherds from circular sites, Krek.
(Adapted from Albrecht et al. 2000:26)

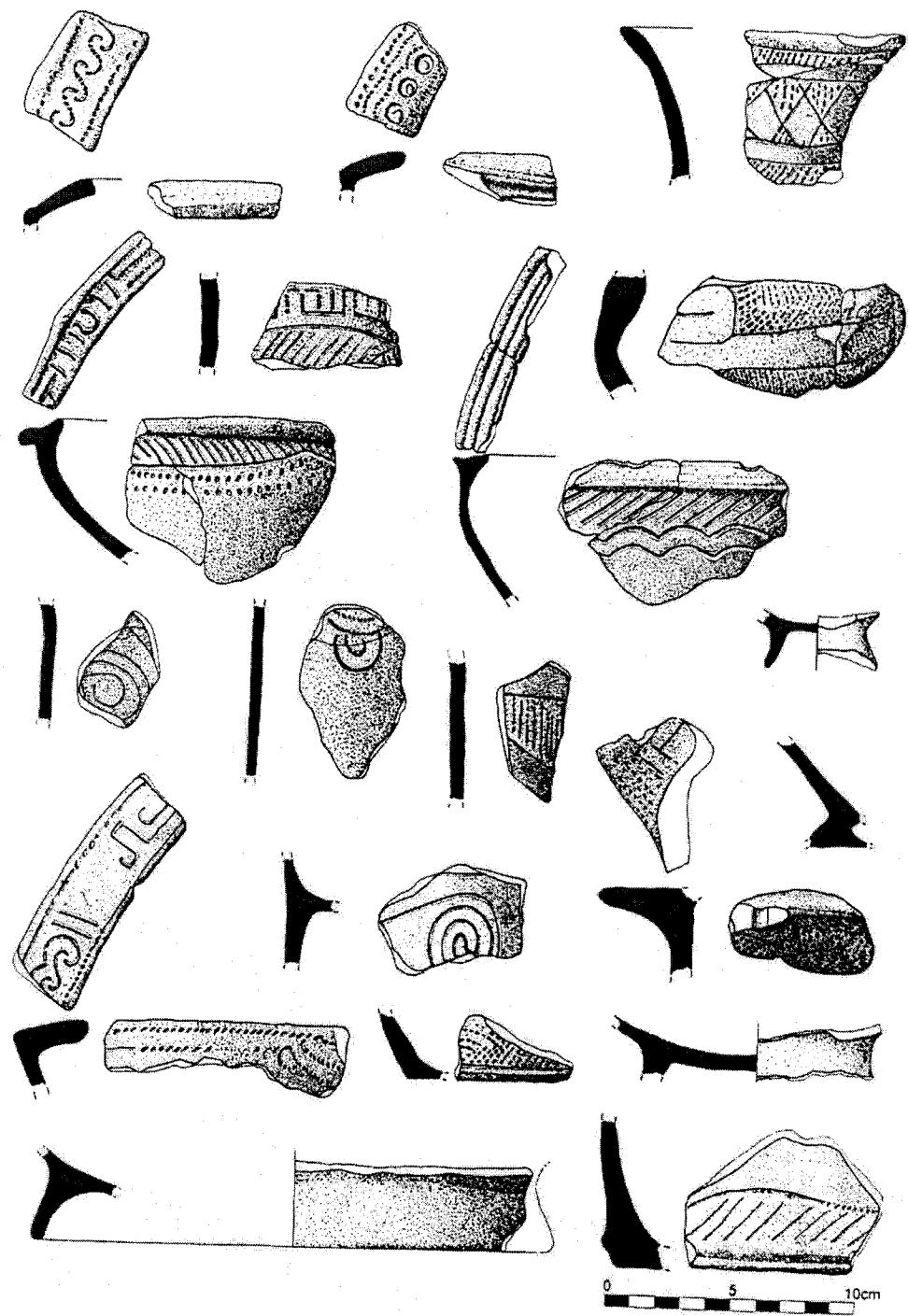


Figure 5.11: Ceramic sherds from Circular sites, Krek.
(Adapted from Albrecht et al. 2000: 27)

Groslier proposed the term "Memotien" for the cultural complex of circular earthwork sites. He classified the sites as Neolithic (Groslier 1966: 195). Based on C14 samples, Carbonnel dated the circular earthwork site at Chamkar Andong as first settled in 180 B.C (Carbonnel 1970: 219). Recent archaeological research yielded new radiocarbon dates for circular sites that range from 2350 B.C. to 200 B.C. (Dega et al. 2000; Albrecht 2000: 42).

Sambor Prei Kuk

Sambor Prei Kuk is located in the Kampong Thom province, central Cambodia (Figure 3.1). It is a large site, containing many brick temples, inscriptions, and *baray*, surrounded by wall and moat. Historians consider the Sambor Prei Kuk complex as the capital city *Isanapura*, dating from 6th to 8th century A.D. (Vickery 1994; Coedes 1968; Groslier 1966). Bernard Philippe Groslier conducted an archaeological excavation at the site before the war erupted in Cambodia in 1975. He collected many potsherds and whole ceramic vessels. Groslier called the material culture from Sambor Prei Kuk the Pre-Angkorian civilization (Groslier 1966; 1981).

Groslier classified the nature of pottery collected from Sambor Prei Kuk into two categories:

- 1) hand-made clay vessels as paddle-impressed utensils, 2) wheel-made clay vessels used for ritual and other religious purposes are vessels with paint over the slip. The slip is

either white or light red color. Groslier further suggested that white slips derived from lime and light red slips from the fine liquid clay (Groslier 1981: 14-15).

Cooking pots usually have hemispherical or globular bodies, a large orifice and everted lip with either no neck or a short neck. In most cases decoration consists of a group of parallel lines. Ritual and religious vessels include large water jars with spherical bodies, long necks, horizontal everted necks, and lined with a vertical band; jugs with globular bodies with a short neck and spout; small jugs with long spout; jugs with everted lip; and small vessels with long necks that were wheel-made.

Groslier described the decoration for these wheel-made vessels as a series of red circles alternating on the neck and shoulder, and red florettes painted on a white background. Vessel bodies of this type are usually white (Groslier 1981: 15). Figure 5.12 and Figure 5.13 illustrates some of the Sambor Prei Kuk's vessel forms.

Groslier assigned dates for Sambor Prei Kuk that ranged from 6th to 8th centuries. He concluded that the wheel-made pottery was influenced from India through the adoption of ritual and religious practices that demanded their use.

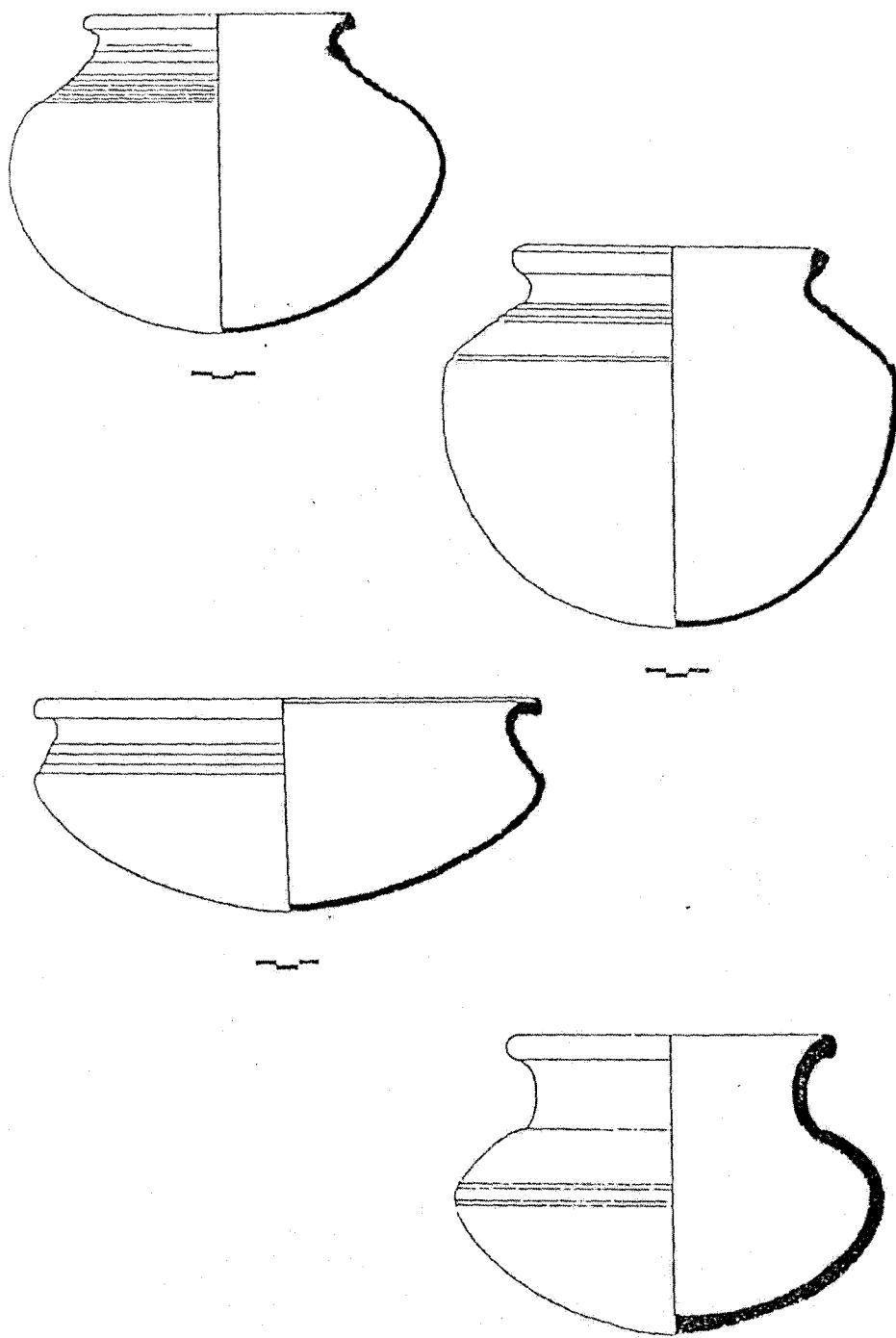


Figure 5.12: Ceramic ware from Sambor Prei Kuk
(From Mourer 1987: pl. 26)

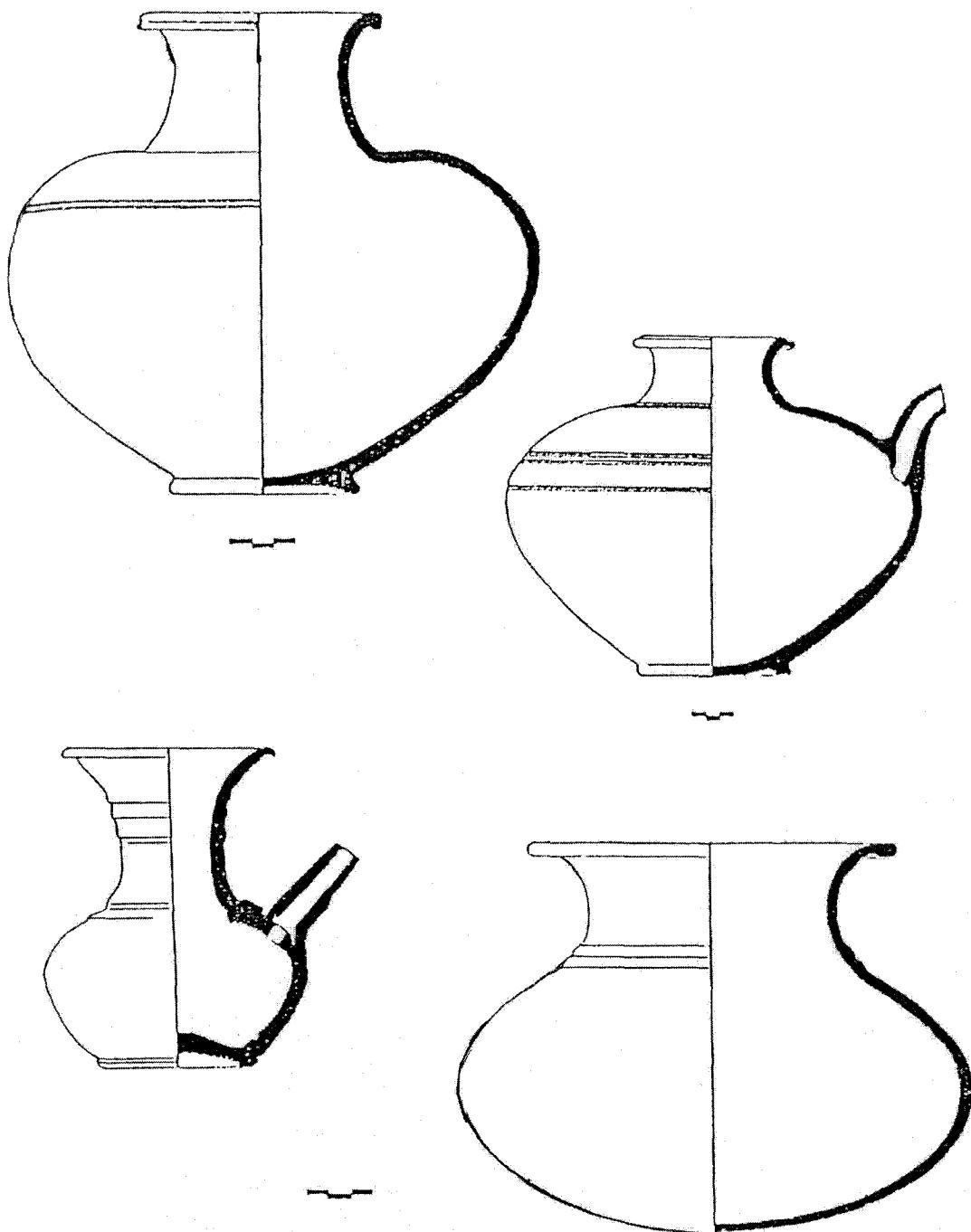


Figure 5.13: Ceramic from Sambor Prei Kuk
(Adapted from Mourer 1987: Pl.27)

For example, Groslier considered the spouted vessel *Kendi* as a kettle for ablution, and other large wheel-made, slipped, and burnished jars with paint as the offerings to

the deceased during the Sambor Prei Kuk period (Groslier 1981: 14-15).

Besides the prehistoric sites, there are more limestone cave sites, such as Phnom Loang and Kbal Romeas, have not been systematically excavated yet. Carbonnel and Mourer only provided a brief description of the sites during their brief visit (Carbonnel 1970; Mourer 1986). Based on sample collection from the site surface, Carbonnel dated Kbal Romeas to 3370 B.C. and Phnom Loang ranged from 2420 B.C. to A.D. 1,450 (Carbonnel 1970: 221-222).

Laos

Archaeological information in Laos during the early historic period (ca. 500 B.C. - A.D. 500) is scarce. The knowledge from this timeframe comes exclusively from the fieldwork by Madeleine Colani before 1935. During her archaeological field investigations, Colani recorded large stone jar burials and standing stone slabs at Ban Ang, in the uplands of Laos. This region is known as the *Plain of Jars* (Higham 1989: 228; 1996: 30).

Colani reported that there were two groups of cemeteries: 1) those located on an elevated area and 2) those located at lower elevations. Colani noticed that the first group of burials contained richer artifactual assemblages, including glass and carnelian beads, bells and bracelets, iron knives, arrowheads and spearheads, cowrie

shells, and bronze helices. The second group's grave goods possessed only stone jar assemblages and no artifacts. Colani also identified cremated human remains and bronze and iron grave goods in these stone jars. She believed that the first burials belonged to high ranking, chiefly families. Colani also saw affinities to the Plain of Jars materials with the urn fields on the coastal tract of Central Vietnam.

Recent works by Laotian archaeologists have contributed new information on the late prehistoric period in Northern Laos (Sayavongkhamdy and Bellwood 2000). Archaeological sites of this region include Iron Age cemeteries and stone and ceramic jar burials. Archaeologists found these burial sites in Luang Prabang, Vientiane, and Xieng Khuang provinces (Figure 5.14). Sites appeared in two different environments, in caves (Tam Hua Pu and Tam Nang An), and open sites (Lao Pako and the Plain of Jars).

Results of archaeological investigations suggest that the occupations began during the late Hoabinhian and continued to the early historic period (Sayavongkhamdy and Bellwood 2000). These cave sites yielded evidence of human burials containing abundant grave goods including pottery, stone tools, bronze objects, iron implements, and beads of glass and shells.

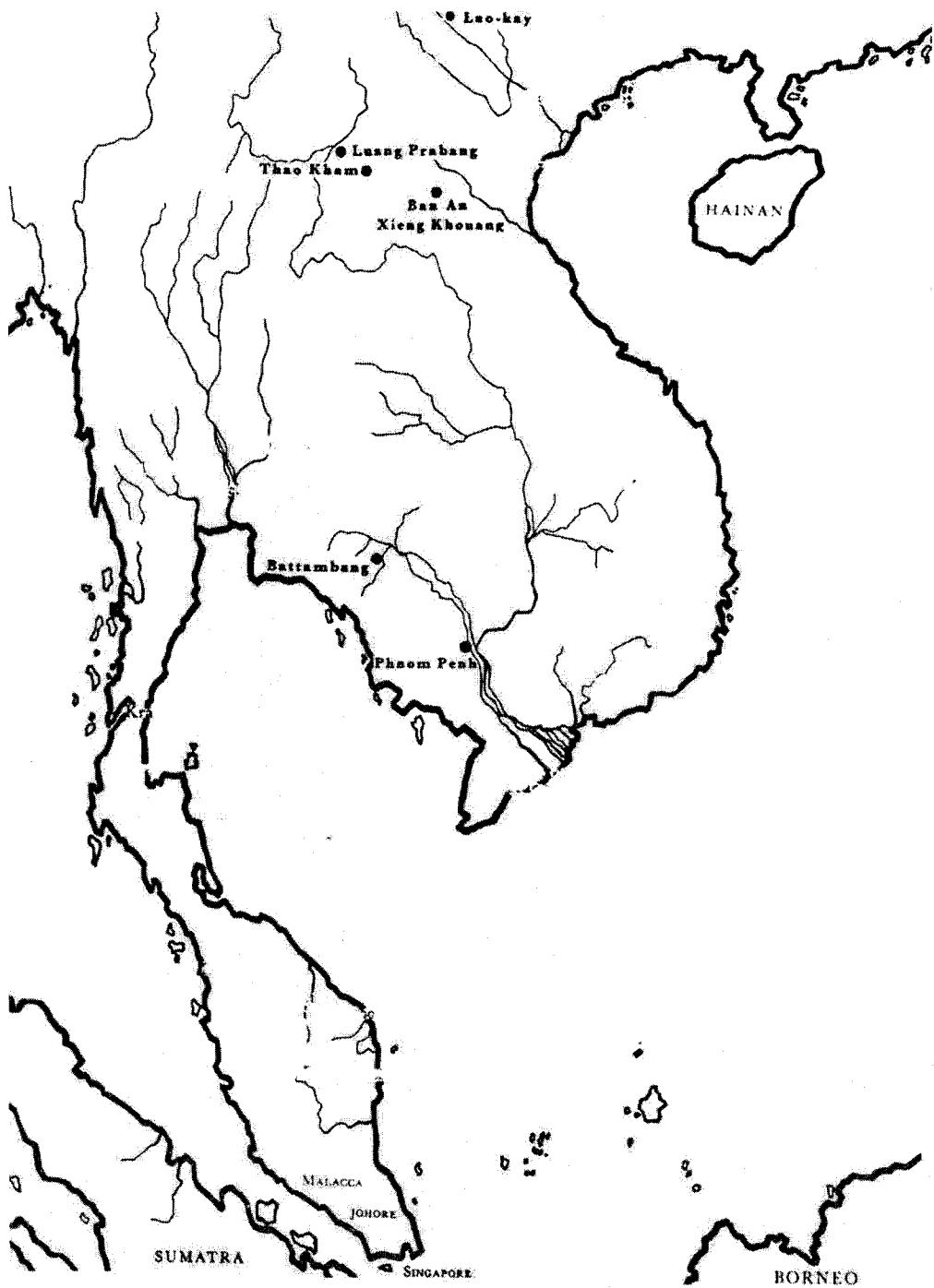


Figure 5.14: Map of Jar Burial Sites in Luang Prabang
(Adapted from Groslier 1962: 24)

Cord-marked pottery is a dominant style for Tam Hua Pu. Paddle impressed and incised lines are the main decoration for pottery presented at Tam Nang An's burials (Sayavongkhamdy and Bellwood 2000).

At the Plain of Jars sites, Sayavongkhamdy and Bellwood reported stone jars similar to those described by Madeleine Colani. These stone jars were locally made by cutting rock from a quarry and by hollowing the stone with iron chisels.

The jar's are mostly cylinder in shape, narrowing at the top. The surface is usually plain. Two jars have a carving of a human figure. Excavations on a terrace facing the cave of Phon Savann site revealed burial jars with many broken potsherds, miniature pots, bronze bells, glass beads, and stone slabs. The ceramic jars from the burials have two distinctive forms, a round-bottom red pot with everted rim and a black globular jar (Sayavongkhamdy and Bellwood 2000: 105-107).

Higham suggested that bronze and iron artifacts were cast locally. He based his conclusions on a study of characteristics of the clay moulds used in bronze casting and on compositional analyses of iron slag. He classified the age of the Plain of Jars sites into the General Period C in Khorat plateau sites in Thailand and as contemporaneous period with the Dong Son sites in Vietnam. Based on stone

mortuary jars, Higham dated the jar burials in Laos between 300 B.C. - A.D. 300 (Higham 1989: 229; 1996: 31).

Thailand

Since the late 1960s, archaeologists have excavated many prehistoric and historic sites in Thailand (Higham 1989). Available chronometric dates resulting from these works suggest that the earliest sites dated to 10, 000 B.C. and extend to the Angkor and post-Angkor periods. Based on data from their researches in Thailand and Vietnam, Higham and other archaeologists divided the chronological sequence of Southeast Asia into six "general periods: - Early Hunter-gatherers, and Coastal Settlement, A, B, C, and D. The periods range from 10, 000 B.C. to A.D. 1,500 (Bayard 1984; Higham 1989; Higham and Thosarat 1998).

The "late General Period C" (500 B.C. - A.D. 200) and "early General Period D" are relevant to the material culture of Angkor Borei. The General Period C is associated with the Iron Age. Many archaeologists suggest that during the Iron Age that societies were highly developed chiefdoms, that contained administrative centers and engaged long distant trade (Bayard 1992; Higham 1996; 1998; Higham and Thosarat 1998; White and Pigott 1996; Stark 1998).

Evidence of this development can be traced through cultural remains from many archaeological sites such as Ongbah, Ban Don Ta Phet, Ban Chiang Hian, Chansen, Ban Tha

Kae and other Iron Age and Dvaravati sites in Thailand. The Iron Age included large sites surrounded by walls and moats, strong distinctions between rich and poor as evidenced by grave goods, and extensive evidence of iron and mining and workshops. Grave goods include bronze and iron weapon and ornaments (bracelets, beads, bangles, earrings, finger rings, and necklaces), pottery vessels with rich decorations, and decorated drums.

Through excavation at many late prehistoric and early historic sites in Thailand, Higham reported that decoration and surface treatment of Iron Age pottery consist of red slip and painted ware. The General Period C's pottery is comparable with Welch's Prasat Phase in dating and pottery decoration (Higham 1989: 212 - 215; Welch 1989: 99-124). It is not necessary to discuss in detail the pottery of Higham's Iron Age and Welch's Prasat Phase. Instead, more important are the ceramics from Welch's latter phase, *Classic Phimai* (300 B.C. - A.D. 300) of Northeast Thailand, data from the Chansen site, and other Dvaravati sites.

During the end of first millennium before and the beginning of early first century A.D., Southeast Asian polities have been extensively engaged in commerce through exchange of local products and technologies and in long distance trading. Especially important is the relationship

between the Mekong delta and central and northeast Thailand (Glover 1989; Higham 1996; Bronson 1978).

Reasons for the importance of these sites include: 1) their cultural elements that are comparable to those discovered at Angkor Borei, Oc Eo, and other sites in the Mekong delta, especially pottery vessel forms and decorations; 2) these archaeological sites were contemporaneous with one another; and 3) possible interaction between Funan and other polities.

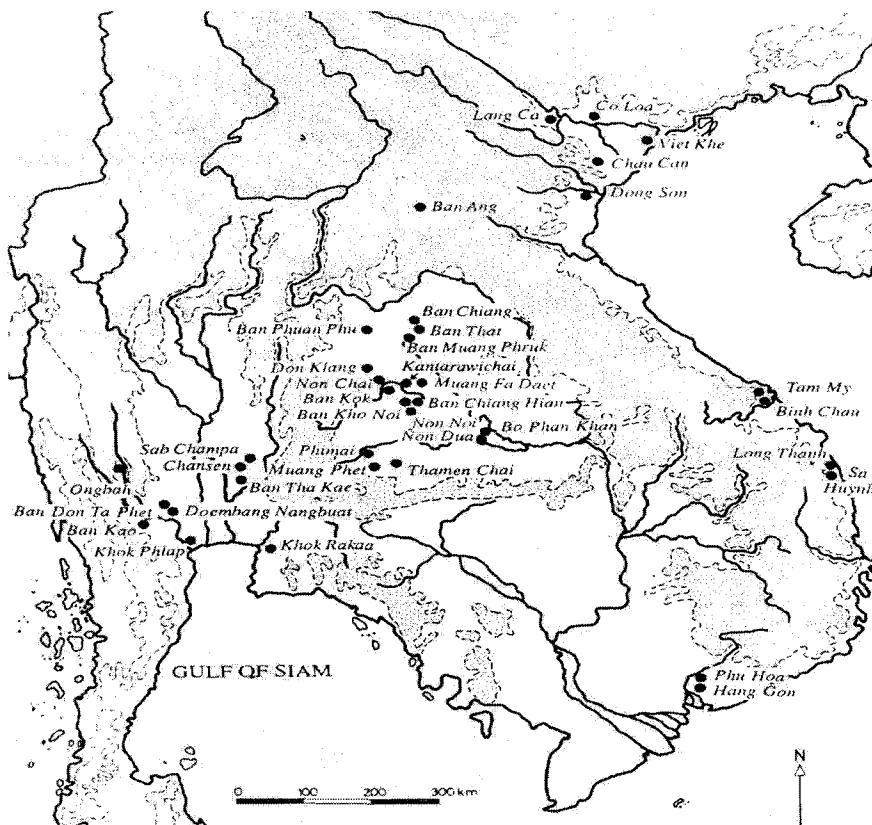


Figure 5.15: Archaeological Sites in Thailand
(From Higham 1989: 196)

Classic Phimai Pottery

The archaeological site of Phimai is located in Nakornratsima of Northeast Thailand. The Phimai region is known by its sandstone temples and it served as an administrative and commercial center during the Angkorian Period (Welch 1989; Solheim and Ayres 1979; Higham and Thosarat 1998; Jacques and Freeman 1999; Groslier 1966).

Figure 5.16 illustrates location of Phimai.

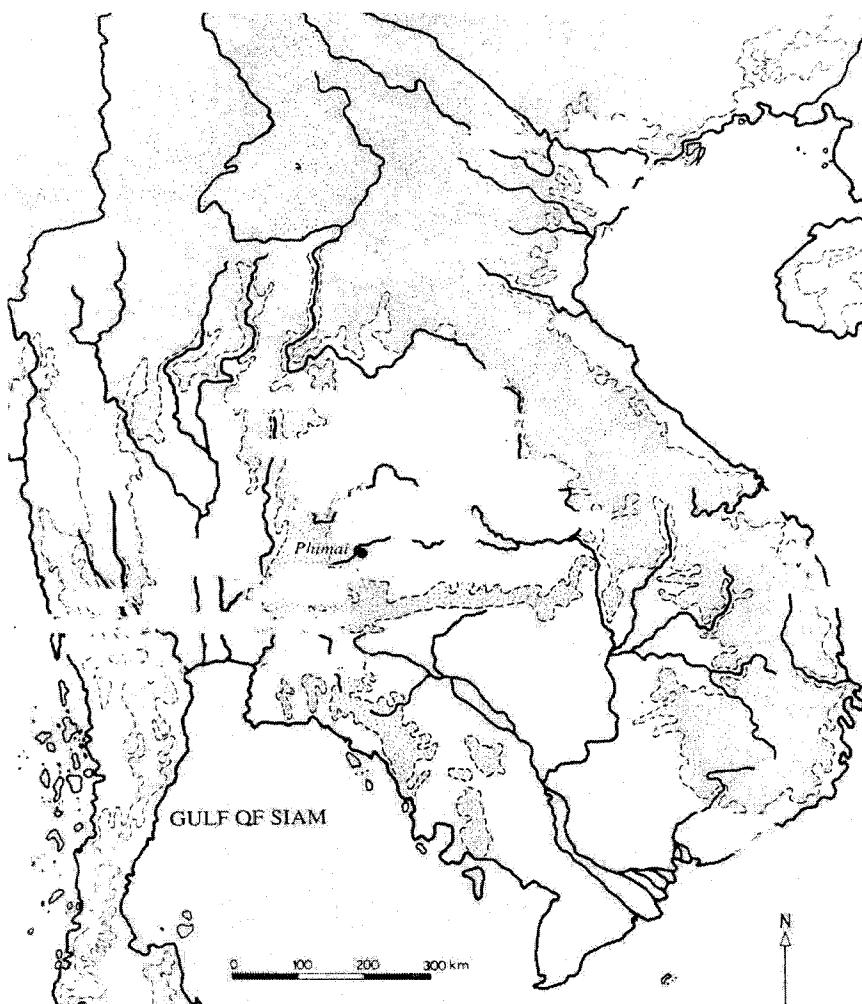


Figure 5.16: Map showing the location of Phimai
(Adapted from Higham 1989: 196)

Archaeological excavation at Phimai during the 1960s by Wilhelm Solheim and Parker yielded various kinds of pottery. Solheim and Ayres identified at least five groups of pottery, e.g., Phimai black earthenware, thick fiber-tempered earthenware, sand-tempered high-fired earthenware, stoneware, and porcelain (Solheim II and Ayres 1979: 67).

According to Solheim and Ayres, a black sherd type dominated the pottery vessels at Phimai sites. Following Solheim, Welch and McNeill called this sherd type a streak-burnished chaff temper Phimai black (Welch and McNeill 1989: 114-115). The characteristics of Phimai black pottery consist of polished lines standing out against a dull unpolished background, with many designs, including spirals, horizontal and vertical lines, and geometric patterns. Solheim and Ayres (1979) provided a description of four distinctive vessel forms from Phimai such as small bowls with concave bases, round-bottom pots, shallow bowls with ring stands, and thick shallow bowls with flat bottoms.

Pottery recovered from Phimai has a coarse texture, abundant pores, and platey paste resulting from a large quantity of fiber-temper. A detailed definition of ceramic fabric will be provided in Chapter 5 on research methodology. Solheim and Ayres suggested that potters at Phimai mixed rice chaff with sand to produce a temper. In general, ceramic vessels unearthed from the site have two

distinctive forms, pots and bowls (Solheim and Ayres 1979: 67-69).

Welch and McNeill suggested that the date for Phimai black pottery fall between 200 B.C and A.D. 300. Thermoluminescence dates obtained by Solheim began in 330 B.C. Solheim and Ayres believed that the manufacture of Phimai black pottery could have begun sometime around 500 B.C. (Solheim and Ayres 1979: 77). Many scholars, however, accept the dates for Phimai black pottery as ranging between the third century B.C. and the third century A.D.

Chansen

The archaeological site of Chansen is situated about 30 kilometers north of Lopburi. Bennet Bronson and his team excavated the site in the late 1960s. Basing his inferences on cultural and chronological sequences, Bronson argued that Chansen was the only site that contained evidence from the Late Metal Age to the time of well developed state levels in Thailand (Bronson 1979: 317).

Figure 5.17 illustrates location of Chansen. During excavation, Bronson and his team discovered pottery figurines, stucco reliefs, pottery stupa finials, carved ivory, worked bone and antler, fauna, antlers, shell, pottery implements, spindle whorls, ground stone adzes, and copper, iron, bronze, and gold artifacts (Bronson 1976).

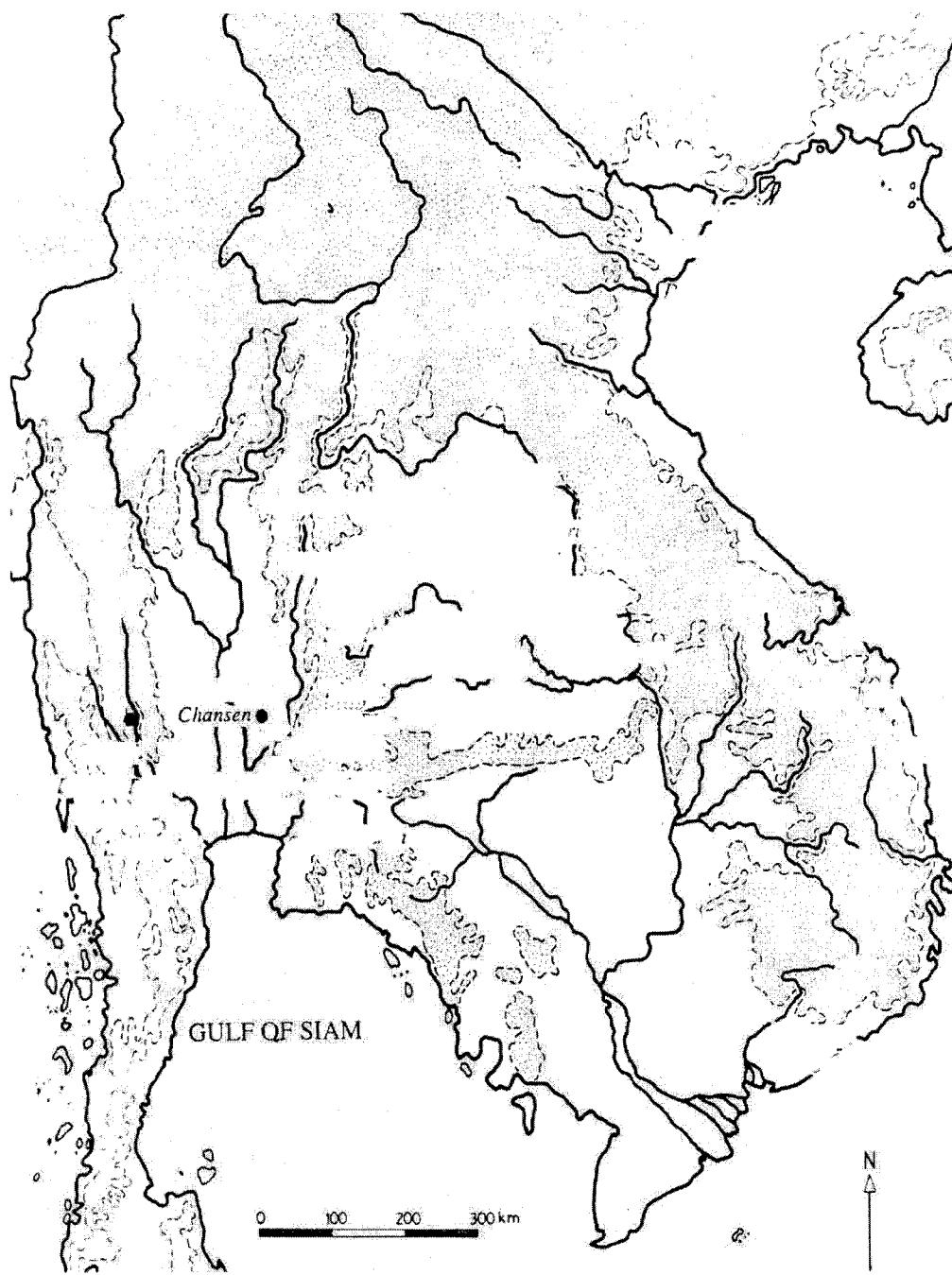


Figure 5.17: Map showing the location of Chansen
(Adapted from Higham 1989: 196)

Bronson used radiocarbon dates to divide the Chansen chronological sequence into six phases, ranging from 800 B.C. to A.D. 1,200. Phases (Ib – IV) correspond

temporally to the rule of Funan from approximately 200 B.C to the end of 6th century A.D. (Bronson 1976: 14-15; 1979: 317) .

Early historic period material culture recovered during the Chansen excavation are diverse. For example, such materials as torque-like ring in tin or gold, earthenware stamp, small bronze bells decorating with filigree spirals, gold jewelry, stone bivalve for making jewelries, and coin or medal decorated with trisula-like design (Bronson 1979: 323). These objects share similarities to those found at Oc Eo by Louis Malleret in 1940s, and more recently in southern Vietnam by Vietnamese archaeologists. Chansen ceramic vessel decoration includes zigzag comb-incising patterns and the fabric is highly mineral-tempered. Pottery at Chansen is dominated by carinated pots, medium and large bowls, medium high neck jars, and large jars. Bronson reported two different kinds of fabrics, those tempered with vegetable materials and those with mineral-tempered fabric. He also hypothesized that there were two groups of ceramic vessel producers, full time and part-time potters. Bronson classified his vessels, based on their textures and surface decoration, into six chronological phases (phase I -VI) that date from 600 B.C. to the end of Angkorian Period, or A.D. 1500.

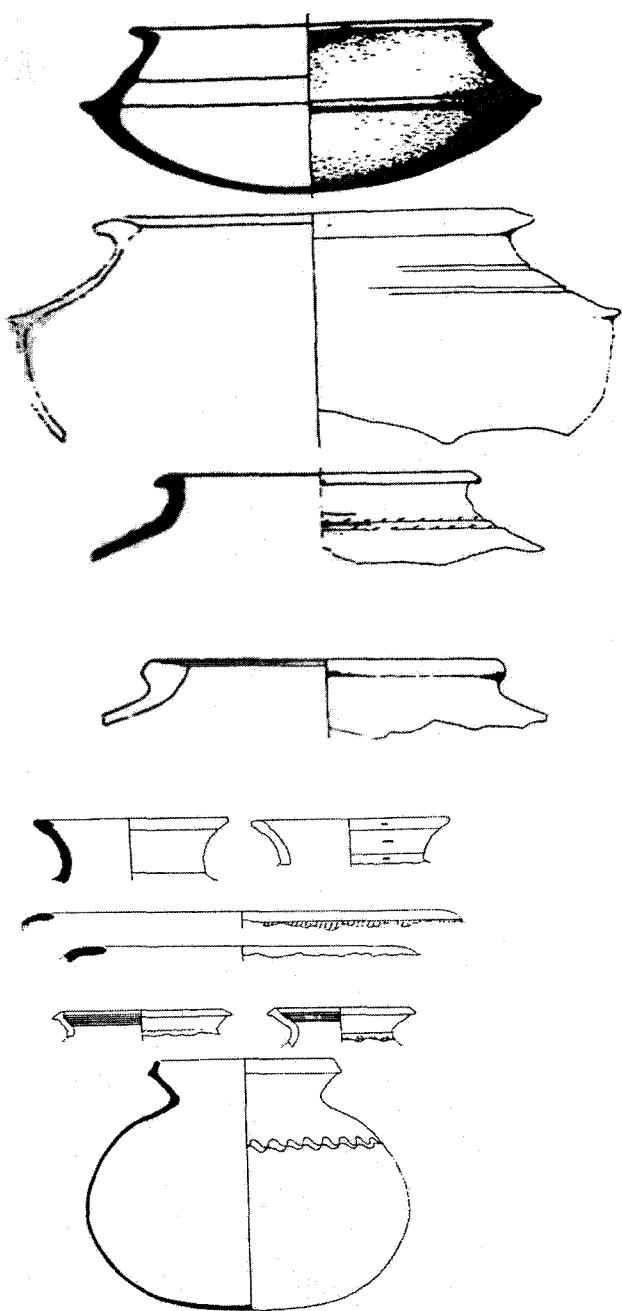


Figure 5.18: Ceramics from Chansen
(From Bronson 1976: 229, 309)

This paper limits its discussion to only Phase I through Phase IV, which date from the end of first millennium B.C. to A.D. 600. The reason that I choose to illustrate the ceramic vessels at Chansen from this time

frame is because they have a strong affinity with those uncovered from Oc Eo, Angkor Borei, and other sites in the lower Mekong Delta (Bronson 1979; Pierre-Yves Manguin and Vo Si Khai 2000).

Bronson indicated that pottery collected from Chansen Phase I is characterized by light-colored, well-fired vessel cores, a high density of tempered and tough pastes, and well-finished features. Potters added mineral material as temper. Surface decorations of ceramic wares in Phase I include plain white, broad horizontal bands, long parallel strokes, wrapped cord-marking, double-slipped, zoned red on white decorations, vertical or diagonal fingernail impressions, and horizontal line and wave incisions on shoulders. Bronson suggests that the vessels in Phase I were imported from outside of the village (Bronson 1976: 186, 238-272).

Ceramic Phase II of Chansen is represented by fiber-tempered ceramics and a smaller proportion of mineral-fabric paste. Surface decoration of ceramics in phase II includes burnishing, wrapped paddle impressions, one or two horizontal grooves or sometimes ridges on shoulders, mat-marking on bases, overlapping fingernail impressions, and short vertical incisions. The texture is coarse. Rims are thick. Carinated pots are the dominant form of pottery for

this phase. Bronson believed that vessels in this phase were locally made for daily use (Bronson 1976: 187-189, 273-307).

Pottery in Phase III has lacquer-like burnishing, bright colors on fine-ware, and thicker and denser porous fiber-tempered fabrics than ceramics from the preceding phases. Black surfaced pottery made up a majority of phase III ceramics. Decorations include wrapped paddle impressions, burnishing and channeling on rims, ridging on shoulders, horizontal grooves below the rim lips, one or two narrow bands of white paint on bodies, and horizontal rows of fingernail impressions. The base is usually plain, with only a few exceptions evidencing light mat or cord-marking decoration (Bronson 1976: 189-190; 313-345).

Phase IV's ceramic vessels have semi-glossy surfaces in dull pinkish colors and crude fiber tempering. Carinated pots are dominant in this phase. Pottery is often decorated with horizontal white or red and white stripes and two sharp ridges separated by wide channels on shoulders. Bronson noticed that a white stripe usually appears on the shoulder. Bodies show no trace of decoration or markings. Vessel bases are marked by mats or cords. Bronson suggested that by Phase IV an increase in regional economic activity was occurring; he drew on evidence such as particular kinds of vessel forms that dominated the phase (Bronson 1976: 191-192, 353-390; 1979).

Dvaravati Pottery

The Dvaravati kingdom flourished from the end of sixth century A.D. to approximately the end of tenth century A.D. Historians believe that the territory controlled by the state covered most of the today's northeast and central Thailand. Based on the material culture evidence, Lyons demarcated the state's boundary as extending from the provinces of Chainat in the north, Ratburi in the south, Karnchanaburi to the west, and Khon Kaen to the east (Lyons 1979: 353). Bronson assigned a date for Dvaravati ceramic vessels into Phase V, circa. A.D. 600 - A.D. 950, (Bronson 1976: 15; 1979: 317).

This period is associated with Welch and McNeill's Sema Phase of Ban Tamyae, Non Ban Kham, and Phimai (Welch and McNeill 1989). Mineral tempers and sandy fabrics characterize a paste of the ceramic vessels from this period. Welch and McNeill described Dvaravati pottery as a high-fired earthenware tempered with coarse grog, laterite, and sand (Welch and McNeill 1989: 114-116). Some earthenware sherds of Dvaravati suggest wheel throwing, especially on semi-fine paste vessels. Result from the excavations at Chansen suggested to Bronson that pottery production during this period indicated a larger scale industry than did earlier chronological phases of Northeast Thailand.

(Bronson 1976: 193; 1979). The vessel forms include rounded globular jars (with everted rims, smooth constrictions at the necks, and flat bases), constricted bowls with sloping shoulders, rimless and neck-less jars, shallow bowls or deep plates, deep and constricted bowls with no necks and rims, pots with concave shoulders with rounded bases, and large slightly constricted bowls (Figure 5.19 & 5.20).



Figure 5.19: Map showing the distribution of Dvaravati site
(From Wales 1969: 2)

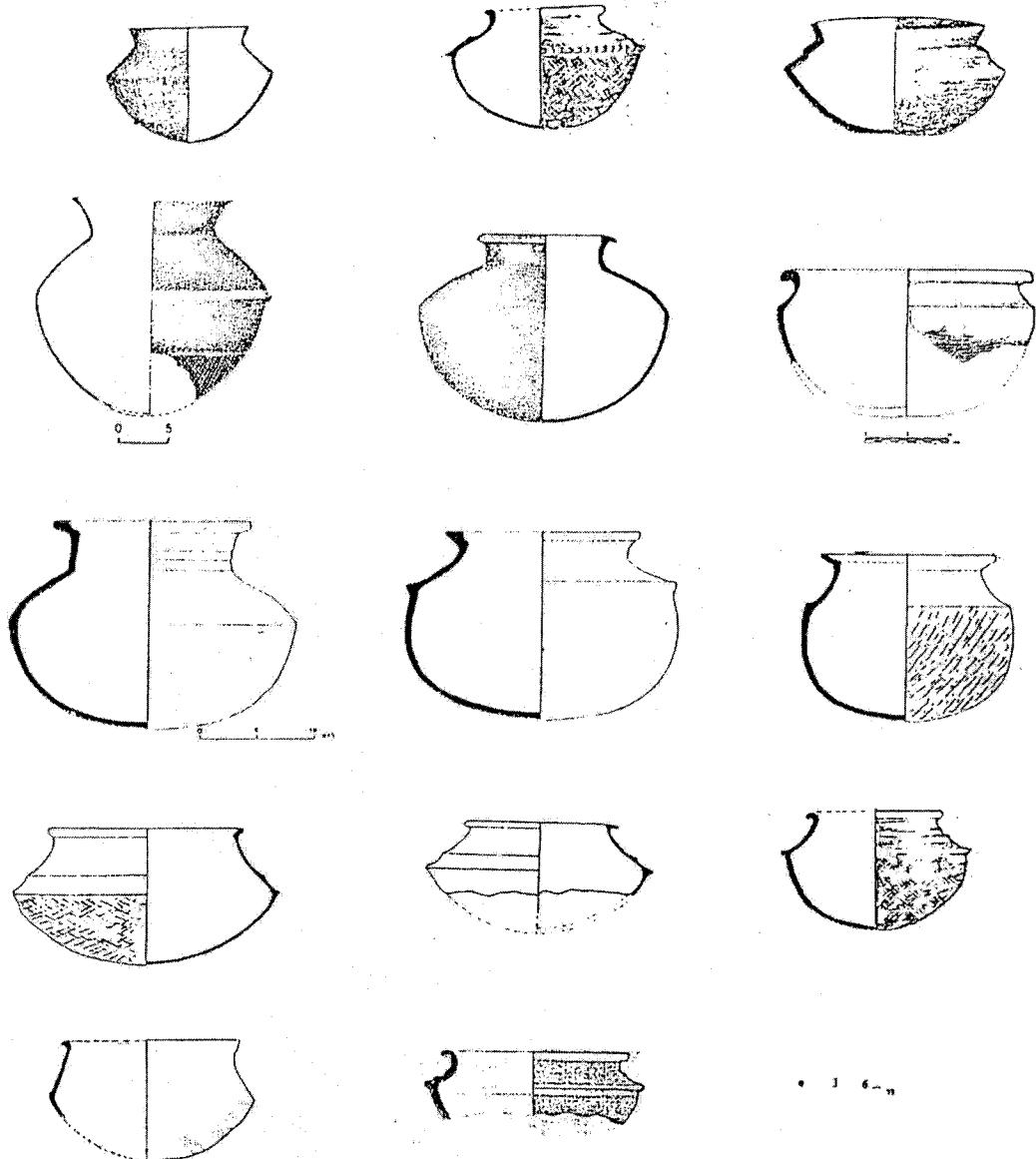


Figure 5.20: Ceramic from Dvaravati site, Thailand
(From Bhumadhon 1996: 21)

Dvaravati ceramics recovered from Chansen presents a variety of surface decorations, including horizontal white, red and white stripes and sharp ridges on shoulders. In addition to plain surfaces, cord-marking, paddle-marking, horizontal and vertical impressions by mat-marked on the body, and diagonal mat-marking on the lower body is found. Narrow burnished streaks, horizontal lines below the lips, incised decorating patterns in bands around the shoulders of the jars, and crude spirals on the bases are also present. Surface colors consist of light red, yellowish-red, reddish yellow, light brown, light gray, and white (Bronson 1976: 354-390; 1979:321-326; Welch 1985: 197-198; Welch and Mcneill 1989: 114-115).

Vietnam

Vietnam has many kinds of archaeological sites, ranging from limestone cave shelters located in mountains and highland landscapes, to open sites on the coast. Dates for these ancient occupations range from the Paleolithic to early historic period. Vietnamese archaeologists divide the prehistory of Vietnam into chronological stages or cultural phases. Examples include the Son Vi culture, Hoabinhian culture, Bacsonian culture, Ha Long culture, Dongson culture, Sa Huynh culture, and Oc Eo culture (Higham 1989; Mourer 1986; Ha Van Tan 1980).

As I mentioned in an earlier chapter, many Southeast Asian historians have thought that Oc Eo was once an international port city of Funan during the first to sixth centuries A.D. Louis Malleret began excavating at Oc EO in 1944, and until today many Vietnamese archaeology teams have pursued excavations at the site. Most recently Pierre Manguin of the French School of the Far East has also worked on Oc Eo sites near Malleret's original site.

Vietnamese scientists use the term "Oc Eo culture" to refer to a cluster of archaeological sites that occupy a large region of the southern and lower Mekong delta of Vietnam. Oc Eo sites are scattered in many southern Vietnam provinces such as Chau Doc, Long-xuyen, Sadec, Vinh-Long, Can-Tho, Rach-Gia, Tra-vinh, Soc-Trang, Ba-Lieu, and Ang Giang. The highest concentration is found around Phnom Ba The. Early French art historians and epigraphers collected many statuaries and Sanskrit and Old Khmer stone inscriptions from the sites (Dupont 1940; Mourer 1986; Ha Van Tan 1986).

New radiocarbon dates acquired by Vietnamese archaeologists offer interesting information on age of Oc Eo. Based on these chronometric dates, the age of Oc Eo ranges from 400 B.C. to approximately A.D 600. Evidence of stone construction begins at A.D. 420, and the first wooden

Buddha statue discovered in Thap Moi was dated to A.D 300 (Ha Van Tan 1986: 93; Dao Con 1993: 114-119).

The details of domestic and exotic artifacts uncovered from Oc Eo sites have already been discussed in Chapter One. Higham (1989: 249-254), Ha Van Tan (1986), and Malleret (1962) extensively reported the material culture of Oc Eo. The next section of this chapter will examine the pottery forms and decorations from the Oc Eo culture.

Oc Eo Pottery

Basing his inferences on vessel forms and their pastes, Louis Malleret classified ceramic artifacts collected during excavation at Oc Eo into 71 types. Due to the non-existence of technology for dating artifacts in those days, Malleret pointed out that his classification of the 71 types could not be associates with chronometric dates (Malleret 1960: 133). Sixty-seven of the types were described as ceramic kitchen utensils, such as cooking and storage vessels, clay stoves, and ceramic bottles. The last four types were identified as Funan's clay stamps. The stamp may have been used as a mark or a symbol during the Funan period.

Malleret and Mourer consider pottery and other material cultures unearthed from Oc Eo and its vicinity as the heritage of Funan civilization (Malleret 1962; Mourer 1986). This paper briefly summarizes and illustrates some of

67 types of ceramics that were reported by Malleret, comparing these with new data from recent research by Vietnamese and Western archaeologists.

Malleret divided the 67 types of ceramic vessels into five categories: 1) clay crucibles of foundries (Type 1-6); 2) vessels with large rims (Type 7-28); 3) vessels with narrow necks or shoulders (Type 29-49); 4) cups or bowls (Type 50-54); and 5) lids (Type 55-67) (Malleret 1960: 133-174). He selected 241 diagnostic sherds to be analyzed. Samples for his studies were taken from the different vessel categories, including crucibles of foundries, clay stoves for cooking, long-neck vases or bottles, black pottery, and fine paste pottery in gray, yellow or pink color (Figure 5.21) (Malleret 1960: 98-102; 353-357). Malleret provided a short discussion of each vessel group.

Similar forms of pottery have been recovered at both OC Eo and Angkor Borei (Malleret 1960: 100; Stark 2000: 76, 79). The following section of this chapter summarizes the ceramic analysis and the description of the six ceramic groups from Oc Eo provided by Malleret (1960: 97-125; 131-175; 353-357) because they are similar in form, decoration, and possibly paste.

Group I is characterized by a raw clay or low firing technique. Some specimens contain sand inclusions.

For chemical studies of this ceramic group, Malleret took a sample from category I of crucibles of foundry.

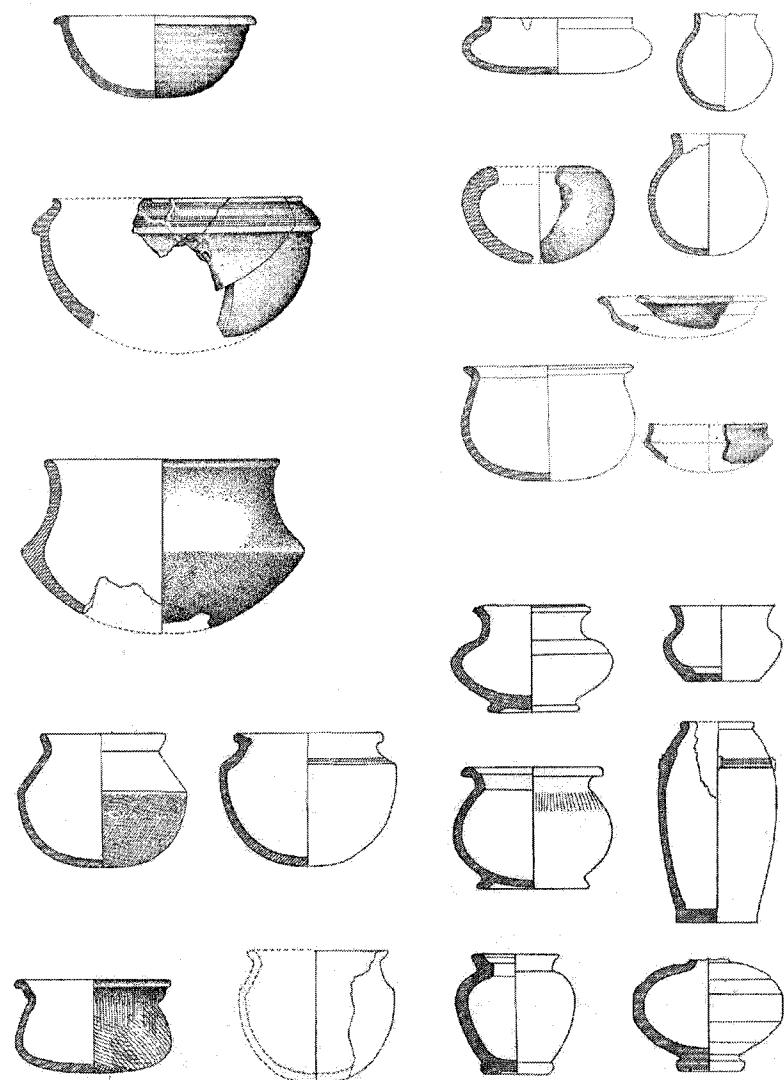


Figure 4.21: Some examples of ceramic from Oc Eo, illustrated by Malleret 1960: Pl. 22, 23, 24, 25

Group II ware tempers contain a medium density of sand quartzite inclusions mixed with black or white mica. Paste is rough and coarse. The exterior color of ceramics in this group is gray or red, and the interior surface is yellow or brown. Ceramic forms include net weights, stamps, lids, pots, jars, bowls or cups.

Group III tempers have a high density of sand inclusions. The surface color is reddish dark. Vessel forms includes crucibles, spherical pots, long necks and narrow jars or bottles, and bowls. Malleret reported that the interior surfaces of vessels in this group contain gold particles. He suggested that the containers belonged to goldsmiths. Gold workers might have utilized these vessels for the production of gold jewelries and other commodities.

Group IV has black (dark) paste with a low density of sand inclusions. The paste is flaky and has fissures. It contains pores and voids as a result of organic materials and charcoal particles. The external surface is shiny or burnished. Vessel forms present in this group include pots, slim bottles, pedestal pots, long shouldered (neck) jars or pots, and spherical pots.

Group V has ceramics with fine paste, relatively hard vessel walls, and a homogeneous texture. It has a pink or salmon, yellow, light gray, and dark gray color, and a smooth surface. Vessels in this group include bowls with

large rims, bottles, pots, narrow neck vases, and lids. Malleret noted that pottery in this group was more artistic in terms of form, and surface decoration. The potters carefully and skillfully prepared the clay and formed the pots.

Group VI is classified as a late Pre-Angkorian Period (7th – 8th century) and early Angkorian Period ceramic group and it is characterized by the appearance of stoneware pottery. Malleret describes it as similar to pottery found at Phnom Kulen. Surface treatment is mat or glossy and varnished or glazed. There were variety of forms and decorations in this group, such as zoomorphic models.

Stark has made some general comparisons of ceramic vessels from Angkor Borei with Oc Eo's pottery. She reported that Angkor Borei's cord-marked earthenware jars are similar to Malleret's group II in term of paste and temper, and the fine buff-ware type is associated with Malleret's group V (Stark 2000: 76, 79).

Following Malleret's classification, Mourer agreed that there are two kinds of ceramic artifacts found at Oc Eo, indigenous and foreign ware (Malleret 1960: 90, 106-110; Mourer 1986: 131-133). Malleret and Mourer defined indigenous ware as a pottery that presented a more primitive form, resembling ceramics found at late Neolithic or Bronze Age sites in Cambodia (i.e., Samrong Sen). It is shaped by

hand (not wheelmade), and was fired at with low heat. The local techniques did not involve wheel turning and firing in a kiln. The domestic vessels have two dominant surface treatments, including impressed and incised decorations. Impressed decorations usually appear on local ceramic groups II, IV, and V. Incising correlates with groups III, IV, and V (Malleret 1960: 110-115; Mourer 1986: 142-144).

So called "foreign" ceramic artifacts in Malleret's definition were described as having a more complex technology and higher firing, including wheel turning and kiln firing technologies. Malleret and Mourer believed that these technologies were Indian influenced. Surface decoration was also constituted by impressed and incised techniques. Impressing decoration dominates the fine paste pottery of group V (Malleret 1960: 130).

Potters usually applied incised decorations in the form of circles on the shoulder on vessels of group IV. Some ceramic artifacts presented zoomorphic and floral motifs, but only rarely. Malleret believed that potters of Oc Eo left a sign (mark) on the exteriors of lips and on the base of cups or bowls, as an indication of their industry. Ceramic group V's signs included plant motifs or stars with eight points or *swastikas* and curved line motifs (Malleret 1960: 116; Mourer 1986: 150).

Recent results of archaeological investigations in the Mekong delta after 1975 by Vietnamese and Western researchers also indicate that Oc Eo sites contain a rich material culture, including ceramics, iron, beads, burials, brick temple foundations, statuaries, inscriptions, and other objects that bear a similarity with the descriptions of Louis Malleret over 50 years ago (Trinh Thi Hoa 1996; Ha Van Tan 1989). Particularly, the reports of these new discoveries have confirmed that archaeologists are still encountering a variety of pottery forms and decorations that resemble Malleret's data.

Ceramic artifacts appear in the forms of round based pots with large rims, pedestaled bowls, slim bodies and long-neck jars and wavy rim bowls. Surface treatments include burnishing and slipping. Some sherds have color painting. Fabric varies from site to site. It ranges from those with an abundance of limestone temper, to those with black and sand temper, or fiber. Decorations include cord-marking, multiple incised lines, paddle impressing, multiple wavy lines between two bands of multiple horizontal lines, single ridges on shoulders, concentric circular lines, concentric semi-circular lines, and impressions between incised lines (Bui Phat Diem, Vuong Thu Hong and Nishimura Masanari 1997: 76; Nishimura Masanari and Vuong Thu Hong 1997: 78-80).

Previous archaeological data from Cambodia, Laos, Thailand, and Vietnam are considered important and a starting point for current archaeological studies of ceramics important studies at Angkor Borei. Although the information from Cambodia and Laos is limited, it still makes valuable contributions to understanding of the development of ceramic technology in Cambodia during the late prehistoric period.

CHAPTER 5
ARCHAEOLOGICAL EXCAVATION AT ANGKOR BOREI AND DATA
COLLECTION

The Research Goals

The primary data for this study comes from archaeological excavations carried out by members of the Lower Mekong Archaeological Project at Angkor Borei during the 1996 field season, specifically from AB4 (Angkor Borei Test Unit 4). A basic goal of this study is to understand the development of the pottery technology (i.e., form, fabric, surface treatment, and decoration) through times, by investigating each diagnostic ceramic artifact that was recovered at AB4.

Results of this analysis, in combination with chronometric dates from radiocarbon samples, enabled this project to build a ceramic chronology for AB4 and, by extension, the Angkor Borei site as a whole. Building a ceramic-based chronology is an essential step for the research at Angkor Borei. This knowledge will become one of the primary sources for the Lower Mekong Archaeological Project to utilize as a database for comparison with ceramic sherds from future excavations at sites in the vicinity of Angkor Borei.

Potsherds recovered from AB4 are abundant. The total amount of sherds is 17,967. As mentioned above, this thesis selects only the most diagnostic sherds, such those with bases, rims, and lids, and those sherds that present a diameter larger than 5 mm², because they contain more information than other parts of the Angkor Borei's vessels. The total sherd count the study is 4,993, approximately 35 percent of the whole collection. All the artifacts for this investigation are well provenienced and were systematically recorded during the 1996 excavation.

To construct the ceramic chronology of Angkor Borei this study first attempted to classify potsherds into major groups based on rim profiles, surface treatment, texture, and vessel form. Second, it sorted each ceramic class according to its stratigraphic layer. Third, we delimited a timeframe by associating each ceramic type with absolute (chronometric) dates. This research was undertaken to differentiate of each ceramic type, in terms of its form, decoration, rim profile, and surface treatment, in relationship to a particular time period.

As mentioned earlier, the archaeological site of Angkor Borei once may have served as a capital city of one of the earliest states or kingdoms in Southeast Asia. Material culture from the site, especially ceramics, are

similar in nature, form, and probably function, to pottery that was uncovered at Dvaravati sites in northeast Thailand (Chansen, Phimai, and Ban Tamyae), southern Vietnam (Oc Eo), and some cases with the Sambor Prei Kuk's ceramics. For example, archaeologists have discovered the spouted pot (*Kendi*) is found in almost every archaeological site in Southeast Asia dating to the early historic period.

Before proceeding to Angkor Borei's ceramic analysis and its results, some background is presented on the archaeological excavation, procedures of data collection, and provenience recording strategies for this research. The following section of this chapter describes the excavation of AB4 during the 1996 field season.

Archaeological fieldwork at Angkor Borei

Following the 1995 archaeological field season, which mostly concentrated on training Royal University of Fine Arts students and on mapping of the site, the newly formed Lower Mekong Archaeological Project team (LOMAP) began in 1996 by conducting systematic excavation at Angkor Borei at three different locations, AB3, AB4, and AB5. One of the goals for launching the excavation was to establish the site's chronological sequence. Other goals included locating the basal cultural deposits and collecting artifact samples for possible chronometric dates (Stark et

al. 1999: 15). The primary data for this study are the ceramic sherds collected from AB4.

Dr. James Bayman and the author supervised the archaeological excavation at AB 4 under the direction of Dr. Miriam Stark and professor Chuch Phoeurn, Co-Directors of LOMAP.

Survey and Mapping

The University of Hawai'i and Royal University of Fine Arts team began the first archaeological survey at Angkor Borei in 1995. Team members included Dr. Bion Griffin and Dr. Judy Ledgerwood, Co-Directors of the Program in the Archaeology, Anthropology, Architecture, and Art History of the Kingdom of Cambodia, Dr. Jefferson Fox, Dr. Carol Mortland, Dr. Miriam Stark, Dr. William Chapman, Michael Dega, Kyle Latinis, Pheng Sytha, Bong Sovath, Ly Vanna, Tea Van, Kou Vet, Kim Sedara, Prak Beaureaksme, Chhan Chamroeun, and Chan Sambath. The goals of this field season were: 1) to discover archaeological features, such as ancient water reservoirs, statuary, stone inscriptions, brick temple foundations, ancient earthen-walls, and evidence of an ancient canals, and to record these features on the archaeological map of Angkor Borei; and 2) to train Cambodian archaeologists to do systematic archaeology,

mapping and excavation (Griffin et al. 1996: 37; Stark et al. 1999: 12).

The activity of the 1995 field season (July 5, 1995 - August 5, 1995) involved pedestrian reconnaissance, mapping, coring, and digging of two test pits at disturbed areas where looters had already dug large excavations (AB1 and AB2). During this field season the team recorded 151 features including 91 pools, 21 baray, 15 temple or brick structures, 20 mounds, and ceramic concentrations (Dega 1996: 16). The team also identified six previously unknown brick temple foundations and recorded some artifacts, such as gold flecks, stone figures, ceramics, beads, and jewelries, excavated by local villagers (Griffin et al. 1996: 40-41).

The archaeologists also studied the earthen wall surrounding the town of Angkor Borei that was described by Malleret, Aymonier, and Mauger earlier in the 20th century. The wall, surrounded by inner and outer moats, is roughly 2 meters wide and 4.2 meters high and approximately 6 kilometers long. The wall was originally made of bricks and covered with soil (Stark 1997: 48).

The LOMAP team, directed by Miriam Stark, began its archaeological fieldwork in summer 1996. Its main mandate was to continue mapping, pursue an ethnographic study of

agriculture and land use, and undertake archaeological excavation at AB3 (an elevated area located at the now local district administration center), AB4 (Tuol Chheu Sar, an elevated area), AB5 (a brick temple foundation), and AB6 (an earthen wall).

The team collected four radiocarbon samples from the 1995 field season, two from each test pit and the other two samples from coring at the moat. The dating ranges from 3505 B.C. to A.D 350. The archaeologists did not find any particular cultural material associated with the sample dated to 3505 B.C. and discount its usefulness in determining the site's origins. Nine radiocarbon samples were collected from the 1996's field research; these date from 348 B.C. to A.D 215. One thermoluminescence sample dated to the middle of the 10th century (Stark 1997: 53; Stark et al. 1999: 13-14).

Archaeological Excavation At AB4

AB4 is located on the top of an elevated mound, called *Tuol Chheu Sar* (mound that has a white tree), approximately 100 meters south of the Angkor Borei River. Before 1975, the villagers of Angkor Borei considered the Toul Chheu Sar as a sacred place where they could pray for rain, children, and protection before leaving on a long distance trip or to

another province. Today, the mound still houses a small spirit hut for a spirit, *neak ta*.

The excavation at AB4 began on June 10, 1996 and ended in late July 7. Dr. James Bayman and the author directly supervised the excavation to the end of the field season. The initial observation that prompted the excavation at the unit came from villagers who told the team that they had discovered human skeletons in big jars while preparing the surface for planting and other activities. When the LOMAP team visited the site, we were struck by its extraordinary scattering of potsherds on the surface. Another reason for choosing this location was to compare the finds and cultural deposits between AB4 (south of the river) and AB3 (north of the river) (Stark 1999: 17-18).

AB4 is situated within the city wall, about 650 meters to the east of the western side of the wall.

The excavation unit itself is exactly oriented to north - south and east - west cardinal directions. The dimensions of the trench are one meter (east - west) by two meters (north - south). LOMAP archaeologists noticed that the uppermost layers of the mound, including the north section of the AB4 unit, were badly disturbed by local activities such as digging for bricks, road construction, and

flattening the area for building houses. These layers contain mostly brick rubble from ancient structures.



Figure 5.1: AB4 excavation unit

Stark et al. (1999) concluded that the layers ranging from 100 to 200 centimeters correspond closely to layer 1 through layer 3 of AB3 (Stark 1997: 11; Stark et al. 1999: 18).

Artifact Collection Strategy

Because of the careful techniques and abundance of ceramic sherds, LOMAP archaeologists established arbitrary 10-centimeter levels, starting from the top present of the ground surface and extending down to the sterile soil which

was sandy. The very bottom is level 45, which reaches a depth of 450 centimeters below the surface. The team also utilized 1/4 and 1/8 size screen to sieve for beads, gold flecks, fishbones, and other tiny material cultures (Figure 5.2).



Figure 5.2: Data collection activity at AB4

Artifacts discovered from each level were bagged according to their original provenience and type of material culture (e.g., bone, antler, potsherds, clay anvil, clay pellet, beads, iron slag, and fishbone) with a tag inside. The bag and tag provides information on the location where the artifact found (Table 5.1).

Site	Provenience	Level	Tag No:	Date	Excavator
AB	4	1	502	06/11/96	JB/CKNH

Table 5.1: Information for recording the artifact provenience at Angkor Borei.

The AB4 trench has 35 stratigraphic layers. These layers were identified by identifying changes in soil color and texture with the naked eye, coupled with a Munsell Color Chart (Table 5.2). The last section of this chapter will provide in more detailed description of the cultural layers in the AB4 excavation unit.

Material Cultural Remains

As a result of careful sieving through 1/4 and 1/8-inch screen size, there are hundreds of artifacts, including potsherds, clay objects, fish and animal bones, antlers, clay pellets, beads, clay lumps, and other cultural remains, collected during the excavation at AB4.

Animal Bone and Shell

Many small bone fragments and large animal bones were mixed among the potsherds scattered on the surface of Tuol Chheu Sar including the area of the future AB4, prior to the start of archaeological excavations. The excavating team began to collect fauna fragments from every level, except level 7, 31, 44, and level 45. It is noted that the animal bones are smaller in size in the upper levels (1

through 28), and that the bone fragments from level 29 to 43 were larger. Although animal bones were found every level, they were particularly abundant between levels 25 and 43.

Snail shell was scarce. These faunal remains were, however, relatively abundant between level 19 and level 27, especially level 26. Snail shell is absent from level 28 to level 45, except for a few pieces that were present in level 39 and level 41. We also collected horns and antlers, but none existed between level 1 and level 22. Horns and antlers were only present from level 23 to level 26, and level 34 and 39. The team encountered only a single piece of turtle shell from level 43. No turtle shell existed in the upper and lower levels.

Initial faunal analysis was undertaken by Peter Eyre (MA paper 2000). Through analysis of AB3's faunal remains, Eyre discovered that the bones were derived from deer (hog deer and brown antler deer), bovid, water buffalo, gaur, banteng (*Bos javanicus*), pig (both wild and domesticated), dog, rodent, fish, turtle, crocodile, and bird (Eyre 2000: 12-17). Detailed studies are currently underway by Dr. William Beleher, at the Central Identification laboratory in Hawaii.

Iron Slag

Two pieces of iron slag were present in level 42 and level 43, approximately 410 and 430 centimeters below the datum. No study has yet been undertaken to understand the function and compositional elements of these iron slag pieces. Based on their depth (410 - 430 cm), the slag could have been left by Iron Age people.

Beads

As a result of 1/8 inch mesh screening, we collected some stone beads from level 3 and level 15. No beads discovered beyond level 15 of the AB4 test excavation.

Clay Pellets

We collected clay pellets from level 5, level 7, level 8, level 13, level 20, level 22, level 24, level 25, and level 33. No clay pellets were present above level 5 or below level 33. The function of the clay pellets (balls) is still unknown. No scientific study on the Angkor Borei's clay pellets have yet been conducted.

Potsherds

As mentioned above, ceramic sherds are abundant and are the dominant artifacts for AB4 and probably for the ancient Angkor Borei site as a whole. We began to find pottery sherds from the first level (0 - 10 cm below surface). We noticed that the amount of sherds appeared to

decrease from level 43 to the bottom of the unit. A thick lens of fine orangeware sherds was documented between level 8 and level 22. We also found some fine orangeware sherds below level 22, but the number was small compared with the upper level. The amount of gray and black ware increased in levels below the fine orangeware lens. This thesis will later elaborate in more detail some characteristics of the sherds from each cultural phase.

Other Cultural Objects

During the excavation at AB4, we also collected clay anvils, stone objects, charcoal samples for radiocarbon dates, clay lumps, and bricks. Occasionally, we identified postholes, ash lenses, and different colors of raw clay in the unit that could have been left by activities such as the preparation of clay for making pottery and cooking.

Defining Cultural Phases

In the delimitation of the cultural layer or cultural phase for the AB4 test unit, this paper tries to utilize three basic strategies based on the Munsell Color Chart, matrices, and potsherd density. As a result, I found that three cultural phases or cultural layers were present in the AB4 trench from the top surface down to the bottom. Detailed descriptions of the layers and matrices are

presented in Appendix B. Table 5.2 illustrates a summary of the matrix in each Cultural Phase.

Cultural Phase	Matrix
III (Levels 1-7)	Soil color ranges from dark brown to reddish brown. Matrix contains: charcoal flecks and ashes, variety of sherds, clay pellets, some animal bone and shell.
II (Levels 8-21)	Soil color ranges from dark reddish brown to reddish brown. Matrix contains: orange sherds, charcoal flecks, postholes, gray and yellow clay lumps, beads, clay pellets, anvils, and shells.
I (Levels 22-45)	Soil color ranges from dark brown to very pale brown. Matrix contains: organic matter, gray clay lumps, low density of orange sherds, charcoal flecks, animal bones, abundant of black and gray sherds, anvils, clay pellets, pebble inclusion, iron slag and posthole-like feature.

Table 5.2: A summary of the matrix for each Cultural Phase

Based on radiocarbon dates from some of the layers, six main ceramic groups are well associated with these three cultural phases. Six ceramic groups, formed the central focus of this dissertation, and they will be discussed in Chapter 7. Table 5.2 illustrates the ceramic groups and chronometric dates for each cultural phase.

Phase	Level	Ceramic Group	Date
III	1-7	Fine Buffware	A.D.300 - 600
II	8-21	Fine Orangeware	200 B.C.- A.D.300
I	22-45	Burnished Earthenware Grayware Slipped Ware Cord-marked Earthenware	500 - 200 B.C.

Table 5.3: Ceramic groups and dates for each phase

Although AB3, AB4, and AB7 were located at a different part of Angkor Borei, the material culture was similar. Figure 5.3 illustrates the locations of all the excavation units (AB1 - AB8) made by the LOMAP team from 1995 through 2001.

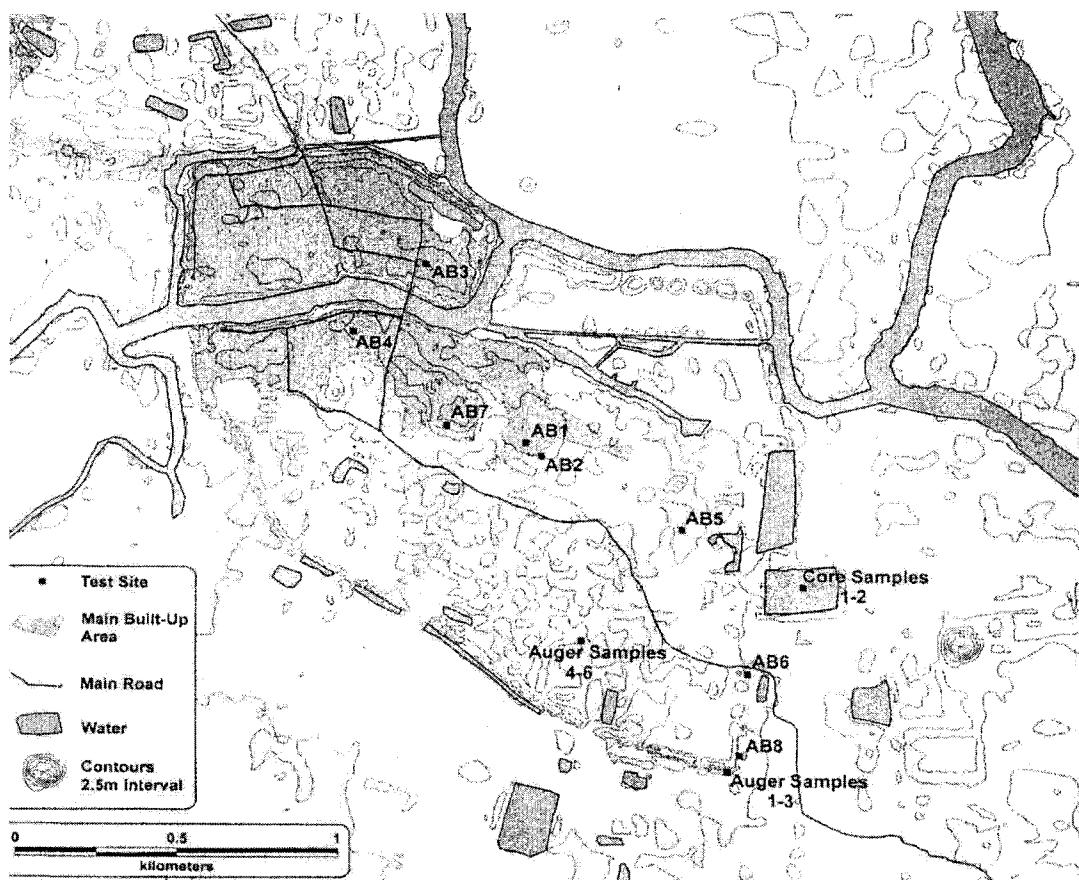


Figure 5.3: Map showing the location of AB3, AB4, and AB7
 (From Stark 2001: 23)

The AB3 and AB4 also revealed a similar assemblage of artifacts and sediment. Figure 5.4 illustrates a stratigraphic profile of excavation unit 3.

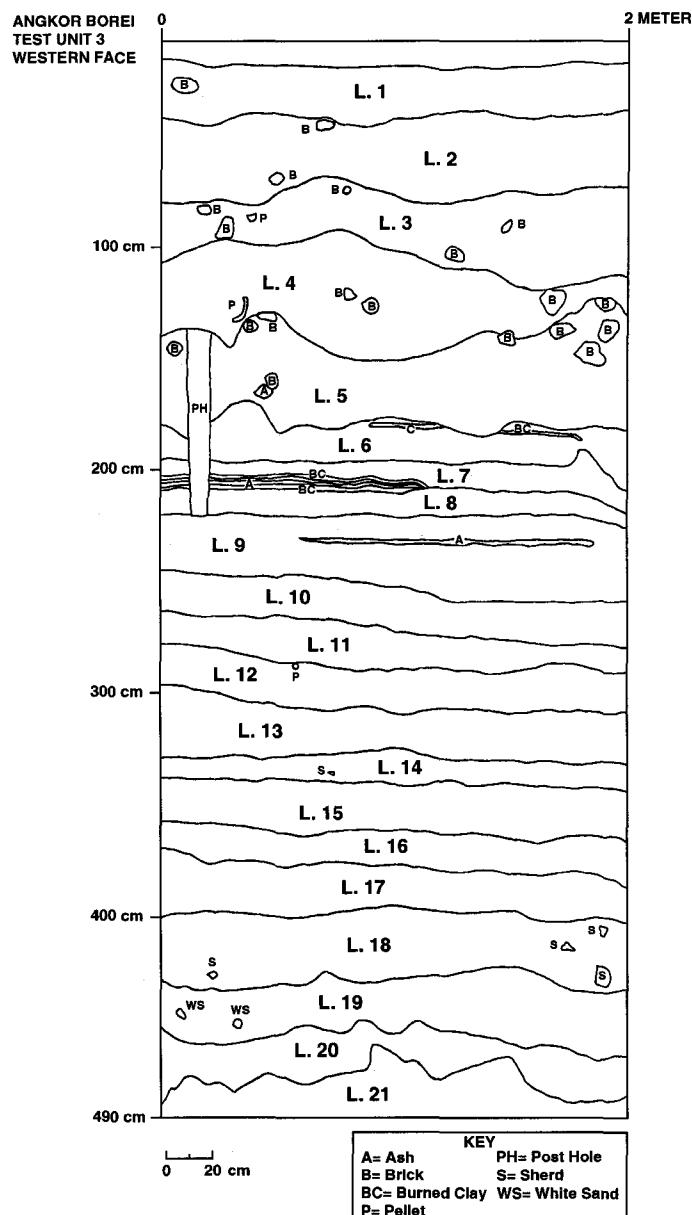


Figure 5.4: AB3 stratigraphic layer
(Courtesy of Dr. Miriam Stark)

Table 5.4. Ceramic Frequency of Test Unit 3

Level	Fine Buffware	Fine Orangeware	Burnished Earthenware	Grayware	Slipped ware	Cord-marked Earthenware
1	28% (650)		1% (40)			
2	44% (3015)			0% (10)		3% (225)
3	34% (2080)				2% (120)	1% (35)
4	31% (370)					3% (40)
5	33% (350)					8% (80)
6	26% (1040)	0% (5)	1% (35)			4% (180)
7	34% (900)		2% (40)			4% (95)
8	37% (1030)		1% (15)			2% (60)
9	26% (1960)					4% (280)
10	21% (1170)	5% (260)	2% (140)			5% (265)
11	19% (1035)		1% (50)			4% (240)
12	15% (335)	0% (5)				13% (285)
13	10% (580)	1% (45)	2% (85)			11% (635)
14	13% (845)	1% (40)	1% (55)			13% (825)
15	5% (280)	1% (50)	2% (135)			19% (1060)
16	2% (180)	1% (160)	10% (1185)			36% (4230)
17		2% (120)	8% (500)		3% (190)	47% (3055)
18		11% (420)	12% (460)		2% (65)	26% (1020)
19	0% (10)	35% (1180)	7% (240)		0% (10)	11% (770)
20		16% (1100)	13% (935)			22% (720)
21		33% (1290)	4% (150)		2% (85)	7% (270)
22		65% (2100)	3% (60)		3% (55)	23% (427)
23		72% (1755)	3% (90)			11% (275)
24		72% (1910)	2% (45)			4% (140)
25	1% (25)	20% (425)	3% (80)		1% (15)	8% (205)
26		16% (560)	3% (70)			33% (680)
27		32% (1455)	9% (310)		4% (155)	30% (1035)
28		11% (805)	4% (200)		1% (25)	22% (990)
29		3% (110)	4% (275)		1% (70)	19% (1340)
30		14% (620)	1% (30)		1% (35)	16% (590)
31		25% (975)	5% (225)		1% (40)	13% (1255)
32		1% (55)	3% (130)		1% (25)	29% (1120)
33		28% (740)	5% (320)	9% (560)		29% (1790)
34		62% (2180)	5% (135)	7% (185)	1% (20)	32% (860)
36			1% (40)	5% (170)		18% (650)

43			11% (520)	7% (320)	5% (225)	11% (500)
44		1% (20)	14.5% (350)	13% (315)	4% (90)	32% (770)
46			5% (115)	12% (260)		25% (560)
47		1.5% (20)	5% (65)	3% (45)	2% (30)	25% (320)
48				6% (30)		8% (40)
TOTAL	15855	19010	7125	1895	1250	27915

Cultural Phase I

Cultural layer I, the lower layer, is roughly defined as ranging from arbitrary level 23 to level 45 (sterile layer). In other words, it began at stratigraphic layer 24 and continued to layer 35, the basal layer (sand). The matrix contains gray clay and burned daub, sand and rock inclusions (granite), and ash and charcoal flecks. Gray and black (burnished) sherds are abundant and dominant when compared with other types. Gray and burnished sherds usually appeared in larger sizes than in the subsequent phases.

Two pieces of iron slag were discovered in this cultural deposit. Animal remains were rich in this layer. The faunal species include turtle shell, mollusks, antlers, and small and large animal bones. Clay anvils were particularly abundant in this phase. The color of the soil ranged from very dark gray (10YR 3/1) to very pale brown (10YR 7/4). It contains some yellow and gray lumps of clay.

Absolute dates for cultural layer I fall between 394 B.C. and A.D. 60, which corresponds relatively well to Stark's (2000: 76-79) Phase I, dating from circa 500 B.C. to circa A.D. 200. It is possible that the date for cultural phase I (394 B.C. - A.D. 60) could be possibly older than 394 B.C. because it derived from a single radiocarbon sample from level 44 (440 cm below surface), and the A.D. 60 date came from level 30. There is no C14 sample available to date from level 24.

Cultural Layer (Phase) II

The layer of cultural sequence II was observed between level 8 and level 23. In other words, it ranges from natural stratigraphic layer 12 to layer 22. The depth is approximately between 80 cm and 230 cm below the datum. The soil is generally dry, mixed with a minor amount of sand inclusions, and is clayish at the bottom of level 21 and 22. This cultural phase is characterized by a thick pavement of small fragments of fine orangeware sherds. There is a high concentration of thin ceramic wares. In some levels there was almost no soil intermingled in the pile of sherds. Gray and burnished and other sherd types played only a minor role in this cultural phase.

This layer also yielded shell and snail remains, a low density of charcoal, and beads. Beads were present only in

this phase. Having witnessed local inhabitants selling ancient beads, in the form of necklaces, bracelets, and amulets, when the team first arrived at the site, we expected to find many beads from the trench. Unfortunately, only a few beads were found. While excavating the unit, we detected some postholes intruding into the fine orangeware layer. Faunal remains and clay pellets (balls) were deposited during this phase, but no antler or horn was discovered. We occasionally detected some burned daub and lumps of clay.

The soil color of cultural sequence II ranged from dark reddish brown (5YR 3/3) to very dark gray (5Y 3/1). The absolute date for this cultural phase began after circa A. D 60 and ended at approximately A.D 215. Stark (2000: 76-79) suggested that Phase II (fine orangeware layer) dated between circa 100 B.C. and circa A.D 200/ 300. Due to the absence of available radiocarbon samples from level 8 and level 22, therefore, I do not have an exact date to demarcate the boundary between cultural layer I and layer II. The date for the end of cultural sequence II came from level 6, whereas the beginning of the phase II commenced at the termination of Phase I.

Cultural Layer (Phase) III

I designated cultural layer III as having started from level 8 up to level 1, the uppermost and youngest level. Stratigraphic evidence suggests that cultural phase III began at layer 12 and continued to the uppermost surface of AB4. As noted earlier, a few levels on the top of the unit were disturbed by human and animal activities. The soil is soft, moist and silty. The matrix contains lots of organic matter, charcoal flecks, brick rubble, and sand. We also collected one stone bead, a clay pellet (clay ball), and stone objects from this cultural phase.

Faunal remains include terrestrial and aquatic shells, and animal bones mixed with ceramic sherds. We uncovered all kinds of sherd types including fine orangeware, gray ware, burnish ware, and fine buff ware. Stark (2000) termed cultural layer III the Fine Buff Ware phase. AB4 yielded only 16 pieces of fine buff ware. The densest concentration of this ware is at level 8 and there is only a single sherd presented below this level (level 13).

The soil color is vertically dark reddish brown silty loam (5YR 3/3) across the phase. By combining the available radiocarbon dates throughout the site, Stark (2000) defined the date for cultural phase III as falling between circa A.D 200/300 and A.D 600.

Figure 5.5 illustrates a stratigraphic layer, and phases and dates of AB4.

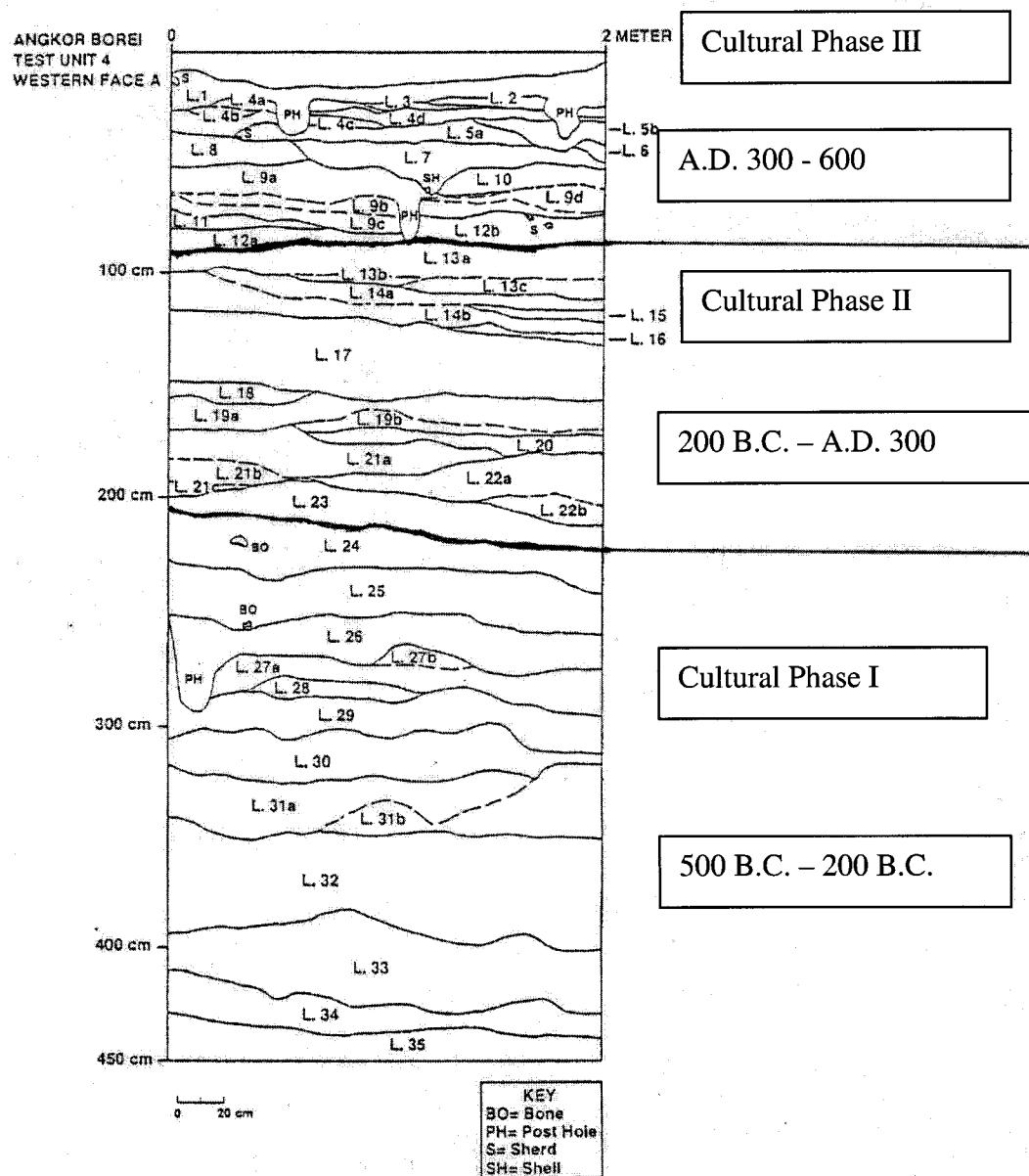


Figure 5.5: Demarcation of the Cultural Phases
(Adapted from Stark et al. 1999: 19)

Interpretation Of Test Unit 4

As remarked by Stark et al. (1999: 18), if the mound was not disturbed by domestic activity and erosion, the stratigraphy of AB4 could have been as high as six meters above the sterile level. Based on its location close to the Angkor Borei River, at an elevation higher than the surrounding area, and the abundance of ceramic sherds and other artifacts, the mound may have been an important center, possibly adjacent to a port or pier. In addition, given its height, it could have been a religious center, where people congregated during special ceremonies and other occasions. These functions cannot be validated given the present state of the data and lack of broadly comparative material. Some uses, however may be suggested.

Thanks to the evidence of the abundance of the brick rubble and laterite constituting the top two meters of the surface of the mound, one may speculate that a brick religious structure was built near there some time in the past. We were told that during the 1980s the local people living around the area dug out and used the brick and laterite to construct their homes, a road, an administrative office, and some Buddhist temples.

Posthole features were occasionally found in AB4 during the excavation. It is suggested that the ancient

inhabitants of Angkor Borei built wooden structures or houses on stilts. This archaeological trace is compatible with Chinese records written during the third century A.D and in later periods (Pelliot 1903).

Gray and yellow clay lumps coupled with anvils discovering at AB4 during the excavation prompted me to speculate that the people of ancient Angkor Borei used these materials to produce ceramic utensils and other objects for domestic purposes such as cooking pots, plate, storage jars, and brick and ceramic roof tiles for religious edifices.

The remains of shells and snails, fish bones, antlers, and small and large animals suggest that the inhabitants consumed a variety of foods extracted from different sources, including the river, forest, and perhaps from their own domesticated species. Chinese information already tells us that the population of Funan knew how to raise pigs and cattle. As mentioned by K'ang T'ai during the mid third century A.D., the most popular games were pig, dog, and rooster fighting. Peter Eyre, in his Master's paper, also found evidence of both domestic and wild pig at Angkor Borei dating to the Funan period (Eyre 2001).

The high density of potsherds, especially in the fine orangeware layer, may lead one to hypothesize that the AB4

locale sometimes served as a place where people discarded their broken pots and food remains. The following chapter will discuss the characteristics and decorations of pottery from AB4.

CHAPTER 6 RESEARCH METHODOLOGY

Ceramic sherds constitute the most abundant artifact class recovered from AB4 and from other test units in the site. At AB4, potsherds were found in association with faunal remains and other materials in every excavated level, ranging from the basal level (level 45) to the uppermost levels (level 1). Most ceramics from AB4 were well preserved in their archaeological context and did not exhibit evidence of erosion.

This paper will not attempt to understand the pottery distribution and function or status of the Funan society. This paper's main goal is to concentrate on dating the ceramic sequence at Angkor Borei based on technological and stylistic attributes.

No complete ceramic vessels were found in the AB4 test unit during the excavation. Most of the 4,993 diagnostic sherds selected for this study are fragments of the pottery rims or bases. This thesis also restricted its analysis to sherds larger than 5 cm². In classifying the entire collection of AB4's ceramics into groups, this thesis relies on the following characteristics (these are listed in Appendix A): sherd size, texture, surface treatment, rim profile, vessel shape, slip location, carbon core, orifice

diameter, paste, temper inclusion, surface color, relative hardness, decoration, and vessel wall thickness. The following section of this chapter discusses the methods of analysis used in classifying the AB4's ceramic collection. A copy of the ceramic coding form is included as Appendix B.

Sherd Size

Each sherd was classified according to its size. Sherd size is measured in square centimeters (cm^2) through the use of a template. The AB4 test unit yielded a variety of sherd sizes, ranging from less than 2.5 cm^2 to larger 100 cm^2 . All the sherd samples (4,993 fragments) for this study are at least 5 cm^2 or bigger. Sherds smaller than 5 cm^2 provide little information for some attributes (like decoration) and insufficient information on other attributes (like orifice diameter). By recording sherd size, I am able to exclude all sherds that were too small (smaller than 2.5 cm^2) to yield productive results and to evaluate the depositional integrity of the test unit. For example, if an excavated test unit yielded a predominance of small sherds throughout all arbitrary levels, archaeologist would be likely to conclude that the test unit comprised of trash that has been repeatedly disturbed and redeposited many times in the past. This form of trash

has poor contextual integrity and basically this test unit would be inappropriate for developing a chronology. As mentioned by Stark et al (1999), only the top layers of AB4 may have been redeposited (secondary refuse). Therefore, most AB4 deposit consists of primary refuse. So AB4 test unit is excellent for developing a chronology.

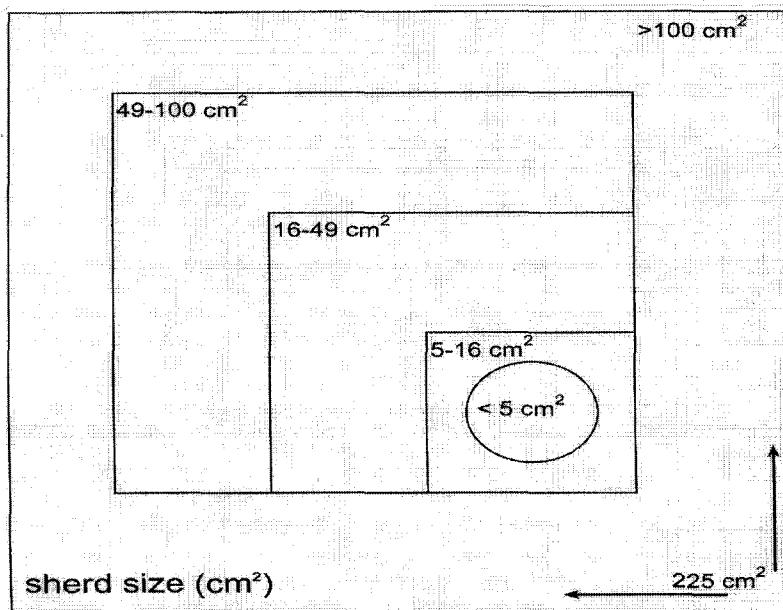


Figure 6.1: Template for recording sherd size

Sherd Color

The color of each sherd was recorded. In defining the exterior surface color of each pottery fragment, this research utilizes standardized MUNSELL Soil Color categories (United States Department of Agriculture 1992). Different surface colors of sherd reflects different technological traditions. For example, a black surface

sherd with fine paste is the characteristic of Phimai pottery, called *Phimai Black*.

Texture

The fabric of each sherd was recorded in terms of texture. Texture refers to the amount of non-plastic inclusions that are visible including grain size, temper, pores, and voids. Texture also refers to the minute arrangement of the particles of the paste (Shepard 1956: 117-121).

A paste is clay or a mixture of clay and added materials (Rice 1987: 479). A platey is a parallel line seen on the ceramic paste.

Temper refers to non-plastic materials, including mineral or/and organic matter, added to clay to avoid fracture during the working, drying, and firing processes, and to improve the pottery quality (Shepard 1956: 156-157; Rice 1987: 483). Pore or void is an open space in a pottery fabric or a space that exists between the solid particles (Rice 1987: 350, 484). The term "inclusion" refers to particulate matter, usually mineral in nature, present in a clay or fabric, either naturally or added by the potter. The term "inclusion" is used interchangeable with "temper" (Rice 1987: 477).

The analysis classified the texture of each sherd by studying its paste, density of inclusion, pores or void, temper, sand and/or quartz grain, and fabric.

This thesis also divides the AB4's ceramic texture into four categories. Texture 1 has fine paste. Sherds classified in this category contain dense paste, with no visible temper and only a few pores visible. Texture 2 has a medium paste that includes semi-dense paste usually with pores and voids. Temper was hardly visible. Texture 3 has a coarse paste and includes abundant temper (generally quartz grains); in many cases the fabric is platey. All sherds whose fabric did not fall into categories 1 through 3 were assigned a "99" designation (indeterminate).

Vessel Part

Each sherd was assigned "vessel part" category (i.e., rim, base, spout). No complete pots were collected from the unit. Only diagnostic potsherds were studied, and most non-diagnostic sherds were not shipped to the University of Hawaii at Manoa for study. Among these sherds, the pottery rim is dominant over the base or lamp (lid). The main reason that "vessel part" was recorded is that it helps me to identify particular vessel forms. For example, the spout part usually belongs to *kendi* (spout pottery), and a pedestal bases are always associated with pedestal bowls.

Vessel Form

Each sherd was assigned to a particular vessel form when possible. The ceramic data from AB4 illustrates some distinctive forms that include jars, bowls, lids, and cylindrical and vertical vessel forms. Vessel forms include several varieties of jars and several types of bowls. Bronson defined a jar as a vessel that has a small mouth and a relatively wide, deep body. The Khmer word for jar is "khvang". The *Khvang* type in Groslier and Mourer term is defined as a large vessel for storing water, grain, and spices (Groslier 1981: 10; Mourer 1986: 342). The term "kaam", mentioned by Groslier (1986: 10) and Mourer (1986:347), appropriately describes the Angkor Borei's pottery. Malleret also provided a classification of jar forms from Oc Eo, southern Vietnam, and illustrated some of the jar forms from Thailand (Malleret 1962; Bronson 1977).

Jars at AB4 appear in four different forms including short flare-rimmed, tall flare-rimmed, constricted flare-rimmed, and a jar with no rim.

Short Flare-rimmed Jar

The short flare-rimmed jar is defined as a carinated vessel that has a short inward neck (narrow neck) or a short incurved neck with rim or lip everted abruptly to the exterior (Figure 6.2A). Vessels of this form often appeared

with a plain surface or incised decoration on the neck or shoulder of the jar. The exterior and/or interior burnished surface is also one of the characteristics of the sherd of this form.

Tall Flare-rimmed Jar

The tall flare-rimmed jar is identified as a pottery used that has a narrow and long neck with a flared-out rim or lip (Figure 6.2B). Vessels in this form usually have a burnished surface and incised decoration on the exterior.

Carinated Jar

Vessels classified into this form have a carination on their shoulder with an everted rim (Figure 6.2D).

Cylindrical Shape Vessel

The vessel in this form has a cylindrical shape with vertical walls. It is found with two base forms, conical and flat. The cylindrical vessel appears in two different mouth forms, narrow and regular mouths. The body decoration ranges from plain surface with drip to cord-marked (shell impressed). This form is only present for the fine orange ware paste vessel (Figure 6.2C).

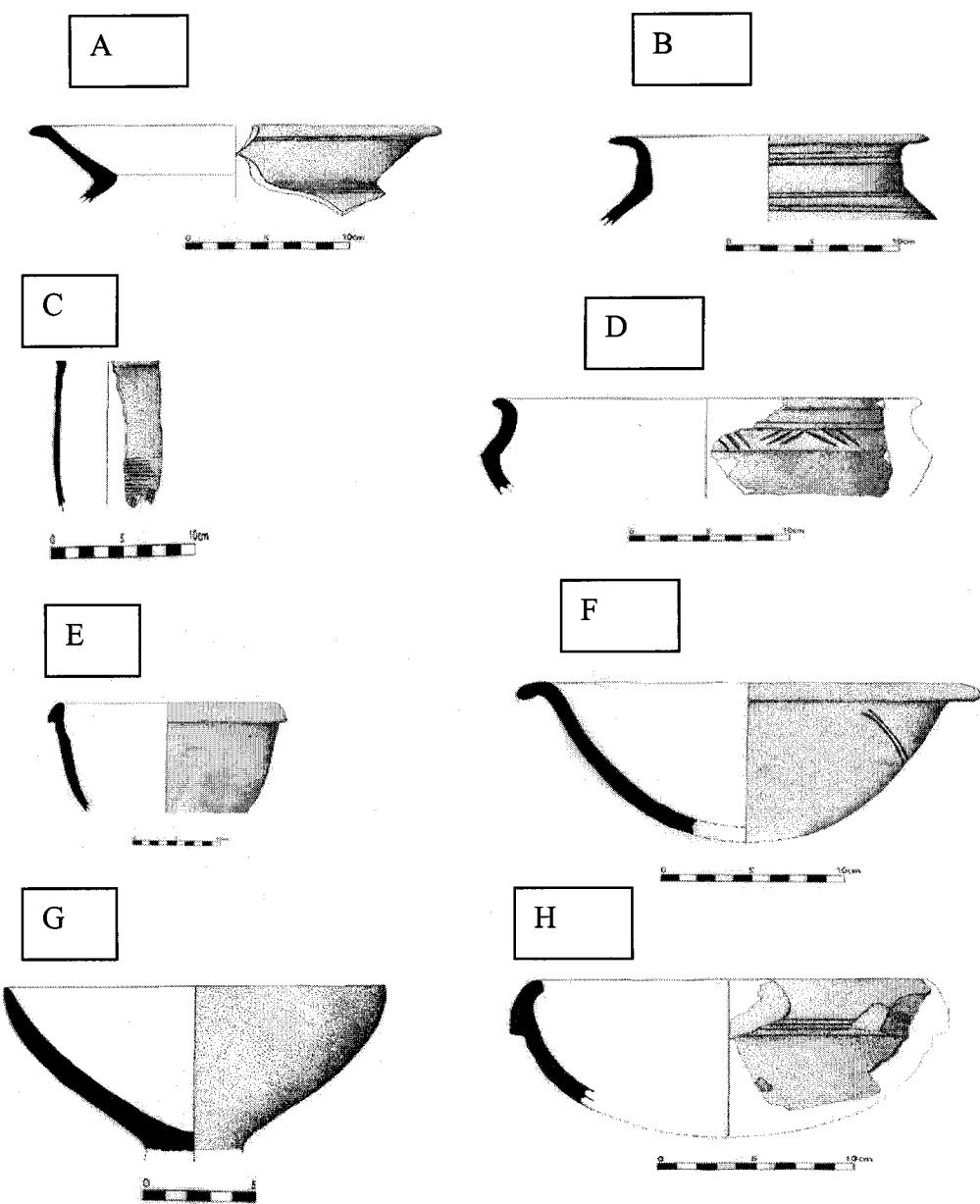


Figure 6.2: A (short flare rimmed jar); B (tall flare rimmed jar); C (cylindrical shaped vessel); D (carinated bowl); E (deep bowl); F (flare rimmed bowl); G (pedestalled bowl); H (folded rim or incurved bowl)

Bowl

A bowl is a short and shallow vessel whose mouth is the same size or larger than the bottom. Its bottom can be either rounded or flat. Bowls from AB4 yielded three forms including incurved, shallow (flare-rimmed), and pedestal bowls.

Deep Bowl

A deep bowl is a ceramic vessel that has a deep wall with an exterior rim (Figure 6.2E).

Shallow Or Flare-rimmed Bowl

The shallow bowl is a vessel that has a round base with a flared exterior rim. A vessel with this form does not have a deep body. The diameter of its mouth is three times larger than the base (Figure 6.2F).

Pedestal Bowl

A pedestalled bowl has a pedestalled base to support it. This bowl has a mouth bigger than its rounded base (Figure 6.2G). The pedestalled bowl has reportedly been discovered at many Dvaravati sites in Thailand. Phutorn Bhumadhon called this ceramic ware "dish on stand" (Bhumadhon 1996:9-10).

Incurred Bowl

An incurred bowl is a bowl that has a round base with an incurred lip or rim. A bowl in this form has a ridge on its body (Figure 6.2H).

Lid

A lid is a cover for a cooking pot or storage jar. Malleret (1961) reported that he discovered some pottery lids which had a circular knob in the center of the bottom surface. During the excavation at AB4, we also collected several examples of this pottery form. The AB4's lid has a rounded shape on the bottom surface. The vessel rim folded inward, creating a shallow surface inside. This is a short vessel with a large diameter and it also exhibits a flattened (or sometimes a protuberance) knob in the middle (Figure 6.3).

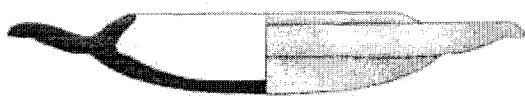


Figure 6.3: Lid

Base Or Foot

A base is a fragment of the bottom part of a vessel that supports the pottery body. At AB4, the base appears in two forms, as a pedestal or a ring base. The pedestalled

base is associated with bowl forms, and the ring base is associated with jar forms.

Pedestal Base or Foot

A pedestal footed vessel is a vessel with a hollow base. The aperture diameter of the hollow pedestal foot is almost as wide as the mouth of the body vessel. The upper part of the pedestal foot connects to the bottom of the main vessel body or to a short and a strong bar (Figure 6.4A).

Ring Base

A ring base is a short and circular shaped base that is attached to the bottom part of the main body of a pot through a constricted or narrow space. The diameter of the ring base is usually a smaller body part (Figure 6.4B).

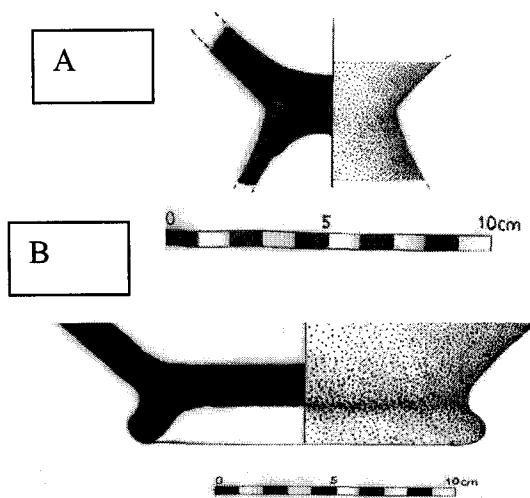


Figure 6.4: A (pedestalled base); B (ring base)

Kendi or Spouted pot

A Kendi is referred to a globular pot with a spout that protrudes from the shoulder of the vessel. The spouted pot has a narrow mouth with an everted lip (Figure 6.5).

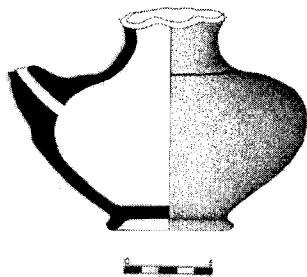


Figure 6.5: Kendi form vessel

Rim Profile

Shepard defined "rim" as the margin of the vessel orifice (Shepard 1956: 245). Based on the attribute analysis, the ceramic vessels of AB4 exhibited some different rim forms (profile) that will be discussed in the following section. These rim forms include interior, exterior, folded, interior and exterior, shelf, channel, rounded, and directed rim (figure 6.6). The interior rim is a rim that has its thicker part or its profile inverted to the interior of the vessel (Figure 6.6A). The exterior rim refers to a vessel rim that projects its thicker part outward or is everted to the exterior (Figure 6.6B). The characteristic of this rim form is that the thicker part of

the rim is expanded to the interior and exterior of the vessel (Figure 6.6C) .

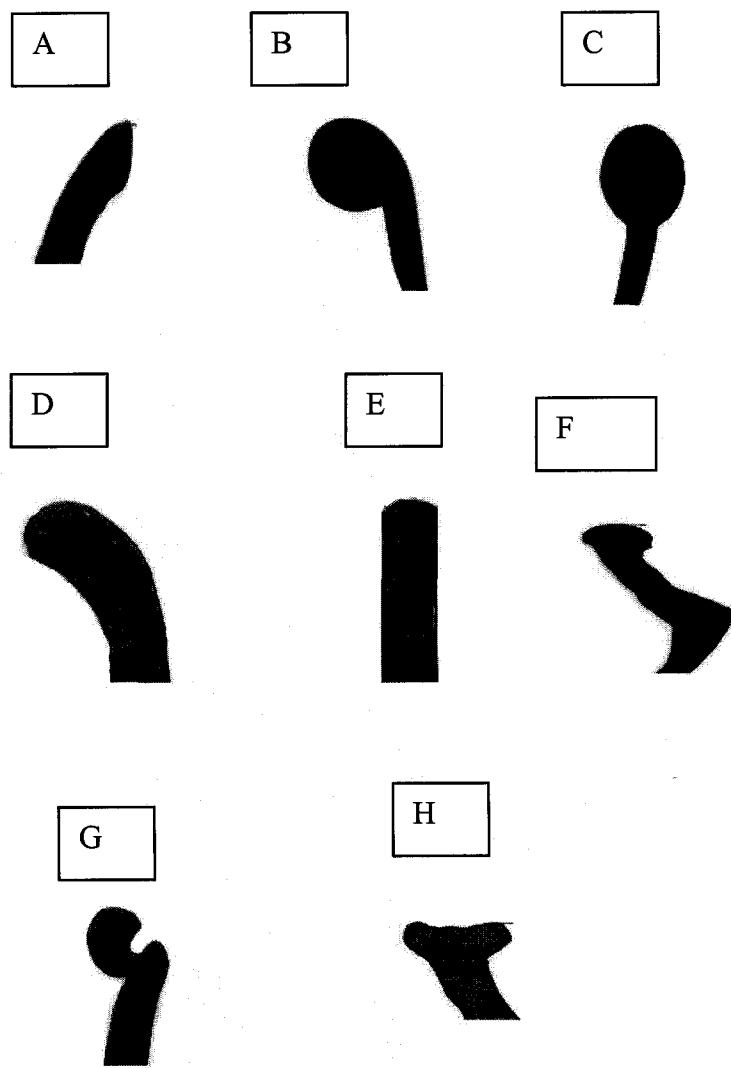


Figure 6.6: A (interior rim); B (exterior rim); C (interior and exterior rim); D (rounded rim); E (directed rim); F (shelf rim); G (folded rim); H (channel rim)

A rounded rim is a rim that has a curve everted to the exterior of the vessel (Figure 6.6D). A tapered or direct rim is a rim that has the same thickness as the vessel wall without a contour (Figure 6.6E). A shelf rim is a rim that has a plain or flat surface on the top of the vessel lip (Figure 6.6F).

A folded rim is a rim that has a groove within the folded surface (Figure 6.5G). A channel rim is a rim that has a deep channel on the top surface of the rim (Figure 6.5H).

Slip

The presence or absence of a slip was recorded for each sherd. A slip is a material (ochre or fine clay and water) that was used by the potters to coat the interior and/or exterior surface of a vessel (Rice 1987). This analysis records the presence or absence of slip on both surfaces.

Surface Treatment

Surface treatment was recorded for the exterior surface of each sherd. The surface treatment refers to the decorated exterior surface that was added by potters after forming the vessels. The exterior surface treatment appears on many forms and it includes combing, grooving, incising, and impressing. Investigation of the AB4 ceramic assemblage

suggests that there are three forms of decoration which characterize vessel bodies and rims: impression, cord-marking, and incising. The AB4 ceramic data shows two forms of impressed decoration, shell and comb (paddle?) impressed.

Shell impressed decoration was observed on the exterior surface of the sherds in bands of oblique lines (Figure 6.7A). Shell impressed decoration is often found on Fine Orangeware vessels. The comb or paddle impression may have been produced by applying a carved piece of wood or bamboo onto the vessel's exterior (Figure 6.7C). Cord-marked decoration was produced using a paddle wrapped with woven cords on the vessel's exterior surface (body, shoulder, and neck) (Figure 6.7D). At AB4, the cord-marked earthenware decoration is vertically present throughout the excavation from the basal to the top level.

Some pottery exhibits incised decoration, and may have been produced by using a pointed wooden stick or metal tool. At AB4, vessels with an incised pattern are present in a deep or lower arbitrary level. Incising is frequently associated with burnished vessels in the lowest deposits of the unit (Figure 6.7B).

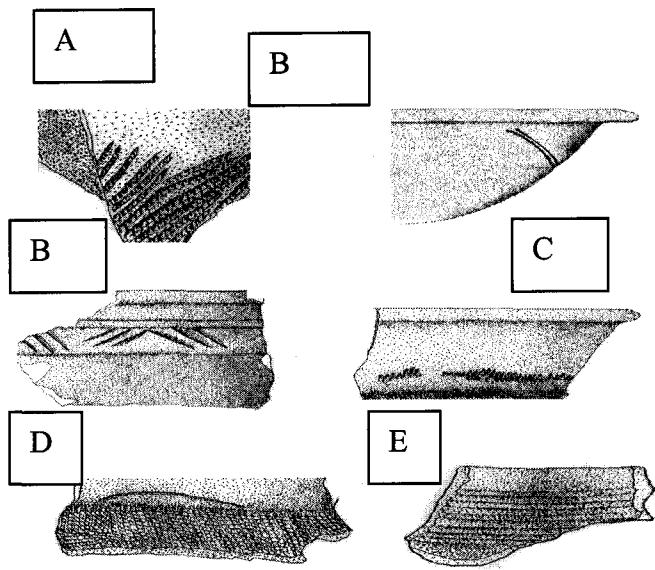


Figure 6.7: A, C, D (cord-marked); B (incised); E (stria)

Surface Trace

Sherds were also studied for surface traces of paint or organic material on the exterior and/or interior surfaces. Drip is usually related to pigment (red clay ochre) which is orange, gray, or black. Drip marks are commonly associated with Fine Orangeware pottery.

Wheel Scars

Each sherd was inspected for evidence of wheel manufacture, which was defined as wheel scars. Wheel scar is a parallel stria or groove on the surface of vessel. Evidence of stria suggest the use of a fast wheel in the manufacture of the pottery, although it is possible that such stria also reflect finishing on a slow wheel or tournette after hand forming (Figure 6.7E).

Carbon Core

To ascertain indications of firing environments, each sherd was inspected for the presence of a carbon core. Rice (1987: 474) defined carbon core as a trace of black or gray spots or particles on the surface of the vessel that usually resulted from a low firing temperature. The absence or presence of a carbon core from AB4's potsherds is significant. I will discuss carbon core frequency in more detail in the next chapter.

Orifice Diameter

Orifice diameter is the measurement of the mouth or an opening of a vessel. The orifice diameter is measured in centimeters by a template suggested by (Rice 1987:223) (Figure 6.8).

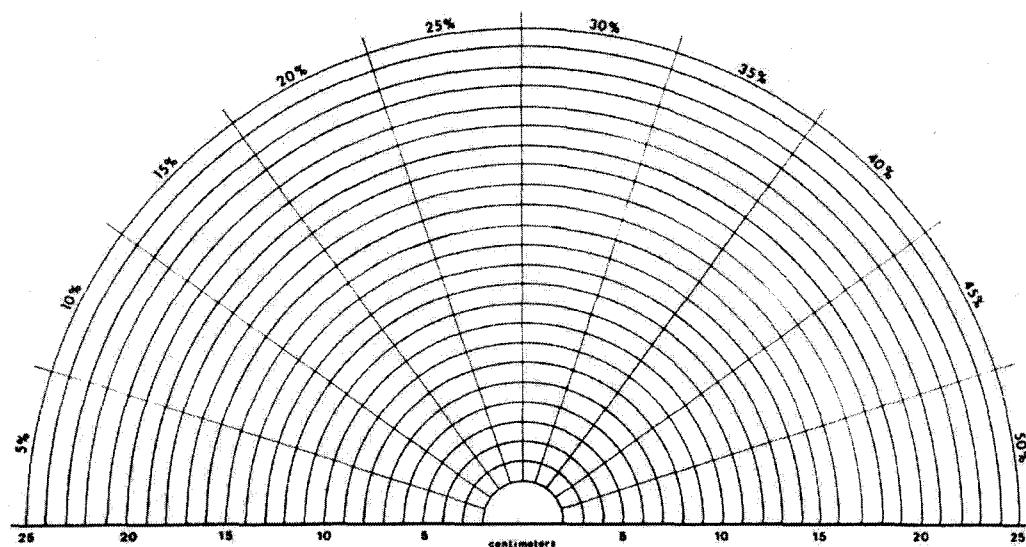


Figure 6.8: Template for measuring orifice diameter
(From Rice 1987: 223)

Vessel Wall Thickness

The wall thickness of each vessel was recorded. This research chose to use the Absolute Digimatic Solar Caliper to measure vessel wall. The caliper provides a measurement in millimeters. Recording the vessel wall thickness is significant to the study of Angkor Borei's ceramics. By recording the thickness of each piece of pottery, I am able to predict the size of vessels and the ceramic types that were manufactured.

Ceramic Group

As discussed in Chapter Five, each cultural phase is determined by using the combination of three characteristics including soil color, archaeological matrix, and pottery sherds. The ceramic sherds, recovered from AB4 and Angkor Borei in general, are significant to the Three Cultural Phases. This research, follows Stark (2001), by identifying six dominant ceramic groups called Burnished Earthenware, Cord-marked Earthenware, Grayware, Slipped Wheelmade, Fine Orangeware, and Fine Buffware. These ceramic groups are significantly related to the three chronological phases (Table 6.1).

Table 6.1. Cultural Phases and Ceramic Groups

Cultural Phase	Ceramic group	Chronometric Date
Phase III Levels 1 - 7	Fine Buffware	A.D 300 - A.D 600
Phase II Levels 8 - 21	Fine Orangeware	200 B.C - A.D 300
Phase I Levels 22 - 45	Burnished Ware Grayware Slipped Cord-marked earthenware	500 B.C - 200 B.C

A detailed description of the three cultural phases and their ceramic groups will be provided in Chapter 7. Chapter 7 discusses each cultural phase by providing some of its specific ceramic groups in terms of vessel forms and surface decoration.

CHAPTER 7
RESULTS OF CERAMIC ANALYSIS

Three Cultural Phases were discussed in the previous chapter: 1) Cultural Phase I (500 B.C - 200 B.C); 2) Cultural Phase II (200 B.C - A.D 300); and 3) Cultural Phase III (AD. 300 - A.D 600). As shown in Table 6, each Cultural Phase has a distinctive ceramic group.

The total number of ceramics for the AB4 unit test is 4,992. Cultural Phase I contains 1,459 sherds which is about 29% of the entire collection. Cultural Phase I contains a variety of ceramic groups (Table 7.1).

Table 7.1. Percentage and Number of Ceramic in Phase I

Ceramic Group	Percentage	Total Amount
Burnished Earthenware	23.92%	349
Cord-marked Earthenware	21.04%	307
Grayware	17.61%	257
Slipped Ware	11.17%	163
Fine Orangeware	6.71%	98
Coarse Ware	2.05%	30
Coarse Grayware	2.53%	37
Indeterminate	14.32%	209
TOTAL	100%	1,459

Phase II of AB4 includes 3,205 sherds it comprised approximately 64% of the AB4's potsherds. Fine Orangeware constitutes about 97% of the Phase II's ceramics and a few other groups (Table 7.2).

Table 7.2. Percentage and Number of Ceramic in Phase II

Group	Percentage	Total Amount
Burnished Earthenware	1.59%	51
Cord-marked Earthenware	0.53%	17
Grayware	0.09%	3
Slipped Ware	0.65%	21
Fine Orangeware	95.69%	3,067
Coarse Ware	0.03%	1
Coarse Grayware	0.03	1
Indeterminate	1.34%	43
TOTAL	100%	3,205

The ceramic sherds of cultural phase III consisted of 328 which are about 7% of the AB4's potsherds. These are a mixture of a few Fine Buffware and some ceramic groups from Phase I and Phase II (Table 7.3).

Table 7.3. Percentage and Number of Ceramic in Phase III

Group	Percentage	Total Amount
Burnished Earthenware	16.46%	54
Cord-marked Earthenware	21.95%	72
Grayware	9.75%	32
Slipped Ware	9.14%	30
Fine Orangeware	3.35%	11
Fine Buffware	0.3%	1
Coarse Ware	0.61%	2
Coarse Grayware	3.04%	10
Fine Grayware	10.97%	36
Indeterminate	24.39%	80
TOTAL	100%	328

Although there are about 10 ceramic groups mentioned in the last three tables (7 - 9), I will only describe six main ceramic types in this thesis because they are the most dominant diagnostics and that are most significant to the

three cultural phases. This chapter's following section will summarize ceramic groups associated with each Cultural Phase.

Cultural Phase I

Cultural Phase I begins with the basal level (Level 45) and terminated with Level 22. Phase I contains four major ceramic groups: Burnished Earthenware, Grayware, Slipped Ware and Cord-marked Earthenware. Before I discuss the results of the analysis, it is necessary to define the technology attributes of each ceramic group.

Burnished Earthenware

The burnished earthenware group is one of the dominant ceramic groups of Cultural Phase I. The frequency of burnished earthenware pottery drops dramatically above level 22.

Burnished earthenware pottery, sometimes has a pattern of incised lines on the interior surface of the ceramic ware. Vessels in this group often exhibit patterned horizontal or curvilinear stria on their interior surfaces. A few rice chaff and other organic marks are visible. Drips are present on the exterior surface of some vessels.

The paste is porous and platey. A few red specks are included in the paste. Sherds in this group have a black thin layer on the exterior surface. This thin layer is

similar to a coat of lacquer. Some of the vessel's surfaces are incised while others are plain (Table 7.4).

Table 7.4. Percentage and Number of Plain and Incised Ceramic in the Burnished Earthenware Group

	Plain	Incised	Inde.	Total
Burnished Earthenware	282 80.8%	66 18.91%	1 0.29%	349 100%

Paste color ranges from dark gray to black. In MUNSELL Color Chart terms, the color ranges from gray (7.5YR 5/1) to very dark gray 5YR 3/1).

Exterior surface color ranges from dark grayish brown to black. In MUSELL Color Chart terms, the color ranges from gray 5YR 5/1) to black (2.5Y2.5/1). Interior surface color ranges from gray to black. In MUNSELL Color Chart terms, the color ranges from gray 5Y 5/1 to black 2.5Y 2.5/1). A detail color and Munsell Color Chart description of the paste and interior and exterior surfaces of the Burnished Earthenware group is shown in Table 7.5. The table illustrates the percentage and actual number of sherds for each color.

Table 7.5. Percentage and Number of Paste, Exterior, and Interior Color of the Burnished Earthenware Group

MUNSELL	Paste	Exterior	Interior
Gray (7.5YR 5/1)	97 27.78%%	65 18.62%	65 18.62%

Dark Gray (10YR 4/1)	99 25.49%	70 20.05%	81 23.20%
Very dark gray (5YR 3/1)	71 20.34%	75 21.48%	88 25.21%
Dark grayish brown (10YR 4/4)	-	25 7.16%	21 6.01
Gray (5Y 5/1)	42 12.03%	38 10.88%	22 6.30%
Dark Gray (5Y 4/1)	50 14.32%	34 9.74%	41 11.74%
Black (2.5Y 2.5/1)	-	42 12.03%	31 8.88%
TOTAL	349 100%	349 100%	349 100%

Texture

Nearly two-thirds of the Burnished Earthenware sherds (61%) had a medium texture, while 37% were recorded as having coarse tempers. Only 2% of the burnished earthenware sherds have a fine texture (Table 7.6).

Table 7.6. Percentage and Number of Texture, Trace, Carbon Core, and Striation of the Burnished Earthenware

	Texture	Drip	Carbon	Stria
Fine	2% (6)	-	-	-
Medium	62% (215)	-	-	-
Coarse	36% (128)	-	-	-
Absent	-	26% (91)	5% (18)	26% (89)
Present	-	74% (258)	94% (329)	74% (260)
Inde.	-		1% (2)	-
TOTAL	100% (349)	100% (349)	100% (349)	100% (349)

Surface Trace

Approximately 72% of the burnished earthenware sherds have drips on the interior and exterior surfaces. For pedestalled vases, drips are visible on the interior

surface. Drips appear in the form of dark or black colored stains on the sherds' surfaces (Table 7.6).

Carbon Core

Most burnished earthenware sherds (94%) had carbon cores (Table 7.6).

Striation

The presence of striations may reflect the use of potter's wheel or a rotational device (tournette). Most (72.4%) of the ceramic sherds in this group present evidence of wheel scars on the interior and exterior surfaces (Table 7.6). For pedestalled bowls, there is a band of burnished lines on the interior surface. This burnished pattern meets at the bottom center of the bowl. The bowl connects to its pedestal base through a knob attached to its exterior base (Figure 7.1A).

Surface Treatment

Pottery in this group is exclusively decorated by incised decoration. The incising appears in three different forms: 1) pattern of oblique parallel lines; 2) a series of "mountains" and 3) a zigzag pattern.

The first incising variant is made up of oblique parallel lines that are framed between two straight lines (Figure 7.1B). This decoration usually appears on the vessel's lip. It is likely that this form of decoration is

associated with an open mouth vessel. It is not clear whether this is the exact form because we only found parts of the vessel. The second incising variant consists of a row of curvilinear bands resembling three concentric semi-circles framed between two lines (Figure 7.1C). This variant is usually found on the vessel's shoulder and it is associated with jars. The third variant, a zigzag pattern, involves two groups of three oblique parallel lines that are framed by two lines (Figure 7.1D).

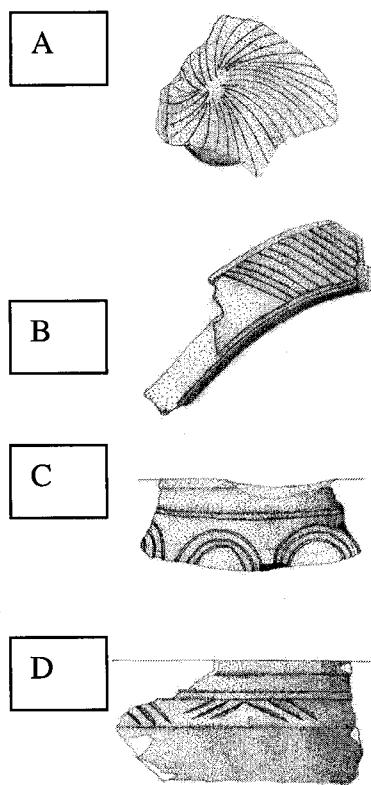


Figure 7.1: Burnished lines incised decoration on the Burnished Ware

Rim Form

Burnished earthenware sherds are characterized by everted or exterior flared rims (Figure 7.2 A-I). On some occasions, the incised decoration is seen on the lip, as seen in Figure 7.1A. The everted or exterior flared rims are expressed in different forms including exterior, rounded, shelf, and channel rims.

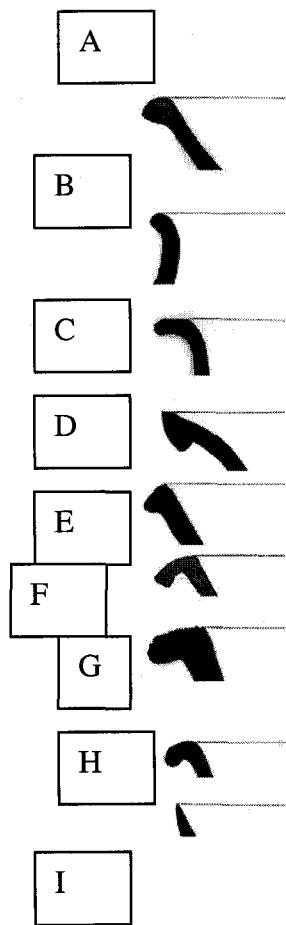


Figure 7.2: Rim forms of the Burnished Ware group

Vessel Form

Five vessel forms are represented in the burnished earthenware group: short flared rimmed jars, tall flared rimmed jars, carinated jar, pedestal bowls, and flared rimmed bowls (Table 7.7).

Table 7.7. Distribution of Vessel Forms in the Burnished Earthenware Group

Short Flared-Rim jar	Tall Flared-Rim jar	Carinated Jar	Pedestalled Bowl	Flared Rim bowl	Inde. Forms	Total
65.04% (227)	2.86% (10)	1.44% (5)	9.20% (32)	2.03% (7)	19.43% (68)	100% (349)

Short Flared Rimmed Jar

Pottery with this form constitutes approximately 65% of the entire burnished earthenware sherds. Vessels with this form have a stout and round body with flared out or rounded rims. The pottery of this form is decorated by a pattern of mountain band (a row of semi-circle design) on its neck or shoulders on the vessel exterior surface. At AB4, it is not uncommon to find a short flared rimmed jar with a plain surface (Figure 7.3 A-B).

Carinated Jar

Carinated jars represent only 1.4% of the sherd in this classification. Vessel in this form have a stout body with a short and everted or rounded rim. The carinated jar is often associated with incised oblique lines (Figure

7.3D). At AB4, we identified only five burnished carinated jars.

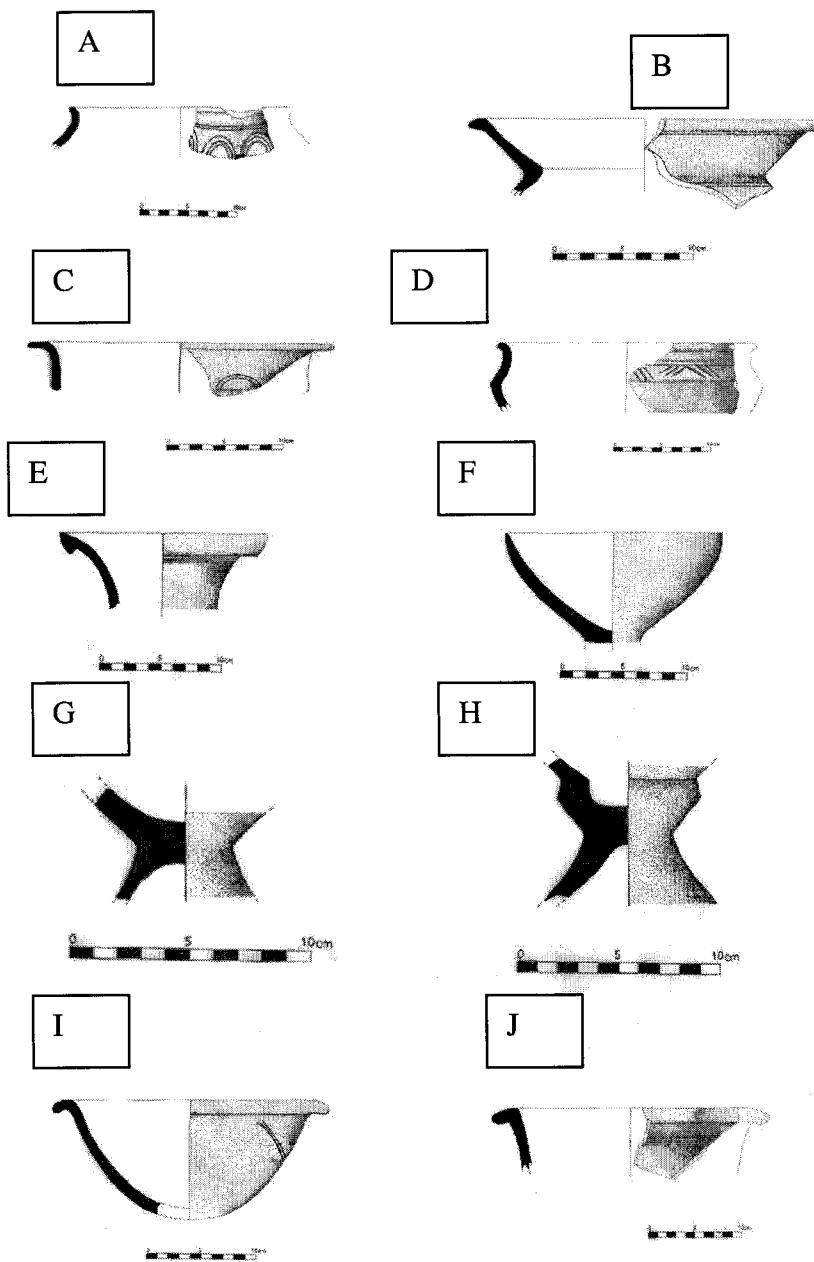


Figure 7.3: Variation of vessel forms within the Burnished Earthenware group

Tall Flared Rimmed Jar

Only 2.8% of the entire potsherd collection is characterized by this form. The total number of sherds is 10. Vessels in this form exhibit traces of striations on the interior and exterior surfaces. At AB4, all of the tall flared rimmed jars have a plain surface (Figure 7.3E).

Pedestalled Bowl

Pedestalled bowls make up 9% (32) of the entire burnished pottery (Figure 7.3F,G,H). At AB4, vessels in the burnished earthenware group contain only 32 pedestalled bowls. The bowls have a series of burnished lines on the interior surface. The pedestalled bases exhibit a burnished band on the surface of their hollow (center). The function of this ware is unclear. During the excavation at AB4, we only identified some parts of the pedestalled bowls.

Flare Rimmed Bowl

Only 2% of the entire burnished earthenware pottery is classified as a flared rimmed bowl. Bowls of this form are associated with incised decorations on their exterior surface or paralleled incised lines on their lips (Figure 7.3 C, I, and J). The flare rimmed bowl has a diameter that ranges from 12 cm to 22 cm.

Grayware

The ceramic vessel in the Grayware group is also one of the dominant pottery types of the Cultural Phase I. The presence of Grayware pottery is almost entirely restricted to Phase I. The Grayware pottery is defined as a plain vessel with an everted rim and a stout body. Vessels in this class are smooth and they lack surface decoration. Many holes are present on the exterior and interior surfaces of this pottery. These holes may be evidence of organic temper.

Surface color ranges from light gray (10YR 7/2) to very dark gray (10YR 3/1). A light brownish gray (10YR 6/2) thin layer is present on the exterior surface of some sherds. Potters of Grayware may have used a substance to coat their ceramic ware. The paste contains pores and voids. White and red specks are present in large numbers in the paste of ceramics in this group.

Paste color ranges from pinkish gray to very dark gray. In MUNSELL Color Chart terms, the color ranges from pinkish gray (7.5YR 6/2) to very dark gray (2.5Y 3/1). The exterior surface color of the pottery in the Grayware group ranges from light gray to black. According to MUNSELL Color Chart measurements, the color ranges from light gray (7.5YR 7/1) to dark (5YR 2.5/1). The interior surface color of the

vessels in this class ranges from gray to black. MUNSELL Color Chart comparisons indicate the color ranges from gray (7.5YR 5/1) to black (7.5YR 2.5/1). The percentages of the different pastes, and exterior and interior colors are tabulated in the Table 7.8.

Table 7.8. Percentage and Number of Paste, Exterior, and Interior Color of Grayware

	Paste	Exterior	Interior
Pinkish gray (7.5YR 6/2)	9.33% (24)		
Gray (7.5YR 6/1)	33.85% (87)		
Very dark gray (2.5YR 3/1)	39.68% (102)		
Light gray (7.5YR 7/1)	17.12% (44)	12.45% (32)	
Gray (7.5YR 6/1)		59.92% (154)	
Very dark gray (5YR 3/1)		17.50% (45)	
Black (5YR 2.5/1)		10.11% (26)	
Gray (7.5YR 5/1)			82.10% (211)
Black (7.5YR 2.5/1)			17.89% (46)
TOTAL	100% (257)	100% (257)	100% (257)

Texture

Most of the entire Grayware group has a medium (61%) or coarse (38%) texture. Only 1% of the sherds in this group have a fine texture (Table 7.9).

Surface Trace

About 85% of the pottery in the Grayware class has drips on their surfaces. Fifteen percent of the sherd does not have a drip staining on its surfaces (Table 7.9).

Carbon Core

The ceramic vessels of the Grayware group have a high percentage of carbon cores, about 93% (Table 7.9).

Striation

The majority of the pottery of the Grayware class has evidence of wheel scars on their surface. Seventy-six percent of the entire ceramic ware in this group exhibit a trace of wheel scars. The other 24% contains no surface striations (Table 7.9).

Table 7.9. Percentage and Number of Texture Size, Drip Carbon Core, and Striation

	Texture	Drip	Carbon	Stria
Fine	1% (2)			
Medium	61% (155)			
Coarse	38% (100)			
Absent		15% (40)	7% (19)	24% (59)
Present		85% (217)	93% (238)	76% (198)
TOTAL	100% (257)	100% (257)	100% (257)	100% (257)

Rim Form

Exterior, folded, and rounded rimmed are the most dominant rim forms of vessels in the Grayware group. Figure 7.4 (A - D) illustrates the variation of rim forms within this group of vessels.

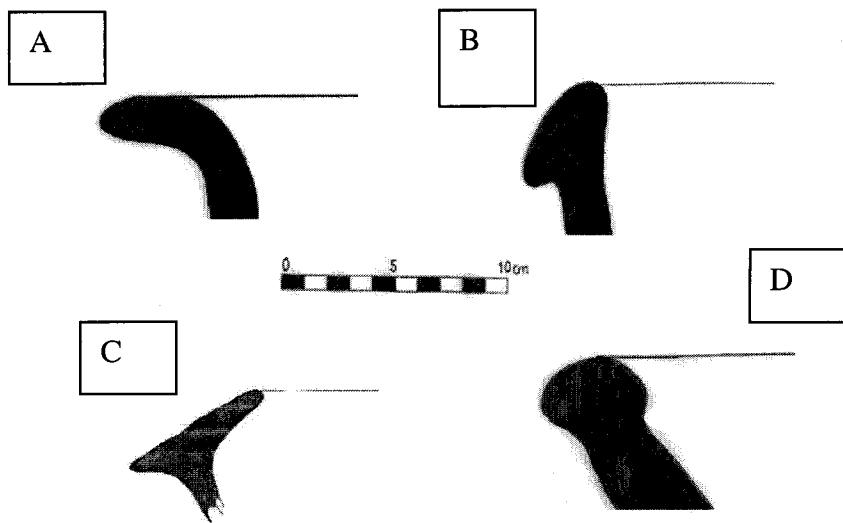


Figure 7.4: Variation of rim form of Grayware

Vessel Form

Pottery of the Grayware group includes three distinctive forms (Figure 7.5): tall flared rim jars, bowls, and incurved bowls. The tall flared rim jar form has a rounded shoulder, a vertical and fairly long neck, and an outward flared rim. The shoulder area has four horizontal lines surrounding the vessel (Figure 7.5A). This form comprised 65% of the Grayware ceramics. Another vessel form in the Grayware ceramic group is a deep bowl with vertical walls. It has an exterior rim form. No bases were recorded (Figure 7.5B). The last vessel form is the incurved bowl with folded rims. The folded area forms a sharp angle

towards the exterior. The bowl has an inverted rim form with a minor rough surface (Figure 7.5C).

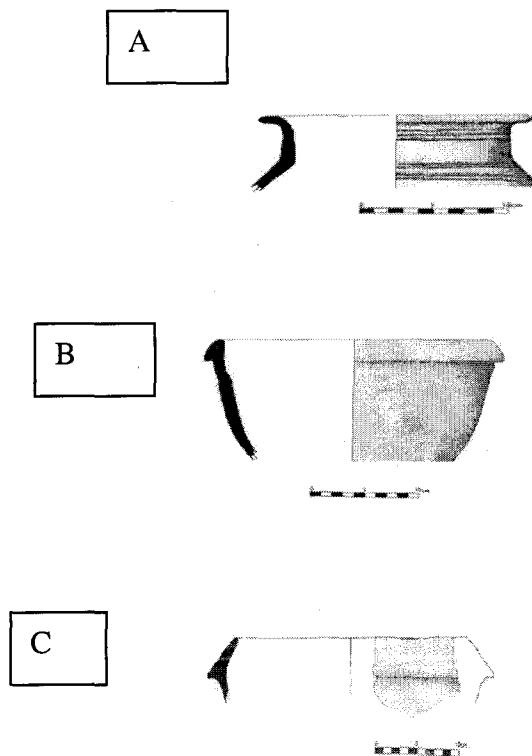


Figure 7.5: Variation of vessel forms in the Grayware group

Slipped Ware

The slipped ware is defined by its pattern of striation on the exterior surface of its body, neck, and shoulder. Its surface ranges from rough to polished. The surface slip appears in three different colors: gray, very dark gray, and orange. A few pores are present on the vessel's surfaces. Pottery of this group has the thickest

wall of any vessel of all the groups, and does not exhibit any surface decoration.

The surface of Slipped Ware ceramics contain some rice chaff and other organic matter. Some sherds have a platey texture, while other do not. Pores and voids are clearly visible in the paste. Some potsherds contain a carbon core which may reflect a low firing temperature. Small sand inclusions are detected in the vessel paste, as are red, white, and yellow specks.

Paste color varies from reddish yellow (orange) to dark gray. Paste color ranges from reddish yellow (orange) to dark gray. In MUNSELL Color Chart terms, the color ranges from reddish yellow (5YR 7/6) to dark gray (10YR 4/1). Vessels in this group have an exterior surface color ranging from reddish yellow to very dark gray. In MUSELL Color Chart terms, the color ranges from reddish yellow (2.5YR 7/8) to very dark gray (2.5YR 3/1).

The interior surface color of the slipped Ware pottery varies from light red to light gray. In MUNSELL Color Chart terms, the color ranges from light red (10YR 6/8) to light gray (10YR 7/2). Table 7.10 provides a detailed summary of paste, and exterior and interior colors of the Slipped Ware ceramics.

Table 7.10. Variation of Colors of the Slipped Ware Group

	Paste	Exterior	Interior
Reddish yellow (5YR 7/6)	43.55% (71)		
Light red (2.5YR 6/6)	37.42% (61)		
Gray (5YR 5/1)	10.42% (17)		
Dark gray (10YR 4/1)	8.58% (14)		
Reddish yellow (2.5YR 7/8)		47.23% (77)	
Light reddish brown (2.5YR 7/4)		38.03% (62)	
Very dark gray 2.5YR 3/1)		14.72% (24)	
Light red (10YR 6/8)			36.80% (60)
Light reddish brown (5YR 3/6)			32.51% (53)
Red (2.5YR 5/6)			20.85% (34)
Light gray (10YR 7/2)			8.58% (14)
TOTAL	100% (163)	100% (163)	100% (163)

Texture

The majority (74%) of the ceramic vessels in the slipped ware group have either a medium or a coarse texture (21%). Only 5% of the sherd this class have a fine texture (Table 7.11).

Surface Trace

Dripping on the surface is one of the major characteristics of the pottery in the Slipped Ware group. Approximately 91% of the sherds have drips on their

surfaces. Nine percent of them do not present a surface drip (Table 27).

Carbon Core

Most of the pottery (86%) in the Slipped Ware group exhibits a carbon core on its paste and surface. Only 14% of the entire Slipped Ware group exhibits no evidence of a carbon core (Table 7.11).

Striation

All vessels in this class exhibit deep parallel grooving on their lip surfaces. It is common to find parallel striation on the vessel lips. All (100%) the slipped ware exhibits a striation on either interior or exterior surfaces (Table 7.11).

Table 7.11. Variation of texture, Drip, Carbon Core, and striation for the Slipped Ware Ceramic Group

	Texture	Drip	Carbon	Stria
Fine	5% (9)			
Medium	74% (120)			
Coarse	21% (34)			
Absent		91% (148)		100% (163)
Present		9% (15)		0% (0)
TOTAL	100% (163)	100% (163)	100% (163)	100% (163)

Surface Treatment

Sherds in this group have grooving as their primary surface treatment. The grooves are present as double or triple raised lines on the vessels; and are most closely associated with incurved bowls (Figure 7.6).

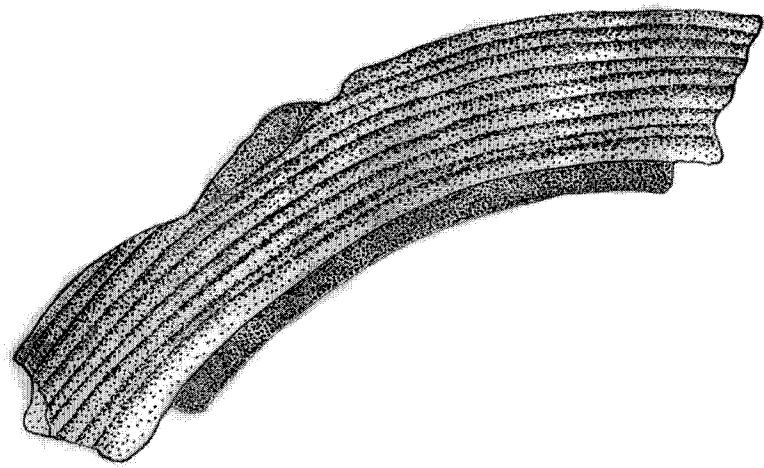


Figure 7.6: Parallel grooving on the vessel's lip

Rim Form

The ceramic vessel of Slipped Ware group is largely dominated by three rim forms: shelf, channel, and interior rims (Figure 7.7).

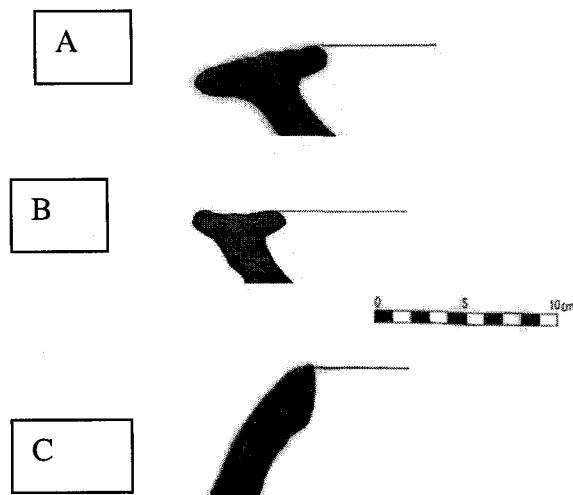


Figure 7.7: Variation of rim forms for Slipped Ware group

Vessel Form

Ceramic vessels of the Slipped Ware group contain three distinctive forms: short flare rimmed jars a globular bodies and constricted neck, incurved bowls with ridges, and lids (Figure 7.8).

The short flared rimmed jars of the slipped ware group exhibit a band of deep parallel grooves on the interior, the exterior, and/or sometimes on both surfaces. The short flared rimmed jar is associated with a shelf or channel rim (Figure 7.8 A -B). Another variant of vessel form of the slipped ware group is the incurve bowl. Incurved slipped bowls commonly exhibit a series of double or triple raised parallel ridges on their bodies. Besides the ridges, there are deep parallel stria traces on their surface. This incurved ridge bowl has a rounded base. Bowls of this form are associated with folded rim with grooves (Figure 7.8C).

The third variant of vessel form in this group is the lid. Ceramic lids were first identified at Oc Eo by Louis Malleret (1960). This same form of ceramic has been discovered at AB4 and in other Angkor Borei test units. The lid has a concave shape with a series of deep and obvious parallel striations on its lip surface. The central hole has an interior rim (Figure 7.8D,E)

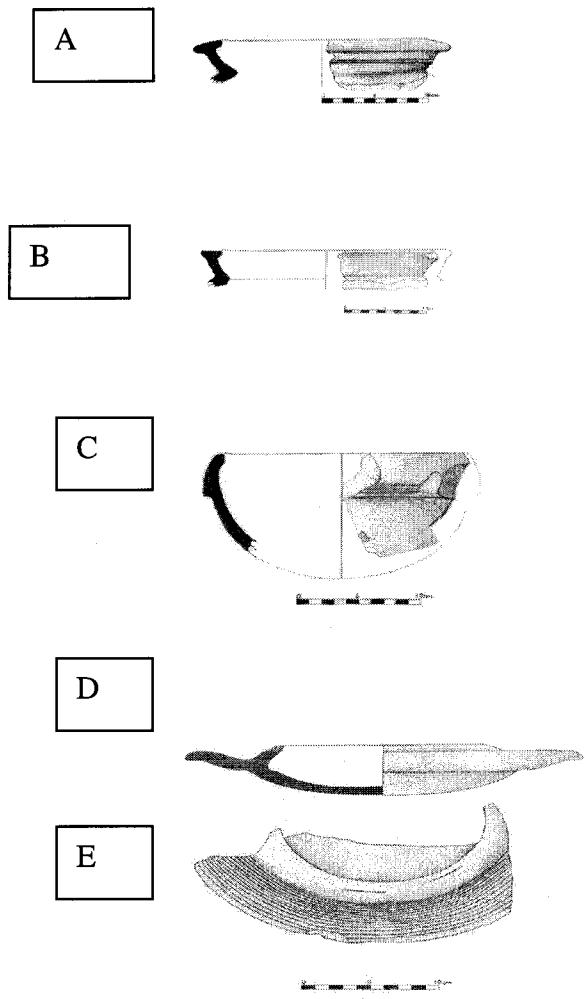


Figure 7.8: Vessel forms of Slipped ware

Cord-marked Earthenware

Cord-marked earthenware is decorated by a pattern of cord-marking on the vessel's neck or shoulder. Vessels of this form have a texture ranging from medium to high density with rice chaff and organic pores on the interior and exterior. Surface color ranges from pinkish white to

dark gray. Pottery in this group commonly exhibits a dark gray or black slip on the interior and grayish brown on the exterior surface. There is a thin layer of white or pinkish white color on the exterior surface. It is not clear whether the thin layer is derived from a different substance used by potters to coat the vessel or if it is the result of the firing technique. Striations are present on almost every sherd.

Paste contains medium sand inclusions. Pores and voids are visible on almost every sherd. At AB4, it is common to find a platey paste on most of the cord-marked earthenware ceramic group. A few white specks are included in the vessel paste that might be calcareous materials. Paste color ranges pinkish white to dark gray. In MUNSELL Color Chart terms, the color ranges from pinkish white (7.5YR 8/2) to dark gray (5YR 4/1). Cord-marked earthenware potteries have exterior surface color ranges from pink to very dark gray. In MUNSELL Color Chart terms, the color ranges from pink (7.5YR 7/3) to very dark gray (7.5YR 3/1). Interior surface color of the cord-marked earthenware vessel varies from pinkish yellow to black. In MUNSELL Color Chart terms, the color ranges from pinkish yellow (2.5YR 8/2) to black (5Y 2.5/1).

Table 7.12. Variation of Color of Paste, Exterior, and Interior Surface of the Cord-marked Earthenware Group

	Paste Color	Exterior Surface	Interior Surface
Pinkish white ((7.5YR 8/2)	8.14% (25)		
Pinkish gray (7.5YR 7/1)	7.81% (24)		6.18% (19)
Gray (10YR 5/1)	40.06% (123)		14.65% (45)
Dark gray (5YR 4/1)	40.71% (125)	40.71% (125)	4.88% (15)
Pink (7.5YR 7/3)		8.14% (25)	
Very dark gray (7.5YR 3/1)		42.99% (132)	26.38% (81)
Pinkish yellow (2.5YR 8/2)		8.14% (25)	7.49% (23)
Dark gray (2.5Y 4/1)			23.45% (72)
Black (5Y 2.5/1)			16.93% (52)
TOTAL	100% (307)	100% (307)	100% (307)

Texture

Most cord-marked earthenware vessels have either medium (54%) or coarse texture (45%). Only 1% of the sherd this group is classified as having a fine texture. This phenomena indicated that the ceramic tradition of cultural phase I contained predominantly organic tempering agents for both burnished and cord-marked earthenware groups (Table 7.13).

Surface Trace

Cord-marked earthenware pottery commonly has drips on its surfaces. Drips appear in gray or dark gray color. About 83% of the entire ceramic ware this group exhibits surface drips (Table 7.13). The predominant presentation of drips on the vessel's surface suggested that the potters used to ochre liquid to paint on the pots.

Table 7.13. Percentage and Number of Texture, Carbon, and Stria of the Cord-marked Earthenware Group

	Texture	Drip	Carbon	Stria
Fine	0.97% (3)			
Medium	45% (137)			
Coarse	54.03% (167)			
Absent		16% (48)	8% (23)	21% (66)
Present		84% (259)	92% (283)	79% (241)
Inde.			0% (1)	
TOTAL	100% (307)	100% (307)	100% (307)	100% (307)

Carbon Core

The majority of the cord-marked earthenware pottery (92%) has a carbon core (Table 7.13).

Striation

The presence of striations indicate that a rotational device was used during the production of the pottery. Approximately 79% of the cord-marked earthenware pottery exhibit striations on their surfaces. About 21% of the sherds have no traces of striations (Table 7.13).

Surface Treatment

The pottery this group is defined by cord-marking decorations on the exterior surface. The decorations usually appear on the vessel's neck or shoulder. There are two forms of cord-marking: 1) oblique and parallel patterns (Figure 7.9 A); 2) a band of triangle or geometric shapes (Figure 7.9 B); 3) a band of zigzag pattern on the vessel's neck (Figure 7.9 C).

Parallel pattern cord-marking involves a series of oblique, parallel lines, and sometimes both forms impressed on the vessel's shoulder. This form of decoration is made up of a series of triangular and other geometric shapes impressed on the vessel's neck.

The final decoration variant is a series of zigzag pattern on the vessel's neck. The patterns might have produced from either wooden or metal stick.

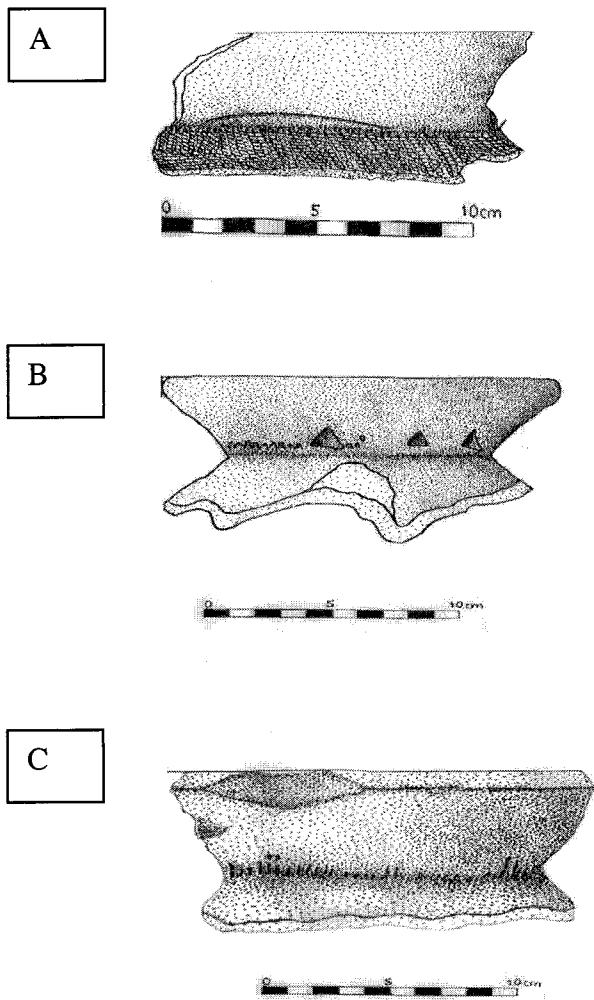


Figure 7.9: Variation of cord-marked decoration

Rim Form

The ceramic vessel in this group exhibits a rim form which is everted and flared out towards the exterior and shelf rim (Figure 7.10).

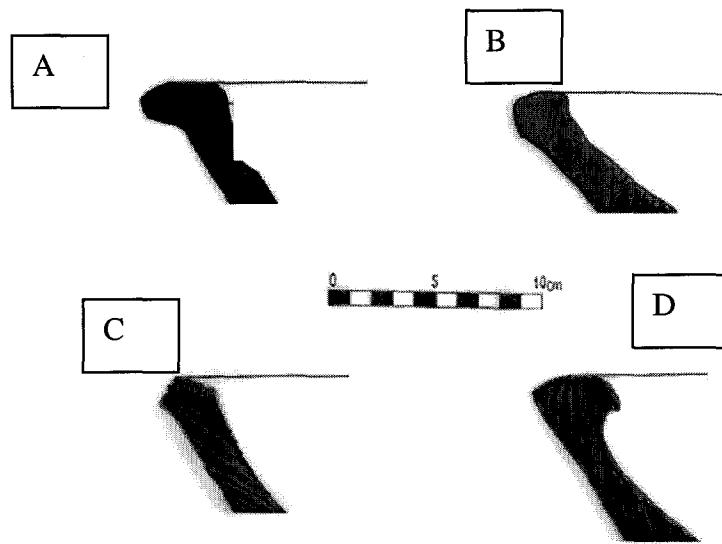


Figure 7.10: Variation of rim form of cord-marked ware

Vessel Form

The form of cord-marked earthenware pottery presents a jar with a short flared rim and a globular body. The vessel in this form is associated with triangular, zigzag line, and string mark patterns (Figure 7.11).

Although the distribution of the cord-marked earthenware sherd is present on almost every level, from the basal (level 45) to the top level, the number of the sherds is more abundant from the lower Level (22).

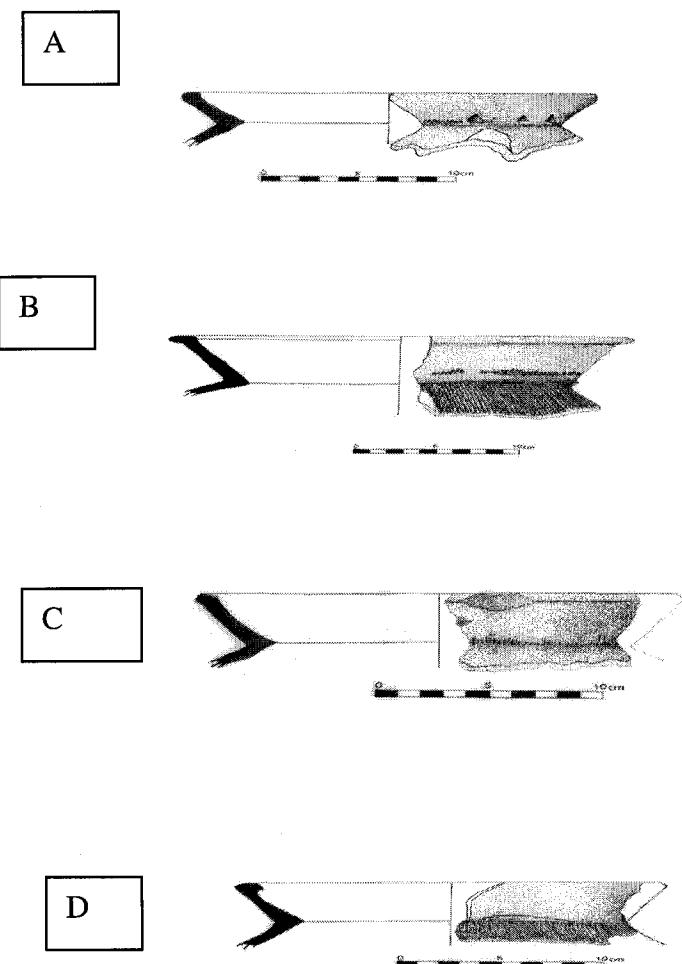


Figure 7.11: Vessel form of cord-marked earthenware group

It seems that the cord-marked potteries from the cultural phase I presented a bigger orifice diameter than the ware from the other two phases. On the other hand, the rich in organic tempering is identical to the cord-marked earthenware of the phase I. All four ceramic groups

discussed above (i.e., Burnished Earthenware, Grayware, Slipped ware, and Cord-marked Earthenware) are clearly associated with Cultural Phase I. The number of the potteries in these classes decreases dramatically above level 22 which is the beginning of Cultural Phase II. Phase I ceramic assemblage exhibits high diversity of forms and fabrics, and some of the vessels' composition suggests local manufacture (Stark and Bentley 1999).

Cultural Phase II

Cultural Phase II dates between ca. 200 B.C and A.D. 2/300. Ceramics from this Cultural Phase include 3205 ceramic sherds. The small thin walled and cylindrical-shaped vessels, Stark described as Fine Orangeware (Stark et al. 1999: 28; Stark 2001; 2002) date to Cultural Phase II. The pottery of Phase II is rather homogeneous in nature. Fine Orangeware pottery is the dominant ceramic group of this phase, comprising approximately 96% (3067) of the Phase II assemblage. Only a few sherds are classified into other groups such Burnished earthenware, Grayware, Cord-marked earthenware, and Slipped Ware. The following section thus concentrates on describing Fine Orangeware pottery.

Fine Orangeware

Paste of the sherds in this group is fine. There is evidence of mild parallel stria on its surface. Evidence of

drip is present on the interior, the exterior, or sometimes on both surfaces of some sherds. Slip mostly appears on the interior of the sherd surface. In general, the pottery in this group has a reddish yellow and orange color.

The paste lacks visible temper or pores. Rarely, the paste contains a few tiny red particles. Most sherds in this class do not have carbon cores.

Paste color ranges from reddish yellow to gray, but most sherds are some hue of orange. In MUNSELL Color Chart terms, the color ranges from reddish yellow (5YR 7/6) to gray (10YR 7/3). The exterior surface color of the ceramic vessel in the Fine Orangeware group ranges from pink to reddish yellow. The MUNSELL Color Chart terms, the color ranges from pink (5YR 8/4) to light reddish brown 2.5YR 6/4). The interior surface color of the pottery in this class ranges from pinkish gray to light red. In MUNSELL Color Chart terms, the color ranges from light red (2.5YR 6/6) to pinkish gray (7.5YR 7/2). In general, the Fine Orangeware vessel wall thickness ranges from 2 - 4 mm. A detail color of paste, exterior, and interior is illustrated in Table 7.14.

Table 7.14. Variation of Colors of the Paste, Exterior, and Interior Surfaces of the Fine Orangeware Group

	Paste	Exterior	Interior
Reddish yellow	30.35% (930)	58% (1778)	42% (1288)

(5YR 7/6)			
Pink (5YR 8/4)	31.91% (978)	28% (858)	
Light reddish brown (2.5YR 7/4)	21.93% (672)		
Pinkish gray (5YR 6/2)	7.80% (239)		
Very pale brown (10YR 7/3)	5.59% (172)		
Gray (5YR 5/1)	4.86% (149)		
Light reddish brown (2.5YR 6/4)		4.8% (147)	
Pink (7.5YR 8/4)		9.6% (294)	
Light red (2.5YR 6/6)			22% (675)
Reddish yellow (5YR 6/8)			28% (859)
Pinkish gray 7.5YR 7/2)			8% (245)
TOTAL	100% (3067)	100% 3067)	100% (3067)

Texture

All of the ceramic vessels in the Fine Orangeware group have a fine texture (Table 7.15).

Table 7.15. Distribution of Texture, Slip, Drip, Carbon Core, and Striation of the Fine Orangeware Group

	Texture	Slip	Drip	Carbon	Stria	Surface
Fine	100% (3060)					
Medium	0% (4)					
Coarse	0% (3)					
Absent		52% (1597)	46% (1399)	89% (2722)	2% (58)	98% (2993)
Present		47% (1434)	53% (1647)	11% (340)	97% (2979)	2% (67)
Inde.		1% (36)	1% (21)		1% (21)	
TOTAL	100% (3067)	100% (3067)	100% (3067)	100% (3067)	100% (3067)	100% (3067)

Slip

Approximately one-half (52%) of the sherds in the Fine Orangeware group have no surface slip, and the other 47% presents reddish yellow slip on its surface (Table 7.15).

Surface Trace

More than half of the entire ceramic vessels of the Fine Orangeware have surface traces on its exterior surface. 46% of the sherd has no trace of paint drip (pigment) on the surface (Table 7.15).

Carbon Core

Most Fine Orangeware sherds (89%) do not have carbon cores. Their thin vessel walls may have required less firing time than other vessel groups (Table 7.15).

Striation

Approximately 97% of the entire pottery sherds in the Fine Orangeware group exhibit parallel stria on either interior or exterior surface (Table 7.15).

Surface Decoration

A few rim sherds exhibit cord-marking, but the examination of whole Fine Orangeware vessels that cord-marking is associated with the body and base of this ceramic group. Therefore, majority of the pottery rim sherds we recorded did not exhibit a surface decoration. Less than 2% of the entire rim sherds have cord-marked

decoration (Table 7.15). Cord-marked decorations are present on the exterior surface of the sherds. The cord-marking ornament is made up of parallel vertical or oblique lines. This decoration pattern is unique pottery sherd in this group (Figure 7.12).

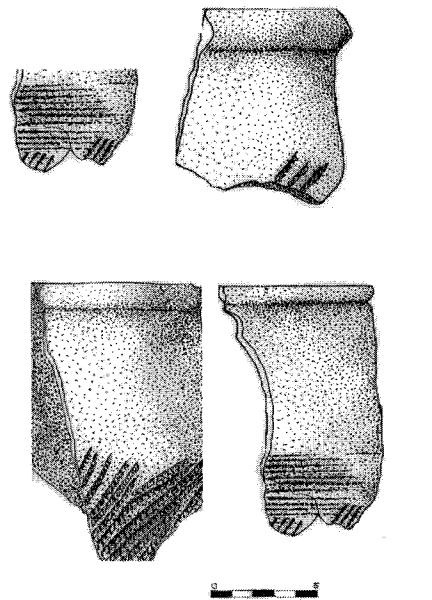


Figure 7.12: Cord-marked decoration of the Fine Orangeware
Rim Profile

The pottery in the Fine Orangeware class exhibits three unique rim forms such as folded (Figure 7.13 A-C), exterior (Figure 7.13D), and channel rims (Figure 7.13E). Folded rim is the most dominant rimmed form for the ceramic

vessel this group. It constitutes approximately 42% of the entire Fine Orangeware pottery.

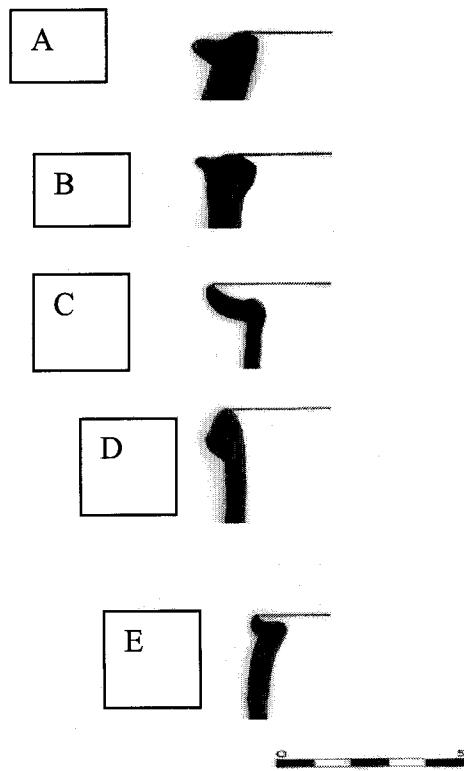


Figure 7.13: Rim forms of the Fine Orangeware pottery

Vessel Form

The ceramic pottery of the Fine Orangeware group exclusively exhibits a cylindrical shape vessel. This vessel form is predominantly significant to Cultural Phase II at Angkor Borei. The cylindrical shaped vessel is incomparable to any pottery form found at other sites in Southeast Asia. The pottery of this form has an orifice diameter ranging from 4 to 6 centimeters. It has a straight

(vertical) wall with flat base. The overall body of the vessel in this form is cylindrical shape. Surface treatment varies from no treatment to cord-marking on the exterior surface (Figure 7.14).

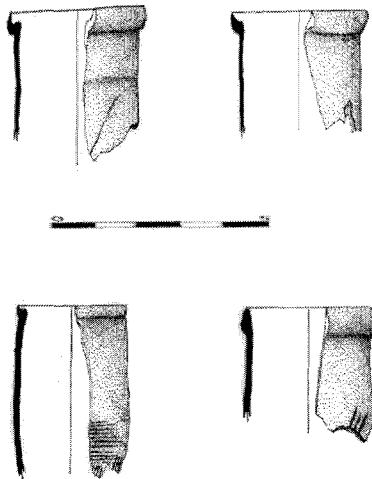


Figure 7.14: Examples of cylindrical vessels of the Fine Orangeware group

As illustrated in Table 7.1, the number of the Fine Orangeware sherd rapidly diminishes after level 8 which is the end of Cultural Phase II and boundary of Cultural Phase III. Phase II ceramic assemblage, with its Fine Orangeware assemblage, exhibits homogeneity as a single localized form.

Cultural Phase III

Phase III dates after A.D 300. This phase contains seven arbitrary levels (level 1 through 7). As mentioned earlier in chapter 4, the top soil surface of the Tuol

Chheu Sar mound, where the AB4 is located, was disturbed by domestic activities. Therefore, we collected a mixture of variety of the potsherds during the excavation at AB4. In general, the Cultural Phase III contains one dominant ceramic group. Called "Fine Buffware" following Stark 2000: 77, 79).

Fine Buffware

The upper levels of AB4 were disturbed and, we collected very few fragments of Fine Buffware sherds. Because this study aims to focus only on diagnostic sherd that has size (dimension) larger than 5 cm², only a single Fine Buffware sherd is included this research. During the excavation at AB3 in 1996, the LOMAP team recovered abundant of Fine Buffware. The following detail description of Fine Buffware pottery depended on observing the ceramic data from AB3 and Angkor Borei museum. AB3 the LOMAP yielded 15,55 fine buffware sherds. These are mostly body sherds. The ceramics in this group is defined as a ceramic vessel that has a fine paste and thin wall with surface color ranges from pinkish white to pink (see also Stark (2000: 77)).

The Fine Buffware pottery has a plain surface. There is no evidence of decoration on its surface. Paste is fine. Fine Buffware sherds have a light gray carbon core. Red

specks are visible in the vessel's paste. The Fine Buffware pottery does not exhibit drip and slip on its surface. As mentioned by Stark (2000: 79), the Fine Buffware pottery at Angkor Borei was described as Type V by Louis Malleret more than 40 years ago on his discussion about the ceramic vessel found at Oc Eo (southern Vietnam).

Malleret narrated the Oc Eo ceramic vessel of Type V as a pottery group that has a fine paste with medium hard, homogenous texture (fine), pink or salmon, sometimes yellow, light gray or dark gray color with smooth surface. Occasionally, red specks were found on the surface. Malleret suggested that it might be derived from the re-use of fired clay as temper (Malleret 1960: 99-100). Recently, Stark (personal communication) have commented that the clays used are alluvial and have small amounts of laterite particles in them.

Although the scarcity of the Fine Buffware ceramic vessels found at AB4, but at AB3 many of the fine buffware fragments belonged to kendi and pedestalled bases. Stark (2000: 79) suggested that there are two vessel forms associating with the Fine Buffware ceramic group: spouted pot and pedestal bowl. Drawing from Malleret, Mourer believed that the ceramic vessel of type V (Fine Buffware) was a foreign made pottery (Malleret 1960:100; Mourer 1986:

145). Stark and Bentley (1999), in their pilot studies, have compared the compositions of the fine orangeware and the buffware sherds concluded that both ceramic groups have been produced from the same clays.

Spouted Vessel

Malleret (1960: 163) described the spouted pottery as having a fine paste with pink color. The spouted pot has a globular body and narrow mouth (Figure 96). Besides assigning this spouted pot to the Funan period, Malleret and Mourer did not provide a specific date for the vessel in this form. A similar vessel form (spouted pot) found at the Dvaravati site was dated between 5th to 6th centuries A.D. (Bhumadhon 1996: 16). Stark (2000: 79) dates the kendi (spouted pot) from AB3 to sometime after A.D 300. At Angkor Borei, the kendi had along and narrow neck with everted rim. The spouted part was attached to the vessel's shoulder creating about 90° degree angle. Evidence of attached trace is visible.

Pedestal Bowl

A bowl in this form has a very fine paste with smooth surface. The surface color ranges from whitish gray to pinkish red (Figure 7.15). A similar form found at Dvaravati site was dated between 7th and 8th centuries A.D (Bhumadhon 1996: 18).

Kendi from Angkor Borei was supported by a ring base (Figure 7.15).

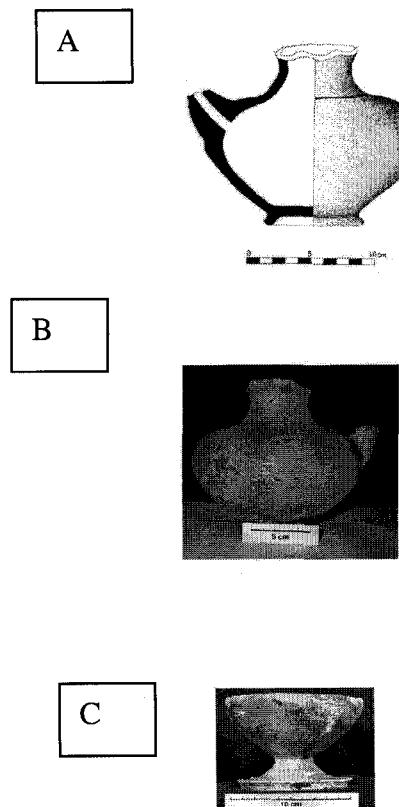


Figure 7.15: Examples of Kendi and pedestal vase

Phase III ceramic assemblage is also standardized (even if locally manufactured) in its forms, since the kendi and pedestalled vase are found widely across mainland Southeast Asia.

Summary of Ceramic Chronology

Data discussed above illuminated the relationship between the dating of Cultural Phases and the ceramic

groups. The following section summarizes and compares the characteristics of ceramic attributes and chronometric dates of each Cultural Phase.

Texture

Pottery in Cultural Phase I general has a medium texture and coarse texture. In contrast, the majority of the ceramic vessel of Cultural Phase II has organic temper (Table 7.16).

Table 7.16. Distribution of Texture for Each Cultural Phase

Texture	Fine	Medium	Coarse	Date
Phase III	N/A	N/A	N/A	A.D 300 - A.D 600
Phase II	96%	2%	2%	200 B.C. A.D 300
Phase I	3%	58%	39%	400 B.C - 200 B.C

Slip

The majority of the ceramic pottery of the Cultural Phase I does not exhibit slip. The number of pottery with surface slip increases from 7% (Phase I) to 47% of Phase II (Table 7.17).

Table 7.17. Slip for Each Cultural Phase

Surface Slip	Absent	Present	Date
Phase III	N/A	N/A	A.D. 300 - A.D. 600
Phase II	52%	47%	200 B.C. - A.D. 300
Phase I	93%	7%	400 B.C. - 200 B.C.

Surface Trace

Drip is present on the surface of almost every ceramic vessel of Cultural Phase I. The number decreases by 30% in Cultural Phase II (Table 7.18).

Table 7.18. Distribution of Drip Each Cultural Phase

Drip	Absent	Present	Date
Phase III	N/A	N/A	A.D. 300 - A.D. 600
Phase II	47%	52%	200 B.C. - A.D. 300
Phase I	17%	83%	400 B.C. - 200 B.C.

Carbon Core

Most sherds in Cultural Phase I have a carbon core; the number decreases dramatically by Phase II. Ninety percent of the pottery in the Cultural Phase I has carbon core, whereas 12% of the entire Phase II assemblage exhibits a carbon core (Table 7.19).

Table 7.19. Distribution of Carbon Core Each Cultural Phase

Carbon	Absent	Present	Date
Phase III	N/A	N/A	A.D. 300 - A.D. 600
Phase II	87%	12%	200 B.C. - A.D. 300
Phase I	10%	90%	400 B.C. - 200 B.C.

Striation

The number of ceramic vessels consisting of parallel striation on the surface increases about 25% in Phase II. Most sherds in Cultural Phase II exhibit parallel stria. Seventy six percent of the ceramic pottery of Cultural

Phase I have parallel stria. By Phase II, 95% of the pottery exhibits a parallel striation (Table 7.20).

Table 7.20. Distribution of Stria Each Cultural Phase

Striation	Absent	Present	Date
Phase III	N/A	N/A	A.D 300 - A.D 600
Phase II	4%	95%	200 B.C. - A.D 300
Phase I	24%	76%	400 B.C - 200 B.C

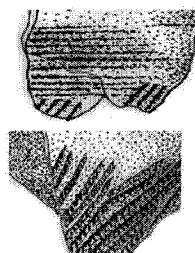
Surface Treatment

Approximately 23% of the pottery of Cultural Phase I exhibits a cord-marked decoration and another 5% has an incised decoration. A few sherds in the Cultural Phase II have surface treatment, and 97% of the Phase II ceramic vessels have undecorated exterior surfaces (see Table 7.21 and 7.22).

Table 7.21. Distribution of Decoration Each Cultural Phase

Decoration	Absent	Cord-marked	Incised	Date
Phase III	N/A	N/A	N/A	A.D 300 - A.D.600
Phase II	97%	3%	0%	200 B.C - A.D.300
Phase I	72%	23%	5%	400 B.C - 200 B.C

Figure 7.22. Surface Decoration Each Cultural Phase

	Surface Treatment	Date
Phase III	N/A	A.D 300 - A.D 600
Phase II		200 B.C - A.D 300

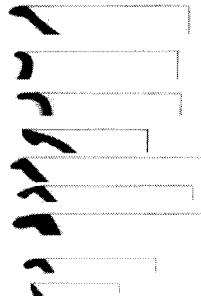
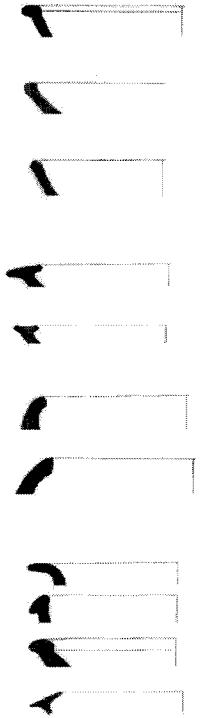
Phase I		400 B.C - 200 B.C
Phase I		

Rim Form

In general, the pottery of the Cultural Phase I exhibits two dominant rim forms, exterior and shelf rims. The Cultural Phase II's ceramic vessel consists of two dominant rim forms, channel, exterior and folded rim (Table 7.23).

Table 7.23. Comparison of Rim Form Each Cultural Phase

	Rim Form	Date
Phase III	N/A	A.D 300 – A.D. 600
Phase II		200 B.C – A.D 300

Phase II		
Phase I		400 B.C - 200 B.C

Vessel Form

Cultural Phase I has a more diverse collection of vessel forms than does Cultural Phase II. Vessel forms in Phase I includes short flare rimmed jars, tall flare rimmed jars, pedestal bowls, incurved bowls, and flare rimmed bowls. Cultural Phase II is exclusively dominated by

cylindrical shaped vessel. Although there is a few Fine Buffware fragments were discovered at AB4 because of the disturbance, but the amount of fine buffware sherds are abundant. Based on observation of the AB3's sherds, Fine Buffware exhibited in two distinctive forms: kendi and pedestalled bowl (Table 7.24, from page 64 to 66).

Table 7.24. Distribution of Vessel Form Each Cultural Phase (Vessel of Phase III Taken From Malleret 1960)

	Vessel Form	Date
Phase III	  	A.D 300 - A.D 600
Phase II	 	200 B.C - A.D 300

Phase I		400 B.C - 200 B.C
Phase I		400 B.C - 200 B.C

The pottery of Cultural Phase I and II present some unique characteristics in terms of its rim profile, vessel

form, and wall thickness. There is not enough ceramic sherd from AB4 to theorize pottery vessel forms of Cultural Phase III. Information from observing the Fine Buffware pottery in the Angkor Borei Museum and AB3 suggests that vessels in this group exhibited two identical forms: kendi and pedestalled bowl. Angkor Borei yields a variety of ceramic vessel forms including cylindrical shape vessels, bowls, carinated jars, globular flare rimmed jars, and spouted vessels. Based on the result of AB4's ceramic analysis, the earliest phase of Angkor Borei (Phase I, 400 B.C. - 200 B.C) consists of more vessel forms than the upper phases. The ceramic vessels in the Cultural Phase II (200 B.C. - A.D. 300) exhibit a unique form, cylindrical shape and tiny pot. Spouted pot is identical to Phase III (A.D. 300 - A.D. 600).

The following chapter of this dissertation focuses on summarizing and comparing ceramic data from other archaeological sites in Mainland Southeast Asia. It will also illustrate some pottery forms that were previously discovered in at Angkor Borei, Oc Eo, Lop Buri, and Chansen.

CHAPTER 8
COMPARISON OF SOME OF THE ANGKOR BOREI'S CERAMIC
ASSEMBLAGE WITH OTHER SITES IN MAINLAND SOUTHEAST ASIA

Previous archaeological investigations at other sites contemporary with Angkor Borei contain some similar pottery forms to those found at Angkor Borei. Explaining *why* and *how* the potters from western Thailand to southern Vietnam more than a thousand years ago produced similar vessel forms still challenges archaeologists of the region. Several theories regarding the spread of the ceramic vessel form and its technology are currently under consideration. One approach intends that trade was a central agent in the diffusion of pottery forms (Stark 2000 73-74; Frasché 1976). Other researchers consider migration as the precursor for the wide dissemination of similar vessel forms (Groslier 1981; Rice 1987). This chapter compares some of the pottery forms that were discovered at Angkor Borei with other contemporary sites in mainland Southeast Asia. Table 8.1 illustrates the existence of the vessel forms that were uncovered from Angkor Borei and other contemporary sites in mainland Southeast Asia.

Table 8.1. Distribution of Vessel Forms in Southeast Asia

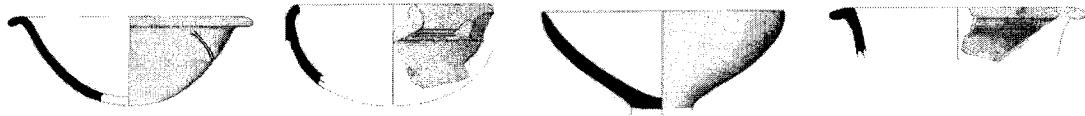
	Angkor Borei	Oc Eo	Lop Buri	Chansen
Bowl	Present	Present	Present	Present
Carinated Jar	Present	Present	Present	Present
Kendi	Present	Present	Present	Present
Cylinder	Present	Absent	Absent	Absent
Lid	Present	Present	Absent	Absent

Bowl Forms

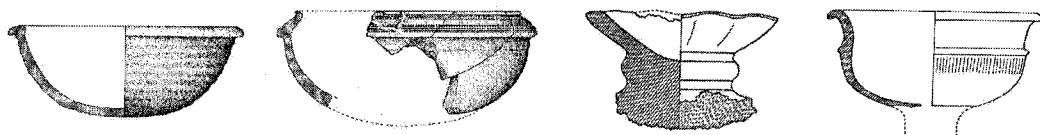
Bowls from Angkor Borei appear in three forms: pedestalled bowl with burnished surface, flare rimmed bowl, and incurved bowl with exterior grooves. Bowls found at Angkor Borei are dated to the Cultural Phase I (400 B.C. - 200 B.C.). At Oc Eo Malleret illustrates a pedestal bowl and a rounded base bowl, but does not designate specific dates for the vessels (Malleret 1960, pl. 23, 39). These bowl forms are illustrated in Figure 8.1.

Pedestalled bowls from Lop Buri (central Thailand) are abundant and described as "*dish on stand*" (Bhumadhon 1996). According to the Bhumadhon. First dish on stand discovered in the Lop Buri region dates between ca. 1000 B.C. and A.D. 50 and continue to the Dvaravati period (Bhumadhon 1996: 9,10,18).

Bowls from Angkor Borei



Bowls from Oc Eo



Bowls from Lopburi



Bowls from Chansen



Figure 8.1: Comparison of bowl shapes from four contemporary sites in mainland Southeast Asia: Angkor Borei (Cambodia), Oc Eo (Vietnam), Lopburi (Thailand), and Chansen (Thailand)

The pedestal bowl as illustrated by Bhumadhon resembles Angkor Borei bowl, except that the pedestal bowl from Angkor Borei does not exhibit a surface decoration on the exterior as does the one from Lop Buri. Bowls with rounded bases and incurved rims are also present in Lop Buri, and according to Bhumadhon, and date between 1000 - 500 B.C (Bhumadhon 1996: 10,19; Indrawooth 1985: 51)).

Bronson (1977) also documents bowls with a rounded base and incurved rim at Chansen (west central Thailand). Bronson classified that bowl into Chansen Cultural Phase I, ca. 600 - 400 B.C (Bronson 1978: 253-254). Flare rimmed bowls with rounded bases found at Chansen date to Chansen Phase IV (A.D. 500 - A.D 600). Bronson also described a bowl with burnished pattern on the interior surface that dates to A.D 500 - 600 (Chansen Phase IV). Bronson speculated that it had a ring foot or was flat-bottomed (Bronson 1978: 389-390). Bronson suggested that the bowl belonged to the Phimai Blackware group of the late Metal Age.

At Angkor Borei, burnished bowls stand on a ring base or pedestalled base and date from ca. 400 - 200 B.C. Yet, there is no case of a flat-bottomed bowl with burnished pattern excavated from Angkor Borei. Bowls found at Angkor

Borei and other early historic sites in Southeast Asia, vary slightly different in shape and surface decoration.

Indrawooth and Bhumadhon believe that Dvaravati period bowls were locally produced at the Lop Buri region (Bhumadhon 1996: 9-11; Indrawooth 1985:51). Flat based and pedestalled bowls have been reported from many archaeological sites in Southeast Asia.

It is not clear where this pedestalled base bowl first originated. One model being consistent in most of the mainland Southeast Asian sites dating to between 500 B.C - A.D 500 is burnished pattern on the interior surface of the bowl. Bronson speculated that the bowl with burnished pattern was originated from Phimai region. Figure 8.1 illustrates bowl variants from archaeological sites in Southeast Asia.

Carinated Bowl

The carinated vessel is another widely manufactured form. The carinated bowl at Angkor Borei dates to Cultural Phase I (400 B.C - 200 B.C), has a burnished surface with the incised decoration on the shoulder, and is usually dark gray or black in color. These carinated forms are illustrated on Figure 8.2.

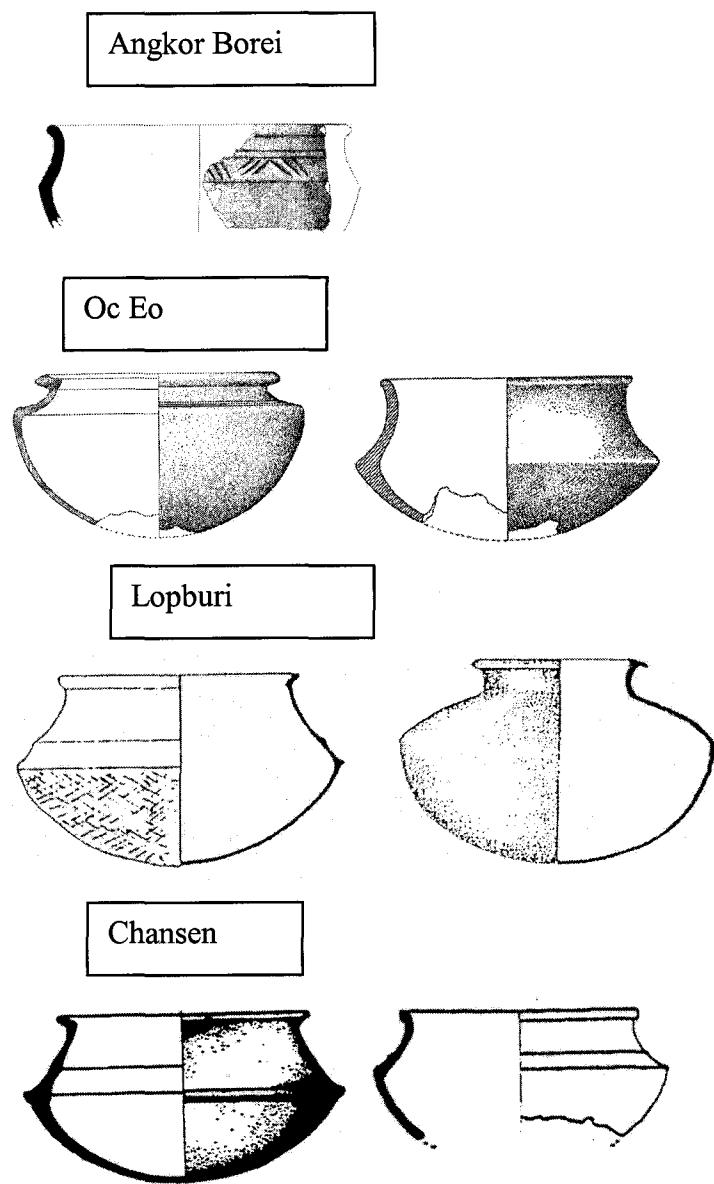


Figure 8.2: Comparison of carinated bowls

Malleret (1960: 142-143) illustrated at least seven carinated vessels from Oc Eo in 1960 (Type 18-22) but did not date any of the ceramics. He suggested that the ancient

inhabitants of Oc Eo used the carinated pot to cook rice (Malleret 1960: 142-143). There is no chronometric date assigned to the pottery of this form.

The Lop Buri region has produced many carinated vessels that ranges in date from ca. 1500 B.C to ca. A.D. 600. Carinated pots from the Lop Buri region usually exhibit a plain surface. Cord-marked, mat, or incised decoration is present on the lower body part of the pot (Bhumadhon 1996: 12). Indrawooth and Bhumadhon strongly believed that the carinated pot was locally manufactured prior to the arrival of the Indian influence.

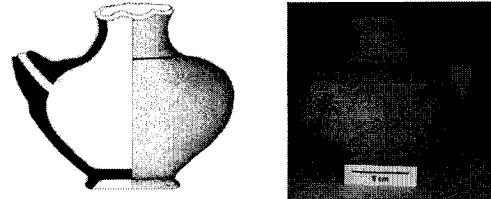
The earliest carinated vessel forms from Chansen date to Chansen Cultural Phase III (A.D. 250 - A.D. 500). Bronson equates this Phase with the early contact with Funan, Oc Eo site (Bronson 1976: 14). These carinated vessels are burnished (Bronson 1976: 315). According to Bronson, the carinated pot was also found in Chansen Cultural Phase V deposits (A.D. 600 - A.D. 900) which represented the apogee of the Dvaravati kingdom and is evidence of contact with the Khmer empire through trade (Bronson 1976: 15 404). Carinated forms continue into Chansen Cultural Phase VI (A.D. 900 - A.D 1100). Bronson suggested that that was the end of Dvaravati period and the beginning of Lop Buri Period (Bronson 1976: 15, 452).

Spouted Vessel, Kendi

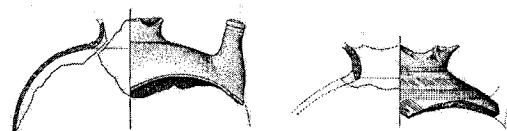
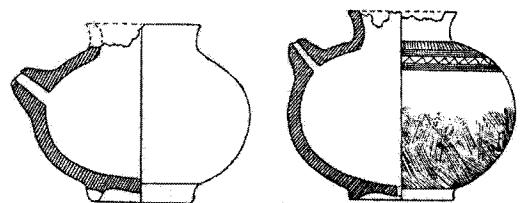
Spouted pot or *Kendi* is one of the most well-known pottery forms that spread throughout Southeast Asia during the Early Historic Period (500 B.C - A.D 500). During the 1996 excavations at AB3 and AB4, we collected some spouts, base fragments and body sherds, but not complete vessels. At Angkor Borei, spout parts are abundant and scattered on the surface. The villagers at Angkor Borei dug up some whole spouted vessels and donated them to the local museum. Angkor Borei spouts are associated with the upper phase, Cultural Phase III, is dates between A.D. 300 and A.D. 600. Profiled of spouted vessels are illustrated in Figure 8.3.

At Oc Eo, Malleret excavated a number of spouted vessels (Type 45 through Type 48). He used the term "cruches a bec" to refer to the *kendi* form vessel. Malleret and Mourer asserted that the spouted pot was not locally manufactured and was probably imported from outside the Mekong delta and perhaps from India (Malleret 1960: 161-163; Mourer 1986: 147).

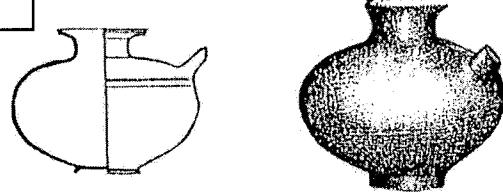
Angkor Borei



Oc Eo



Lopburi



No Kendi vessel illustrated by Bronson

Figure 8.3: Kendi from Angkor Borei, Oc Eo, and Lopburi

Based on results of the chemical compositional analysis of the samples from Angkor Borei, Stark also

suggested that the spouted vessel form was foreign but the paste of Angkor Borei kendi was local (Stark 2000: 81-82).

Bhumadhon reported that the earliest *kendi* vessel uncovered from the Lop Buri region dates between 500 B.C and A.D. 500 (Bhumadhon 1996: 7). Bhumadhon described the surface decoration of the spouted vessel as ranging from a plain body to a stamp motif on the neck and pointed with a series of horizontal red stripes on the shoulder (Bhumadhon 1996: 8). Bhumadhon suggested that the people from the west, perhaps India, introduced the spouted vessel to the Lop Buri region and the ancient people might have used the vessel for ritual purposes.

At Chansen, the first spouted vessel appears in Chansen Cultural Phase V (A.D. 600 - A.D. 900) (Bronson 1976: 440). Bronson did not discuss in detail decoration nor illustrated vessel features. He only referred to similar spouted forms found near Oc Eo and Sambor Prei Kuk.

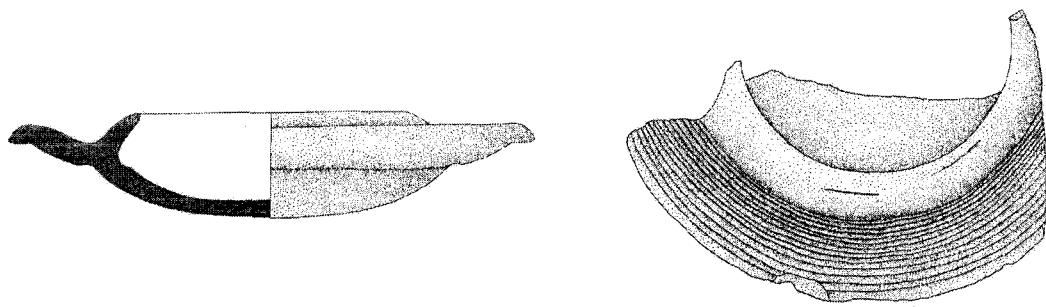
The distribution of the *kendi* form vessel covered a large area in the south and Southeast Asia. In Asia, many archaeologists believe that the spouted or *kendi* vessel first originated in India long before the first century A.D., and later spread to the other settlements of Southeast Asia during the Indian expansion (Malleret 1960:

162-163; Groslier 1981: 14-15; Indrawooth 1985: 49-50; Mourer 1986: 144-147; Bhumadhon 1996: 7). The oldest spouted vessel found in Mesopotamia is dated 3200 B.C., and one from Greece is dated to 2500 B.C. In India, the first Kendi is dated as early second millennium B.C. (Indrawooth 1985: 50; Sumara Adhyatman 1987: 6).

Lid

Lids or covers uncovered from Angkor Borei date to the Angkor Borei Cultural Phase I (500 B.C - 200 B.C). Stark believes that the lid from excavation at Angkor Borei resembles ceramic forms from Arikamedu, Pondicherry of India (Stark 2000: 81). Malleret, and later Mourer, considered the same lid found at Oc Eo as the pottery of foreign origins. Malleret traced the first appearance of these lids to second millennium B.C. in the Middle East (Malleret 1960: 170; Mourer 1986: 148).

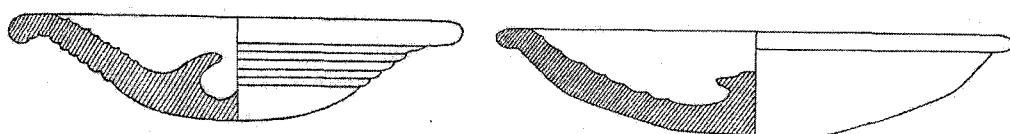
Besides the lids from Angkor Borei and Oc Eo, none is known from other archaeological sites in mainland Southeast Asia. Drawing from the absence of lids or covers from other areas, I speculate that this vessel form is unique to the lower Mekong sites, Angkor Borei and Oc Eo, and probably its vicinity. These lids are illustrated in Figure 8.4.



Lids from Angkor Borei

No lids from Chansen

No lids from Lop Buri Region



Lids from Oc Eo

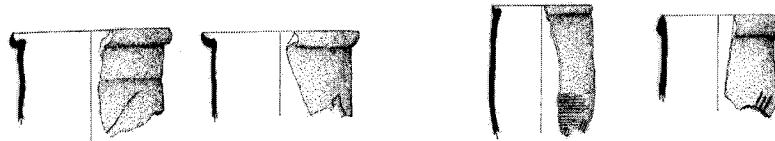
Figure 8.4: Comparison of lids

Cylindrical Shape Vessel

The cylinder vessel at Angkor Borei dates to Cultural Phase II (200 B.C – A.D 300). This is a unique vessel at Angkor Borei during this Phase II. The current archaeological data in mainland Southeast Asia does not present evidence of the cylinder vessel during the early historic period. Likewise, Oc Eo, one of the other lower Mekong delta sites that is the closest to Angkor Borei, and thought to be the international port of Funan, presents no artifact in this cylinder vessel form.

Archaeological research at Chansen and Lop Buri region has produced no confirmation of any cylinder vessel discovered at the sites. The cylindrical shape vessel is currently present only at Angkor Borei. In sum, bowls, carinated pottery, and spouted vessels are present in many mainland Southeast Asian sites that date between 500 B.C. and A.D. 600. Because so little archaeological research has been done in these areas, it is too soon to identify where the idea for these forms of vessels first appeared. Due to the current data, lid is identical to two sites in the lower Mekong Delta, Angkor Borei and Oc Eo. The cylindrical shape vessel, however, is only known to the Angkor Borei's site during the end of first millennium B.C. and the beginning of first millennium A.D.

A detail comparison of cylindrical shaped vessel is illustrated in Figure 8.5.



Cylindrical shape vessels from Angkor Borei

No cylindrical shape vessel from Oc Eo

No cylindrical shape vessel from Chansen

No cylindrical shape vessel from Lop Buri Region

Figure 8.5: Cylindrical shaped vessel

The next chapter of this paper is the conclusion of the thesis that contains summary and conclusion. It also includes a recommendation and possible projects for future research at Angkor Borei and Pre-Angkor of Cambodia.

CHAPTER 9
SUMMARY AND CONCLUSION

Summary

The primary objective of this dissertation is to develop a ceramic chronological sequence for the site of Angkor Borei between 500 B.C and A.D 500. Two principal questions structured this research: what are the dominant ceramic technological traditions through time? And what kinds of changes in ceramic style over time? Answering these forms the basis for this dissertation.

My research investigates only portions of the Angkor Borei ceramic assemblage excavated during the Lower Mekong Archaeological Projects 1996 field season. Research concentrated on pottery sherds from one deep trench excavation called test unit 4 or "AB4". Use of an attribute-based analysis facilitated the documentation of variability in form, fabric, rim form, slip and trace, presence and absence of carbon core, surface treatment, and striation. Documenting each of these characteristics in Angkor Borei's ceramic assemblage is critical to seriating the site's ceramics.

Angkor Borei was selected as the focus of this investigation because this site was one of the earliest settlements established by the early kingdoms in Southeast

Asia. These kingdoms have been known to historians for more than a century, yet little archaeological information was available about Angkor Borei prior to the work by the Lower Mekong Archaeological Project. Previous research on Angkor Borei mainly focused on art style and Sanskrit and Old Khmer inscriptions. Publications of Paul Pelliot's translation "Le Fou-nan" also contributes to the understanding of Angkor Borei in general.

The task of this investigative research was to develop a ceramic chronology for Angkor Borei that is anchored by radiometric dates. The site's large size and long occupational sequence underscore its importance in the northern Mekong delta, and this ceramic sequence should facilitate future regional survey in the region. Angkor Borei was linked to a series of other settlements by ancient canals (Bishop et al. 2003), and to still others by the Takeo river.

Data from Old Khmer and Sanskrit inscriptions, oral history, art historical research, and Chinese documents shed light on the importance and role of the Mekong delta sometime after the first century A.D. Sources from the archaeological research also provide information from the period prior the first century A.D, and also provide information on social and political organization. Ceramic

analysis is an important tool for exploring the Mekong delta's ancient civilization. Findings of previous archaeological research on prehistoric sites (e.g., Samrong Sen, Mlu Prei, Krek, Phnom Laang, and Laang Spean) in Cambodia by French archaeologists suggests that the first pottery in the region dates to the third millennium B.C. Mourer asserts that pottery form and technology have not changed much since it first appeared three thousand years ago.

Information from archaeological excavations at other contemporary archaeological sites (e.g., Chansen, Phimai, Oc Eo, and Plains of Jars) when compared with Angkor Borei provides invaluable information toward the understanding of ceramic pottery of the northern Mekong Delta sites in Cambodia and especially toward understanding Angkor Borei's ceramics.

The previous chapters have examined Angkor Borei's occupational sequence and described three chronological phases for the site: Cultural Phase I (500 B.C - 200 B.C), Cultural Phase II (200 B.C - A.D 300), and Cultural Phase III (A.D 300 - A.D 600). Analysis of the ceramic collection from AB4 reveals particular ceramic groups that are closely associated with each Cultural Phase.

The Cultural Phase I data base includes 1459 sherds and has four dominant ceramic groups: Burnished Earthenware, Grayware, Slipped Ware, and cord-marked earthenware pottery. In general, Cultural Phase I pottery is characterized by Cord-marked, incised decoration, and burnished surfaces. The pottery of Cultural Phase I contains either a medium texture or a coarse texture. Surface color mostly ranges from light gray to black. Pottery of the Cultural Phase I exhibits a variety of forms ranging from short neck to tall flare rimmed jars, and from pedestal to rounded and to flat base bowls.

The Cultural Phase II ceramic database consists of 3205 sherds and has only one dominant ceramic group: Fine Orangeware. The Fine Orangeware pottery has a reddish yellow color, a fine paste, and faint parallel stria on its exterior surface. The ceramic ware of this group exhibits one distinctive form: a small cylindrical shape vessel. More than 98% of the Fine Orangeware sherd does not have surface decoration. A few ceramic vessels exhibit cord-marked decoration.

The Cultural Phase III ceramic assemblage is associated with one dominant group: Fine Buffware. Two vessel forms, the spouted vessel (kendi) and the pedestalled vase, are most closely associated with this

ceramic group. Pottery in the Fine Buffware group is characterized by fine paste with a pinkish white color. Malleret illustrated spouted vessel form, known as *Kendi*, with a rounded or globular body (Malleret 1960). At Angkor Borei, the spouted vessel and pinkish white pedestal bowl are also well-known pottery forms for the ceramic in this group.

Based on previous archaeological excavations at ancient sites (e.g., Chansen, Oc Eo, Angkor Borei, Ban Tha Kae, and Sab Champa) that are dated between the late first millennium B.C. and early first millennium B.C., we can conclude that the spouted vessel ceramic is widespread in Southeast Asia (Indrawooth 1985; Bhumadhon 1996).

The Pedestalled bowl is also a widespread vessel form in early Southeast Asian society. The first pedestal bowl discovered at Angkor Borei dates to Cultural Phase I (400 B.C. - 200 B.C.). In addition to Angkor Borei, archaeologists excavated pedestal bowls that date to the same period from many sites in Southeast Asia such as Oc Eo, Chansen, Phimai, and Lop Buri Province (Bronson 1977; Indrawooth 1985; Bhumadhon 1996).

Burnished carinated vessels and rounded base incurved bowls also spread all over the Southeast Asian sites and

are dated from the late first millennium B.C to first millennium A.D.

Conclusion

There is still a mystery about the meaning of the Chinese records left from the middle of the third century A.D. and later period concerning the *Funan Kingdom*. Due to the absence of local accounts (Old Khmer and Sanskrit inscriptions) mentioning the kingdom's name, it is difficult to determine the precise location of the capitol of Funan (Briggs 1957; Coedes 1968). Based on the distance described in the Chinese documents, Coedès located the earliest capital city of Funan at Ba Phnom (Coedes 1968). The capital later was moved to Angkor Borei.

Archaeologically speaking, no scientific survey or excavation has yet been undertaken at Ba Phnom. Although the Faculty of Archaeology, Royal University of Fine Arts, conducted two-week field trainings for its students at Ba Phnom, there is still more work needed to be done at the site in order to find evidence of the ancient capitol city. Angkor Borei, on the other hand, is marked by a long fortified earthen wall that surrounded many archaeological features. In addition to the six kilometers long earthen wall, Paris identified a canal linking Angkor Borei with Oc Eo of southern Vietnam (Paris 1931). If the capitol city of

the kingdom of Funan mentioned by Chinese documents was once situated at the lower Mekong delta, Angkor Borei would be an appropriate location as an ancient capitol center (Vickery 1994).

There is no clear explanation about the downfall of the Funan kingdom. Historians present different arguments from one another. Based on the Chinese documents, some scholars believed that a new kingdom was established in the central of the Mekong River, *Chenla*, subjugated the Funan polity. Others suggested that the location of the capitol city shifted from the lower Mekong delta, presumably Angkor Borei, to Sambor Prei Kuk (Coedes 1968). None of these suppositions was mentioned in the Old Khmer and Sanskrit inscriptions. One question arises from the demise of the Funan kingdom: Why did Chinese records stop describing the Kingdom of Funan after 6th century A.D., and began describing the kingdom of Chenla from the late 6th and 7th centuries A.D.?

Oral history (Huntien and Lieu Yi, Kaudinya and Nagi, and Kok Thlok), gleaned from old villagers at Angkor Borei speak about the origin of the Khmer being linked to the first century A.D. This is another interesting issue worthy of consideration. All the stories depicted a prince from India who came to rule Funan polity (Pelliot 1903).

Investigating these oral histories leaves some questions unanswered: How could an unknown individual (prince) and his retinues carried by a junk, who traveled from far away (India), take over the governance of a kingdom and rule it peacefully? Further, in regard to language difficulties, how could a foreign prince from India communicate with local inhabitants? The sandstone inscriptions at Baksei Chamkrong indicate that stories were being told about the origin of the Khmer into the Angkorian period (Briggs 1957). The legend about the king of Angkor and the Nagi spirit was again mentioned by the Chinese Ambassador, Chou Ta Kuan, in 1296 -1297 A.D (Pelliot 1903). It would be most interesting to know the answer to such a question as why have the kings of Cambodia been so vitally interested in maintaining a connection with the Kaudinya, Nagi, Kambu and Nagi Soma. What significance does this have in understanding Cambodian history?

Archaeological research also informs our knowledge of ancient civilization. Analysis of the AB4 ceramics indicates that the potteries of the Cultural Phase I exhibit a mixture of forms and styles. The variety of pottery forms and styles might indicate many different potters who produced these ceramic vessels. As mentioned by Stark and Bentley (1999), Phase I ceramic assemblage

exhibits high diversity of forms and fabric, and some of the vessels' composition suggests local manufacture. The Cultural Phase II is dominated by a single ceramic group, Fine Orangeware. Form and decoration of the Fine Orangeware pottery are clearly homogeneous, especially a cylindrical shaped vessel. The uniformity of vessel form and style could have been made by a small group potters or an organized workshop. Phase II ceramic assemblage, with its Fine Orangeware assemblage, exhibits homogeneity as a single localized form. Stark (2000, 2001) believes that the idea of making the kendi form of Angkor Borei came from elsewhere, but the clay was local. Phase III ceramic assemblage is also standardized (even if locally manufactured) in its forms, since the kendi and pedestalled vase are found widely across mainland Southeast Asia.

Literature contributed by previous archaeological researches in mainland Southeast Asia and other regions are invaluable data for this thesis. Part of this paper relies on these early publications, especially the ones from lower Mekong delta of Cambodia and southern Vietnam.

Recommendation

The core area of Angkor Borei within the earthen wall is paved by an abundance of ceramic sherds and brick. The area is, however, disturbed by the everyday activities of

the current occupants. I would, therefore, recommend that the Ministry of Culture and Fine Arts develop a zoning plan and a policy which limits the domestic activity and the construction of concrete buildings at the core area and in the vicinity.

If there a canal linking Angkor Borei to Oc Eo indeed remains from the first century A.D., as mentioned by Pierre Paris, I suggest that further scientific research should be undertaken to seek evidence of an ancient quay at Angkor Borei. A pedestrian reconnaissance survey to map and record Angkor Borei and its vicinity areas is, currently led by professor Miriam Stark, University of Hawaii at Manoa. This survey is also necessary in order to understand the interaction between sites during the past two thousand years.

Mapping of the distribution of Pre-9th century A.D sites through out Cambodia is essential. By having recorded all early archaeological sites, it will be interesting to see distribution of settlement patterns and interaction between locales. The NAGA Research Group is currently recording Pre-Angkorian sites located in the upper and central Mekong of Cambodia. I hope there will be more projects to come. I am personally interested in doing a

comparison of the ceramic data and dates between Angkor
Borei and Ba Phnom.

APPENDIX A: Ceramic Data Recording System

1. Sherd Size (numeric variable) [SIZE]

01 = <5 cm²
02 = <5-16 cm²
03 = <16-49 cm²
04 = <49-100 cm²
05 = >100 cm²

99 = less than 2.5 cm²

2. External Surface Color (numeric variable) [COLOR] (use Munsell terminology)

3. Texture (numeric variable) [TEXTURE]

01 = fine (dense paste with no visible temper and few pores)
02 = medium (semi-dense paste often with pores and voids, temper hardly visible)
03 = coarse (temper visible, often quartz grains, fabric is platey)

99 = indeterminate

4. Vessel Form (numeric variable) [VESFORM]

01 = short flare-rimmed jar
02 = tall flare-rimmed jar
03 = Carinated jar
04 = cylinder (vertical walls)
05 = incurve bowl
06 = Pedestalled bowl
07 = "lamp" or "lid"
08 = flare-rimmed bowl
99 = indeterminate vessel form (include a Rim)

5. Rim Profile (numeric variable) RIMPROF]

01 = interior
02 = exterior
03 = exterior and interior
04 = rounded
05 = not a rim
06 = Channel rim
07 = "shelf" rim (rim has horizontal plane)
08 = folded rim (must have visible groove)
09 = indeterminate

6. Slip Location (numeric variable) [SLIP] ("slip" here includes any case in which surface and core color are different; can include self slip)

00 = Absent
01 = interior only
02 = exterior only
03 = interior and exterior
99 = indeterminate

7. Exterior Surface Decoration (numeric variable) [EXTDEC]

01 = impressed (include comb-impressed)
02 = cord-marked
03 = cord-marked and incised
04 = appliqu 
05 = no surface decoration
06 = other
07 = incised
99 = indeterminate exterior surface decoration

8. Surface Trace (numeric variable) [TRACE]

01 = paint (or organic materials) drip on exterior surface only
02 = paint (or organic materials) drip on interior surface only
03 = paint (or organic materials) drip on interior and exterior surfaces
04 = no paint (organic materials) drip on either surface
99 = indeterminate

10. Wheel Scars (numeric variable) [STRIA] (evidence of wheel manufacture)

01 = parallel stria/grooving on interior but not on exterior
02 = parallel stria/grooving on exterior but on interior
03 = parallel stria/grooving on interior and exterior
04 = no parallel stria/grooving on interior or exterior
99= indeterminate

11. Carbon Core (numeric variable) [CARBON]

00 = absent
01 = present (include CME cases in which exterior/interior surfaces are better fired than

the pore; this is not technically a carbon core
UP TO TAG 567)
02 = differentiation visible but not carbon core
(AFTER TAG 567)
99 = indeterminate

13. Orifice Diameter (cm) (numeric variable) [ORIFDIA]
measured at outside top edge of the rim when leveled
[includes out flared rims]; includes diameter of base or
lamp/lid)
00 = not applicable (includes no orifice or not a
Rim)
99 = indeterminate

25. Vessel Wall Thickness (mm) (numeric variable)
[BODTHICK] (for CME sherds, thickness taken in groove
rather than on ridge)
99 = indeterminate

26. Ceramic Group (numeric variable) [GROUP]
01 = Fine Orangeware [FOW]
02 = Cord-marked Earthenware [CME]
03 = Plain Earthenware [PE]
04 = Fine Buffware [BFW]
05 = Coarseware [CW]
06 = Burnished Earthenware [BE]
07 = Whiteware [WW]
08 = Textured Earthenware [TEW]
09 = Coarse Grayware [CGW]
10 = Coarse Orangeware [COW]
11 = Fine Grayware [FGW]
12 = Grayware [GW]
13 = Slipped Wheelmade [SWM]
14 = Red Slipped Earthenware [RSE]
15 = Red Slipped Wheelmade [RSM]
16 = Other [O]
99 = Indeterminate Ware

APPENDIX B: AB4 Soil Matrix

Layer 1	7.5YR 3/4: dark brown. The soil is soft and moist. This layer contains some charcoal and some artifacts.
Layer 2	5YR 3/4: dark reddish brown. The soil is soft and moist. This layer contains some charcoal and some artifacts.
Layer 3	7.5YR 4/3: dark brown. The soil is compact. This layer contains some charcoal but few artifacts.
Layer 4	5YR 4/3: reddish brown. The soil is compact. This layer contains some charcoal but few shards. This layer contains three 3 thin sub-layers (4a, 4b, 4c).
Layer 5	5YR 7/1: light gray. This is an ashy layer that contains charcoal flecks interspersed with brown matrix. Very low artifact density. This layer contains two sub-layers (5a, 5b).
Layer 6	5YR 3/2: dark reddish brown. This thin lens contains some charcoal flecks and ash but no artifacts.
Layer 7	2.5YR 4/4: Reddish brown. The soil is compact and moist and contains a moderate amount of charcoal, but very few shards or shell.
Layer 8	5YR 3/3: dark reddish brown. The soil is soft, silty, and moist. It contains a few potshards, some charcoal, and shell.
Layer 9	5YR 3/2: dark reddish brown. The soil is soft, silty, and moist. A posthole is visible in this layer that also cuts into layer 12. This layer contains a medium density of shards, and more charcoal than was observed in upper layers. This layer has 4 sub-layers: 9a, 9b, 9c, 9d.
Layer 10	5YR 4/3: reddish brown. The soil is compact. This layer contains some charcoal but no shards.
Layer 11	5YR 3/3: dark reddish brown. The soil is compact and contains a high density of fine orangeware shards.
Layer 12	5YR 3/2: dark reddish brown. The soil is soft, silty, and moist. Artifact density remains high. This layer contains 2 sub-layers: 12a, 12b.
Layer 13	5YR 3/3: dark reddish brown. The soil is compact and contains a high density of fine orangeware shards. This layer contains 3 sub-layers: 13a, 13b, 13c.
Layer 14	5YR 4/4: reddish brown. The soil is compact and contains a high density of orangeware shards, but in slightly lower quantities than Layer 13. This layer contains sub-layers: 14a, 14b.

Layer 15	10YR 4/3: reddish brown. The soil contains a high density of shards like Layer 14.
Layer 16	10YR 4/3: reddish brown. The soil is soft, silty, and moist with approximately the same density of shards as Layer 15. Some charcoal flecks were observed.
Layer 17	10YR 4/3: reddish brown. The soil is soft, silty, and moist with approximately the same density of fine orangeware shards. Consolidated lumps gray or yellow clay were encountered and some bits of charcoal.
Layer 18	10YR 4/3: dark brown. The soil is compact. This layer contains a high density of fine orangeware shards, some charcoal flecks, and occasional lumps of clay.
Layer 19	5YR 4/4: reddish brown. The soil is soft, silty, and moist. Fine orangeware shards in this layer derive from larger vessels than those found in Layer 11 through 17. It contains a high density of fine orangeware shards, some charcoal flecks, and occasional lumps of clay. This layer contains 2 sub-layers: 19a, 19b.
Layer 20	5YR 4/4: reddish brown. The soil is compact with a slightly lower density of fine orangeware shards than that found in Layers 18 and 19.
Layer 21	5YR 5/4: reddish brown. The soil is softer and siltier than in Layers 8 through 20. Lumps of gray clay were also observed in addition to yellow and orange lumps of clay. This layer contains many small charcoal fragments and some shells. This layer contains 3 sub-layers: 21a, 21b, 21 c.
Layer 22	7.5YR 5/4: brown. The soil is soft, silty, and moist with higher sand content. The density of fine orangeware shards is lower than that found in Layer 19 through 21. This layer contains very little organic matter. Lumps of gray (rather than yellow or orange) clay were observed in this layer. This layer contains 2 sub-layers: 22a, 22b.
Layer 23	1YR 4/3: dark brown. The soil is soft, silty, and moist. A high density of fine orangeware shards continues, along with a few dark shards. Little charcoal was observed in this matrix; matrix includes patches of yellow and gray clay mixed with flecks of charcoal.
Layer 24	10YR 3/2: very dark grayish brown. The soil is soft, silty and moist. Density of fine orangeware shards is much lower than in Layer 23. Matrix contains

	animal bone, black and gray ceramics, and lumps of dark gray clay.
Layer 25	10YR 4/3: dark brown. The soil is soft, silty, and moist. Low density of dark shards. Matrix is similar to Layer 24.
Layer 26	7.5YR 3/3: dark brown. The soil is soft, silty, and moist. Higher quantities of gray and black shards are observed in this layer than Layer 25.
Layer 27	7.5YR 4/4: dark brown. The soil is soft, silty, and moist. This layer has a low density of shards. This layer contains 2 sub-layers: 27a, 27b.
Layer 28	10Yr 4/3: dark brown. The soil is soft, silty, and moist. Nearly equally proportion of fine orangeware shards and black and gray shards.
Layer 29	7.5YR 4/3: dark brown. The soil is soft, silty, and moist. Matrix similar to Layer 28 except matrix contains some olive/yellowish mottling. Relatively low density of shards in this layer.
Layer 30	7.5YR 4/3: dark brown. The soil has silty sand and is slightly loamy. Matrix contains charcoal flecks; black and gray shard density is high.
Layer 31	10YR 3/3: dark brown. Soil is silty sand and relatively dry. This layer contains animal bone but no shell covering. The density of black and gray shards is significantly higher than that of fine orangeware. This layer contains 2 sub-layers: 31a, 31 b.
Layer 32	10YR 3/2: very dark grayish brown. Soil is a silty loam with few pebble inclusions; soil is slightly sticky and plastic. It contains a relatively high density of gray and black shards, and also charcoal flecks.
Layer 33	10YR 5/3: brown. The soil is silty with higher amounts of sand than was observed in higher layers. Shard density in this layer is lower than in Layers 31 and 32. ; Very few fine orangeware shards were found. Matrix contains abundant charcoal flecks.
Layer 34	10YR 6/4: light yellowish brown. The soil contains more sand than previous layer and fewer potshards. Matrix contains charcoal flecks and bone fragments.
Layer 35	10YR 7/4: very pale brown. The soil contains primarily sand with some rock inclusions. Some features (possible postholes) intrude into this layer from upper layers. This layer contains very few artifacts; below this layer is sterile soil.

Description of soil color and texture of 35 stratigraphic layers of the AB4's excavation unit (West Face of the Unit). Adapted from Stark et al. 1997: 13-15.

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