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PART I

Introduction

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Pre-Mamom

The Unnamed Era Takes Shape

DEBRA S. WALKER

This volume on the earliest lowland Maya pottery began without a name and remained nameless until it was nearly completely written. Like the pre-Mamom era itself, even now a better moniker eludes us, and the reader will note that, while the participating authors agree there *is* something called pre-Mamom, we cannot yet reach consensus on exactly how to define it, set parameters on it, or place it precisely in absolute or relative time. In fact, we are not yet certain whether we have one pre-Mamom component or multiple, sequential pre-Mamoms, nor are we clear about exactly how many ceramic spheres we have encountered in our collective surveys and excavations. There is, however, substantial agreement among the authors on one point: the first potters in the Maya lowlands may not have been recognizably Maya when they started firing ceramics about 1000 BC, but they *were* by the time the pre-Mamom period ended around 600 BC. This evolution is evident in the ensuing Mamom ceramic sphere (600–300 BC), which constituted a broadly recognizable tradition in the Maya lowlands, materialized in the collective acceptance of waxy ware ceramic technology, monochrome slips, common vessel forms, and inferred similar functionality that undergirded

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the community practices we now refer to as the ancient Maya. To unwrap the complex set of cultural entanglements that characterized the pre-Mamom era, we must first consider the later, better-known Mamom sphere. The story of pre-Mamom pottery, and the nameless state it retains to this day, thus begins with the definition and description of Mamom pottery.

DEFINING THE MAMOM CERAMIC SPHERE

The lowland Maya region described here consists of the area where some Maya peoples live today and where their ancestors built and abandoned great cities and small villages that shared specific cultural content, including similar ceramics. Geographically, the lowland Maya region comprises the Yucatan Peninsula of Mexico, all of Belize, and the Peten region of Guatemala (figure 1.1). Much of the karst landscape of the Yucatan Peninsula lacks river systems, and fresh water for settlements is restricted to lakes and seasonally inundated wetlands or *bajos* that fluctuated with the water table. In contrast, rivers crosscut the southern Maya lowlands, providing inland trade networks as well as more permanent freshwater resources. The highland Maya area is excluded from consideration here because, for the most part, its ceramic traditions are dissimilar and have trajectories distinct from those of the lowland Maya region. We do not know what the peoples who inhabited the area 3,000 years ago called themselves or their territories; nonetheless, throughout this volume we refer to the geographic region as the Maya lowlands.

Researchers recognized early on that the lowland Maya shared a common ceramic technology across a relatively large area, visible in the characteristics of clay pastes, temper, formal modes, slips, painted and modeled design, firing processes, and patterns of ceramic exchange. To facilitate intersite comparison, the type: variety-mode system was developed to offer a systematic method for comparing pottery characteristics from two or more sites (Smith et al. 1960). The ceramic type is the standard unit for comparison in this model, which is based on a vessel's specific surface treatment modes, such as slip, incision, or striation. Types are then organized into ceramic groups that share the same production technology—including slip, paste, and firing characteristics—so that they could have been made and fired together in a single batch (Gifford 1976:17). Groups can then be organized into wares based on a shared pottery fabric, that is, local potters' paste recipe choices, often interpreted in multiple slip colors (groups) and plastic surface treatments (incising, appliqué, impression). The sum of all contemporary ceramic types that can be isolated stratigraphically at a site then becomes a temporal unit referred to as a ceramic complex.

For regional comparison, researchers created the ceramic sphere. Ceramic complexes from two sites are members of the same ceramic sphere when they share a majority of their principal types (Gifford 1976:12). In the case of the

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FIGURE 1.1. *Map of the Maya lowlands highlighting pre-Mamom sites described in the text. (Map by Kathryn Reese-Taylor and Debra S. Walker.)*

Maya lowlands, some of these ceramic spheres have become quite extensive after nearly a century of research. By tradition, the first ceramic complex identified and published in a region lends its name to that particular ceramic sphere. Because of their primacy in the literature, the ceramic complex names from the site of Uaxactun (Smith 1955) are commonly used by archaeologists today to relate local chronologies to the wider lowland Maya tradition. In his introduction to his volume, Robert Smith laid out the rationale for such an approach, "Uaxactun may be considered the focal point of a definite ceramic development extending north to Calakmul, south to Yaxha or beyond, east to Yaloch, and west to the Rio San Pedro Martir" (1955:2). Today we might quibble with the idea that Uaxactun was *the* focal point, though most Maya ceramicists agree it was *one of*

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the focal points for a regional ceramic sphere. Although some critics have questioned the validity and usefulness of the type: variety-mode system (see Adams 2008; Aimers 2007; Culbert and Rands 2007; Foias 2004:128–129; Love chapter 17), as Lauren Sullivan and Jaime Awe (2013:112) argued recently, it may be "the best way to provide a common language for comparison of pottery between sites," particularly in a region such as the Maya lowlands.

It was by historic accident that the lowland Maya ceramic sphere names we use today came from Uaxactun, Peten, Guatemala. The site was one of the first to be systematically excavated in the region, and it remains the focus of continuing research today (Kováč et al. 2010). Uaxactun sits on the southeastern edge of the CKU, where an outcrop abuts the lowlands or "island wetlands" from which Peten derives its name. The Classic era site core, composed of Groups A to C, sits tightly clustered atop a defensible ridge overlooking the Juventud Bajo and was investigated in the 1930s (A. L. Smith 1950). The Preclassic component, including Groups D to H, stretches out on open ground below this outcrop about a kilometer to the east. First excavated in the 1920s, the Preclassic research is best remembered for the first identification of a solar-aligned E Group (Ricketson and Ricketson 1937), an architectural form dating back to pre-Mamom times, as at Ceibal (Inomata chapter 7). Subsequent work at Uaxactun in the 1980s by the Proyecto Nacional Tikal was overseen by Juan Antonio Valdés, who investigated both the Preclassic center (Laporte and Valdés 1993) and the Classic era site core above it (Valdés 1999, 2005). Ongoing research by the Proyecto Arqueológico SAHI–Uaxactun, overseen by Milan Kováč (Kováč et al. 2010), has focused on the Terminal Preclassic Group H, expanding our understanding of how the two site cores related, including recognizing a clear 100-year hiatus between the Preclassic and Classic occupations (Kováč 2011).

Because of the long and mostly continuous occupation sequence revealed in excavation, Uaxactun was the first site to provide a complete Preclassic through Classic pottery sequence. From this material, R. E. Smith (1955) published the first complete ceramics report in the region, choosing his complex names from K'iche' terms (R. Smith 1955:3; table 1.1). It was Edith Ricketson (1937), however, who had conducted the initial stratigraphic analysis and defined the ceramic sequence a generation earlier. She was the first to recognize the Preclassic materials as discrete sequential complexes, which she divided into two stratigraphic units, named 1A and 1B. A generation later, these became Smith's Mamom and Chicanel complexes. It was in this manner that Ricketson's 1A pottery, renamed Mamom complex by Smith, became the Mamom ceramic sphere adopted by ceramicists to describe the earliest pottery produced in the southern Maya lowlands. Similarly, Ricketson's 1B pottery lent its name to the Late Preclassic Chicanel sphere.

We have since discovered that earlier pottery did indeed exist in the region but not at Uaxactun itself. Ricketson did not report finding any earlier material, nor

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TABLE 1.1. The Uaxactun ceramic sequence

Dates	*Period Names*	*E. Ricketson Complex Name*	*R. E. Smith Complex Name*	*K'iche' Mayan Meaning*
AD 550–850	Late Classic	III	Tepeu	Dominators
AD 200–550	Early Classic	II	Tzakol	Builders
300 BC–AD 200	Late Preclassic	IB	Chicanel	Concealer
600–300 BC	Middle Preclassic	IA	Mamom	Grandmother

did subsequent researchers discover more than a handful of earlier sherds there (Silvia Alvarado Najarro, personal communication, 2015). As a result, there was no extant ceramic sphere name in use when earlier material was discovered far south of Uaxactun on the Pasión River drainage at Altar de Sacrificios (Adams 1971). It was in this way that the term "pre-Mamom" came into the literature to describe the earlier period. The term first appeared in print in the early 1960s. A reference by George Cowgill, for example, noted that a "pre-Mamom phase is also present at Altar" (1964:146). As we use the term in this volume, pre-Mamom refers to a range of ceramics found stratigraphically below deposits generally containing Mamom sphere materials. Pre-Mamom here is a temporal reference for presumed contemporary materials of somewhat complex and ambiguous affiliation.

As our study area includes all of the Yucatan Peninsula, it is important to note that Mamom sphere has a more distant relationship to contemporary material in the northern lowlands. First defined at Komchen, where contemporary ceramics were described as Early Nabanche complex (Andrews 1988), the waxy monochromes and bichromes of the northern lowlands share basic similarities in form and surface treatment with their counterparts to the south. Detail on these regional relationships is outlined later in this volume (Andrews and Bey chapter 13; Stanton et al. chapter 15). By agreement, the authors in this volume have chosen to extend the use of the term "pre-Mamom" to describe material from the entire peninsula dating to roughly 1000–600 BC.

One consequence of the discovery of pre-Mamom pottery involved revising our system of nomenclature for the temporal units involved. There was no simple way to accomplish this revision based on the system already in use. In Mesoamerica generally, the Early Formative dates to about 2000–1000 BC, the Middle Formative to 1000–300 BC, and the Late Formative to 300 BC–AD 200. Because of the extensive literature already in existence, most Maya ceramicists use "Preclassic" in reference to lowland Maya temporal periods rather than "Formative," and most authors in this volume use this term, but they may be understood to be interchangeable (see Jerald Ek chapter 16; Love chapter 17; Rosenswig chapter 3). To incorporate the pre-Mamom material, the Middle

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Preclassic period has now been divided into two segments, using "early Middle Preclassic" for pre-Mamom pottery and "late Middle Preclassic" for Mamom sphere. Nakbe's Ox complex is a notable exception, having been reported as a single Middle Preclassic complex with three facets. The complexities of temporal nomenclature are the modern construction of archaeologists and should be described explicitly in advance, with apologies to the reader.

Another unresolved naming dilemma is hinted at in this book but is not yet ready for consensus building. In the lowland Maya region, the Early Preclassic has been described as Archaic or Preceramic because almost no ceramics are securely dated to this era (Lohse chapter 2). Some researchers have suggested that certain pre-Mamom materials should be assigned to the Early Preclassic (Kohut et al. chapter 14; South and Rice chapter 10) rather than the Middle Preclassic. The general difficulty in dating pre-Mamom materials accurately (Lohse chapter 2; appendix 1) makes this an awkward proposition to accept or reject at this time. Recognizing that time period designations include the full cultural assemblage of artifacts, not just pottery vessels, Robert Rosenswig (chapter 3) uses ceramic figurine styles to cross-date pre-Mamom materials with other parts of Mesoamerica, asserting that figurine styles associated with pre-Mamom pottery do in fact support an early Middle Preclassic or early Middle Formative date. The volume does improve our understanding of the wide geographic spread of early pottery in the Maya lowlands, and the increasing attention directed to the period is encouraging, so resolution of these questions in the near future is increasingly likely.

The initial pottery complexes described here vary considerably in their constituent components; indeed, the variation in initial adoptions of pottery is one of the fascinating results of this volume. Some are functionally complete complexes; that is, they included a variety of forms that could be used for most food and beverage preparation, service, and storage needs for individual and group meals as well as other utilitarian activities. Other complexes seem incomplete, lacking individual decorated service items, or cooking vessels, or represent only a beverage service perhaps associated with nonutilitarian activities. We can assume that food production and service techniques were well established before pottery arrived and that some of these processes continued unabated when pottery production was initiated; their perishable containers such as gourds, baskets, and wooden bowls are rarely attested in the archaeological record of the humid tropics. In addition, because of the sparsity of early populations, some of the early complexes are represented by very small samples. Perhaps additional vessel forms once existed in these contexts but were not encountered in excavation. Now that we know *where* to look for these early complexes, future excavations may solve issues of sparsity.

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DISCOVERING THE FIRST PRE-MAMOM POTTERY

Altar de Sacrificios was one of the first sites to reveal a previously unknown pottery complex found stratified below Mamom sphere material. These ceramics were analyzed, described, and published by Adams (1971), who named the earliest ceramics Xe complex. Located at the southern edge of the lowland Maya region, Altar is a medium-sized settlement on the Pasión River just above its confluence with the Salinas (also known as the Chixoy) River. Altar sits on a narrow triangular outcrop bordered on the north by the river, where erosion has taken portions of some mounds, and on the south by the dry Arroyo San Félix. Excavated by the Peabody Museum between 1958 and 1963 (Willey 1973), the site core consists of three major groups, with dispersed residential settlement to the west, where Xe era settlement was concentrated. Specifically, Mounds 25 and 38 in the settlement zone provided evidence for ground-level occupation, some sealed below San Félix Mamom constructions (Adams 1971:79–84; A. L. Smith 1972:130). To the east, Group B constituted the Preclassic site core (A. L. Smith 1972:72). This complex remained ritually important throughout the Classic era, materialized in the deposition of Classic era censers found atop Temple B-I (Adams 1971:figs. 95–98). Excavation did not reveal evidence for Xe era public construction in Group B, but Xe activity was discovered on bedrock and in fill below San Félix Mamom Platform B-IV, which produced an imported ground stone celt and the only Xe-linked pit burial, B-135, a young adult male found flexed and lying on his right side. As the pit itself lacked grave goods, there was no way to discern whether the burial was interred in Preceramic times or was contemporary with the Xe complex material found above it.

Despite the paucity of constructions and features, Xe contexts were consistently encountered on bedrock, and the distinctive, functionally complete ceramic sample permitted Adams to postulate a new ceramic complex (table 1.2), characterized as "very diverse in shape range and in the number of decorative techniques used. White is favored as a slip color." He also reported "typological continuity with the early facet of the San Felix Mamom which follows" (Adams 1971:4). Although he was able to compare all other Altar ceramic complexes to the equivalent Uaxactun spheres, there was no sphere affiliation for this earlier material; thus, Adam's Xe complex became a newly established Xe sphere for the region. In all, Altar produced 3,000 Xe diagnostics for ceramic analysis. Distinct pre-Mamom modes included thin slips, pastes with dark cores, thin vessel walls, polished unslipped sherds, incised design, and zoned pinhole punctation (Adams 1971:82 and see appendix 2).

While working at Altar de Sacrificios, Adams organized a short expedition about 50 km upstream to Ceibal (Seibal), where he dug test pits in Plaza A and found Xe materials below Mamom era strata there (Adams 1963; Willey 1970; Willey et al. 1975:7). Gordon Willey (1990) subsequently oversaw research at

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TABLE 1.2. Xe complex ceramic types identified in the Pasión region

Group	*Type*	*Defined by*	*Comments*
ACHIOTES			
	Achiotes Unslipped: Raudal Variety	Adams 1971	
	Baldizón Punctated: Baldizón Variety	Adams 1971	Real 3 Marker at Ceibal
	Baldizón Impressed: Unspecified Variety	Sabloff 1975	Real 3 Marker at Ceibal
	Unnamed Appliquéd	Sabloff 1975	
	Farina Incised: Farina Variety	Adams 1971	
	Unnamed Red-banded	Sabloff 1975	
	Special: Dentate Stamped Unslipped	Adams 1971	
ABELINO			
	Abelino Red: Abelino Variety	Adams 1971	
	Setok Fluted: Setok Variety	Sabloff 1975	
	Yalmanchac Impressed: Yalmanchac Variety	Sabloff 1975	Real 3 Marker at Ceibal
	Pico de Oro incised: Pico de Oro Variety	Adams 1971	
	Unnamed Chamfered: Unspecified Variety	Sabloff 1975	Real 3 Marker at Ceibal
	Special: Red Stucco on Abelino Red	Adams 1971	
HUETCHE			
	Huetche White: Huetche Variety	Adams 1971	White pottery decreases in frequency after Real 1
	Comistun Incised: Comistun Variety	Sabloff 1975	
	Unnamed Appliquéd	Sabloff 1975	
	Toribio Red-on-cream: Toribio Variety	Adams 1971	Real 3 Marker at Ceibal
	Unnamed Red and Cream	Sabloff 1975	White exteriors and red interiors
	Unnamed Red and Cream: Incised Variety	Sabloff 1975	Real 3 Marker at Ceibal
	Edmundo Fluted: Edmundo Variety	Sabloff 1975	
	Special: Modeled Frog Head on Huetche White	Adams 1971	
CRISANTO			
	Crisanto Black: Crisanto Variety	Adams 1971	Black pottery increases in frequency during Real 3
	Chompipi Incised: Chompipi Variety	Adams 1971	
	Crisanto Black: Appliqué Variety	Adams 1971	Real 3 Marker at Ceibal

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TABLE 1.2.—*continued*

Group	*Type*	*Defined by*	*Comments*
	Valdemar Fluted: Valdemar Variety	Sabloff 1975	
	Datile Red-on-black: Datile Variety	Adams 1971	Gray paste with black core; red-slipped exterior over black polished slip
	Unnamed Chamfered: Unspecified Variety	Sabloff 1975	Real 3 Marker at Ceibal
	Special: Incised, Punctated, Black Slipped	Adams 1971	
	Special: Red Stucco on Crisanto Black	Adams 1971	
YALTATA			
	Yaltata Orange: Yaltata Variety	Adams 1971	Black-cored paste, calcite temper; waxy, hard, polished slip
UNSPECIFIED			
	Mars Orange (weathered)	Adams 1971	

Source: Adams (1971) and Sabloff (1975)

Ceibal between 1964 and 1968. Excavation consistently revealed Xe materials near bedrock and stratified below Escoba Mamom deposits; however, unlike Altar de Sacrificios, these materials produced evidence for early public constructions at Group A, on the highest original ground surface at the site (Sabloff 1975:230). These features included a floor associated with a deep test into the Central Plaza and a platform found in a test into the East Court, both of which saw further investigation by later researchers.

Jeremy Sabloff (1975) analyzed approximately 213,000 sherds to develop the complete Ceibal ceramic sequence, and 14,000 diagnostics (6.6%) were retained to compile the final type descriptions for the monograph. Of these, Real Xe complex comprised 1,368 slipped diagnostics and 200 unslipped rims (Sabloff 1975:9–10). Sabloff generally followed Adams's initial sort of the Xe materials. He noted red-slipped sherds were matte red rather than slightly waxy as Adams had described and, along with other modal differences, suggested the Ceibal material might be earlier. Using the association with public constructions, in tandem with radiocarbon assays, Sabloff discerned a probable early facet Real Xe that likely predated the Altar materials by about 100 to 200 years. In 2006, Takeshi Inomata and colleagues returned to Ceibal to begin new research focused on Real complex. He reports on the results of his recent research on Real Xe complex pottery (Inomata chapter 7).

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During the 1960s and 1970s, "Xe sphere" was used to describe these early materials in the Pasión drainage, but presumed contemporary pottery being excavated by the University of Pennsylvania at Tikal, referred to as Eb complex (Culbert 1977:36), and along the Belize River at Barton Ramie, referred to as Jenney Creek complex (Gifford 1976), was not similar enough to warrant sphere membership (table 1.3). Under those circumstances, extending the Xe ceramic sphere name (the first in publication) to those industries did not seem appropriate. Ultimately, Norman Hammond's excavations in northern Belize at Cuello and the discovery of even more new pottery types, termed Swasey complex (Hammond 1991; Kosakowsky 1987), resulted in the switch to the more generic term "pre-Mamom," though this was complicated by an out-of-context radiocarbon date at Cuello (Hammond 1982; Hammond et al. 1979) that pushed Swasey into the Early Preclassic for a decade until the dating issue was resolved (Sagebiel et al. chapter 4; appendix 1). At about the same time, the discovery of Cunil pottery at Cahal Pech in the Belize Valley (Awe 1992; Sullivan and Awe chapter 5) further expanded the date range for pre-Mamom and, for the first time, suggested potentially two sequential pre-Mamoms in the region, with Cunil substantially predating Jenney Creek.

The Pennsylvania Tikal data were only recently published (Culbert and Kosakowsky 2019), documenting that much of the Eb complex material analyzed by Culbert dated after about 800 BC and was mixed with Mamom types (Culbert and Kosakowsky 2019:13), though subsequent work by the Proyecto Nacional Tikal (1972–1980) better defined an early facet Eb component associated with the E Group there (Laporte and Fialko 1993, 1995; Neivens chapter 9). Current data suggest that the Cunil and early facet Xe complexes began production by 1000 BC, while late facet Eb correlates more closely with Jenney Creek. This variation illustrates the complexity of the pre-Mamom problem: some of the diversity is chronological, and not simply representative of spatially distinct contemporary spheres. Now most ceramicists acknowledge that the pre-Mamom era can be subdivided into two facets, if not more, the latter overlapping somewhat, and certainly related developmentally, to Mamom sphere. In recent years, investigators have accelerated their research into the pre-Mamom era, and that attention has proved fruitful. This volume documents the wide geographic range of pottery technology in the early Middle Preclassic, involving the whole of the Yucatan Peninsula, Belize, and Peten. Detail on most of these recent investigations is included in other chapters; however, one further site description and pottery sample, summarized in this section, demonstrates the complex issues associated with intersite comparison.

Other than northern Yucatan, most pre-Mamom pottery discovered to date stems from sites associated with river systems and coastal access. We assume these locations facilitated long-distance exchange, along which ideas, technologies,

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and materials flowed, as several authors in this volume discuss. The one outlier to date is the landlocked and poorly understood CKU (Central Karstic Uplands) of southern Campeche and northern Peten, so it was somewhat surprising to encounter a substantial pre-Mamom occupation recently in the middle of the CKU at Yaxnohcah, Campeche, Mexico (Walker chapter 12). El Mirador lies about 25 km to the southwest of Yaxnohcah, on the western fringe of the CKU, in another somewhat unlikely location for the discovery of early pottery technology. The massive Late Preclassic site of El Mirador anchored a complicated landscape of regional settlements connected to the site core by radial *sacbeob*. Thirteen km southeast, at the end of one *sacbe*, lies Nakbe. It was there that researchers identified dense early settlement on what was prime agricultural land, consisting mostly of upland ridges and *bajo* margins (Hansen 1992, 1998, 2005:55). Excavations beginning in 1987 documented that Nakbe reached its apogee in the late Middle Preclassic period (Mamom sphere), prior to El Mirador's Late Preclassic (Chicanel sphere) domination of the region (Hansen 2005).

The Middle Preclassic component discovered at Nakbe, referred to as Ox complex, was defined by Donald Forsyth (1993), who characterized the predominant types as Mamom sphere Flores Waxy Ware. Unlike other researchers, however, Forsyth suggested that Ox materials spanned the entire Middle Preclassic period and that some Ox types were partial contemporaries with pre-Mamom Xe, Swasey, Eb, Jenney Creek, and possibly Cunil ceramics (Forsyth 1999:51, 2006:499). More recently, Ox complex was divided into three facets based on radiocarbon dates, with early and middle Ox now thought to be associated to some extent with pre-Mamom materials (Hansen 2005:57–63, 2018:155–158). Late Ox pottery, however, is fully within Mamom sphere, and dates Nakbe's apogee in construction, population, and influence to 600–350 BCE.

Early Ox pottery was found in very limited quantities in excavation trenches throughout the Nakbe site core, but only a few primary contexts were encountered, most notably at the base of the central pyramid in the eastern E Group platform, Structure 51. Nakbe Stela 1 was discovered in the E Group plaza in front of Structure 51, arguably making it a very important early public building (Hansen 1992:343, fig. 113). Early Ox contexts included packed earthen floors with patterns of postholes carved into bedrock and perishable superstructures evidenced by daub. Early Ox pottery found there was comprised principally of unslipped tecomates (neckless jars) and bowls. Of the unslipped tecomates, some had red-painted rims, preslip or postslip incision on the rims, or fingernail impressions on the vessel body (Hansen 2018:157, fig. 7.4a–e). Similarly, some of the unslipped hemispherical bowls had red painted rims, incision around the rim—one with a double-line-break design—or fingernail impression. Another form was described as a flat or concave base black-slipped bowl with flaring rim and incised design (Hansen 2005:59, fig. 5.5e).

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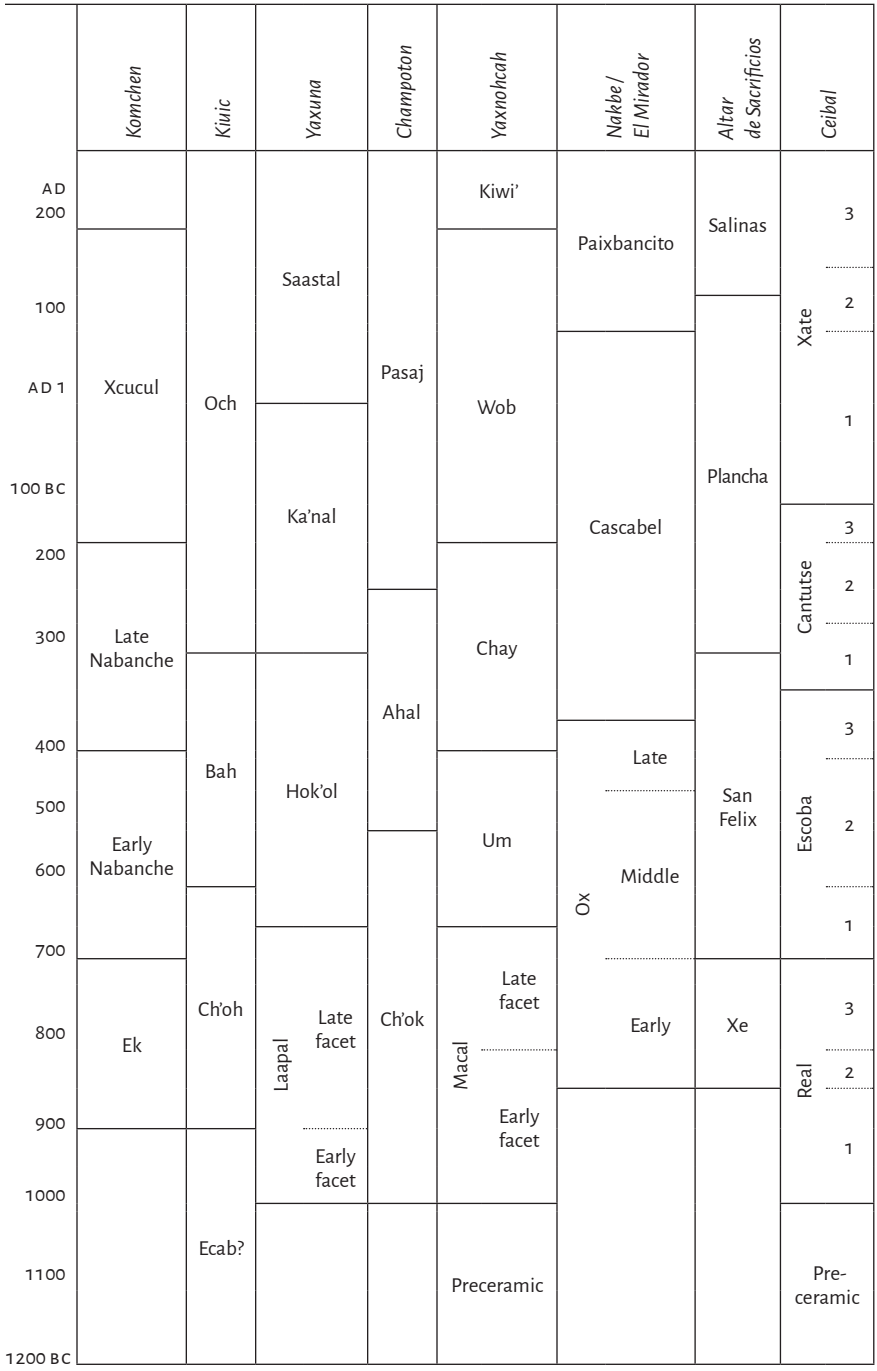
TABLE 1.3. Selected lowland Maya pottery sequences with early Middle Preclassic occupations



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Uaxactun/ Holtun	*Tikal*	*Nixtun-Ch'ich'*	*Nakum*	*Holmul*	*Pacbitun*	*Cahal Pech*	*Ka'kabish*	*Cuello*
Mat-zanel	Cimi	Kax: Late facet	Ajkok	K'ak; Wayab	Ku	Xakal: Late facet	Rhogeesa	Cocos
Chicanel	Cauac; Chuen	Kax: Late facet; Early facet; Nix: Late facet	Ajkok; Tzutz; 'Ayin	Wayab; Itzam-kanak	Ku; Puc	Xakal: Late facet; Early facet	Rhogeesa	Cocos
Mamom	Tzec	Nix: Late facet; Early facet	'Ayin	Itzam-kanak; Yax Te	Mai: Late facet	Xakal: Early facet; Kanluk: Late facet	Rhogeesa; Noctilio	Cocos; Lopez
pre-Mamom absent at Uaxactun	Eb: Late facet; Early facet	Nix: Early facet; Chich; K'as	'Ayin; Chä-mach; Preceramic	Yax Te; K'awil	Mai: Early facet	Kanluk: Early facet; Cunil	Mormoops	Bladen; Swasey; Pre-ceramic

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Most middle Ox radiocarbon dates derived from trenches excavated into the same E Group building, Structure 51. These contexts were more substantive and stem from a time when Nakbe reportedly covered about 50 hectares. Middle Ox constructions included leveled platforms and low wall stubs, lime plaster floors, and wattle-and-daub walls. In these contexts, middle Ox ceramics were found in dense middens, together with human and zoomorphic solid figurines, obsidian from San Martin Jilotepeque and El Chayal, and worked Caribbean conch shell (Hansen 2005:62). Middle Ox pottery is described as a vibrant collection of early facet Mamom types, perhaps with more plastic modification than found with later materials (Forsyth 1993:41). One unique vessel, likely harkening back to techniques of gourd decoration prior to adopting pottery technology, is described as including black-slipped sherds covered with red and green stucco applied in geometric patterns (Hansen 2005:62).

According to David Cheetham, Forsyth illustrated a few examples of sherds from the nearby site of El Mirador that share modes with the pre-Mamom Cunil complex. One example is a cream-slipped, horizontal-rimmed plate that Forsyth defined as Pital group, but Cheetham compared it with the Cunil type Kitam Incised (Cheetham et al. 2003:624, quoting Forsyth 1989:17, fig. 4QQ). Although it is quite logical to anticipate that a distinct pre-Mamom component may exist at the base of the behemoth that is El Mirador, finding discrete contexts could be difficult because of the massive Late Preclassic overburden, an illustration of one of the difficulties in pursuing pre-Mamom research: investigators must target early contexts to find them, and, even then, small sample size and spotty distribution below a significant overburden make it difficult to ensure success.

In general, Ox complex exemplifies some of the issues pre-Mamom researchers face in creating an overview through intersite comparison. Assuming the 1000 BC start date for the early facet proposed by Richard Hansen (2005), a 650-year-long Ox complex with only faceted changes seems unlikely. With the reported descriptions, however, we can place Ox complex into the overall pre-Mamom to Mamom chronology (table 1.3). For example, Inomata (chapter 7) has identified three pre-Mamom facets at Ceibal, the latest of which, Real 3, probably is coeval with middle Ox. Furthermore, several authors describe similar late facet pre-Mamom materials that appear to overlap with middle Ox complex (see Callaghan chapter 11; Crow and Powis chapter 6; Sullivan and Awe chapter 5). Where defined, all late facet pre-Mamom collections are clearly transitional between localized pre-Mamom industries and the much more uniform Mamom sphere. The smooth transition between late facet pre-Mamom and Mamom sphere at many sites, in view of the spotty and sometimes incomplete samples, makes it difficult to know exactly where to place the beginning of Mamom sphere. Should it be at the onset of the new waxy ware technology, or at the complete disappearance of the old? Although researchers in this volume consider

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these issues at their individual sites, there is not one clear, correct answer for all sites. The character of the pre-Mamom period is much more ephemeral and site specific, and the time frame during which each site joined Mamom sphere is not necessarily simultaneous. That said, burgeoning evidence from other sites suggests further subdivision of Ox complex might be appropriate. Specifically, the small sample of early Ox materials derived from bedrock contexts at Nakbe may comprise a distinct temporal component, yet, as previously mentioned, it consists principally of serving vessels. This is true at Yaxnohcah as well (Walker chapter 12), where no apparent cooking vessels have been identified in the earliest contexts, though storage jars do occur. In both cases, sampling error may be involved, as the locations excavated to date may have simply excluded kitchen debris. Alternatively, some settlements may have maintained preceramic cooking traditions for at least a portion of the pre-Mamom era. The earliest pottery users in the lowland Maya region, it appears, are both difficult to track down, and singularly independent in how they adopted pottery technology.

BUILDING PRE-MAMOM THEORIES

Other than the methodological issues associated with sorting, comparing, and dating pottery outlined in the preceding sections, there are major theoretical considerations to muddle through when compiling data on the origins of pottery production in the Maya lowlands. As Robert Rosenswig (2010, chapter 3) reminds us, the beginning of Mesoamerican pottery production was perhaps a thousand years prior to its first appearance in the Maya lowlands; indeed, our subjects were relative latecomers to the adoption of ceramic technology. Jon Lohse (2010, chapter 2) further disabuses us of the idea that the immigration of new peoples into a vacant landscape explains the arrival of pottery; rather, people had been living in the Maya lowlands for untold generations when pottery was first produced there. Rosenswig (2010) further decouples the adoption of pottery from either sedentism or farming, noting, as many researchers have (see Barnett and Hoopes 1995), that each is possible without the others in certain circumstances. The core question for this pre-Mamom volume, then, can be summarized as follows: What set of circumstances occurred at about 1000 BC in the Maya lowlands that resulted in sedentism, agriculture, and the production of pottery over the course a relatively small number of generations?

This is, of course, principally a pottery book, and not a theoretical treatise on the origins of a complex social order (see Brown and Bey 2018 for recent perspectives on this greater thesis for the lowland Maya), yet explaining the phenomenon of early pottery production involves some discussion of the larger issues. The authors represented here outline a suite of data sets that dovetail to produce a relatively rapid expansion of sedentary complexity across a wide swath of the Maya lowlands, including not only locations with coastal or riverine

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access, which were popular in the Preceramic era (Lohse 2010; Lohse et al. 2006), but inland sites that must have been accessed by a Middle Preclassic road system such as that found around El Mirador. Furthermore, the recent discovery of the massive site of Aguada Fénix in Tabasco in 2018 (Inomata et al. 2020), and its Early Preclassic dating in tandem with Xe-like pottery (ca. 1200 BC; appendix 1), suggests that the idea of a monumental central place was embedded in the set of cultural norms adopted by early pottery producers in the southern lowlands. Our research indicates that the principal components of this dramatic shift across the region, simply put, included (1) greater dependence on maize (*Zea mays*) agriculture, (2) exploitation of limestone caprock, and (3) greater reliance on a preexisting system of long-distance exchange.

Rosenswig (chapter 3) reviews the argument for increasing reliance on maize across Mesoamerica after 1000 BC. What is unique for the lowland Maya is that pottery and intensified maize agriculture were virtually simultaneous adoptions there, whereas pottery was present long before intensified maize agriculture elsewhere in Mesoamerica. Two specific changes appear to account for the new concentration on a single crop. First, new and more productive strains of maize were developed at this time, likely through ongoing exchange of local varieties using established trading networks, and the hybrid vigor that exchange would have produced. Second, there was a change in how maize was processed that made it more nourishing. Crucial to maize becoming a dominant crop was the development of nixtamal, from the Nahuatl words roughly translated as "lime dough" (Blake 2015:183–185). Nixtamal (hominy, or *masa* when ground) was produced by soaking and cooking maize kernels in an alkaline solution of water and wood ash or slaked lime. Through a chemical process, nixtamalization releases necessary nutrients—for example, niacin, lysine, and tryptophan, —that are not digestible otherwise. *Masa* consumed as *pozole*, tamales, or tortillas, in combination with beans, can provide complete nutrition for the long term; without nixtamalization, amino acid deficiencies and nutritional disease are inevitable on a predominantly maize diet. After 1000 BC, nixtamal eventually became the staple maize product throughout North America, including Mesoamerica, but apparently it was not universally adopted farther south (Blake 2015:185).

There are multiple consequences to a major shift from broad-spectrum horticulture with a dependence on riverine or coastal protein sources, to a singular focus on one staple crop with new processing protocols. One of these consequences is a more permanent attachment to the landscape. In the context of a more productive and nutritious form of maize, the probable use of swidden agriculture eventually resulted in an expansionist perspective, with identifying available arable land an important component of the future settlement plan. Tikal provides an instructive example. Although not situated on a major river, the Tikal area probably was occupied in the Preceramic period based on easy

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access to substantial chert deposits, a perennially valuable resource (Laporte and Fialko 1995:44). Tikal's first pottery users are represented in the early Middle Preclassic Eb complex (Coe 1965:11; Culbert 1977:28–30, 1993:5; Culbert and Kosakowsky 2019). In addition to good-quality chert resources, the impetus for Eb farmers to stay and expand settlements around Tikal seems logical based on the availability of well-drained, defensible high ground on the fringes of seasonally inundated *bajos*. In his regional settlement study there, Dennis Puleston defined what he called the Koxol settlement pattern for the Middle Preclassic period, noting that most early Tikal inhabitants established "tightly knit hilltop hamlets" (1973:310) that overlooked wetland or lakeside locales. As Penn Project researcher and ceramicist Robert Fry put it, "Eb settlements tend to be found in areas judged by present day milperos . . . to be the most productive terrain, high, well drained, slightly sloping land fairly close to water sources" (1969:138). More recently, researchers studying the Preceramic to ceramic transition in the Peten lakes region found evidence for swidden agriculture in pollen cores that significantly predated the adoption of pottery (Cheetham et al. 2010; Lohse 2010), suggesting agrarian populations already inhabited the region when the first ceramics were produced. Taken together, the landscape conditions, populations, and local farming traditions were all in place in the Tikal region prior to the shift to a singular focus on maize agriculture. This situation likely played out similarly at other populations centers throughout the Maya lowlands.

Another consequence of the shift to intensive maize agriculture involves the technology associated with nixtamal production. Although water-tight baskets and similar gourd containers surely existed, pottery containers may have been superior for soaking maize kernels overnight. If nixtamalization was invented in another part of Mesoamerica, which seems likely (Rosenswig chapter 3), perhaps it first reached lowland Maya peoples together with the pottery vessels needed for soaking maize kernels and was adopted as a package. In any case, the more permanent living arrangements needed to manage intensive maize crops arguably made ceramic technology easier to adopt.

Original discovery of the process of nixtamalization may have been an accidental consequence of mixing alkaline wood ash into the maize cooking pot; however, the Maya eventually utilized the karstic landscape itself to produce the alkaline slaked lime product for nixtamal. The importance of limestone and the lime cycle for the Preclassic Maya cannot be overstated (see Freidel 2018:372–373 quoting El Mirador researcher Carlos Chiriboga). The lowland Maya region itself is composed of a raised Pliocene limestone seafloor, so the material was ubiquitous. By late facet pre-Mamom times (ca. 800–700 BC), lime plaster was widely used, indicating the entire lime cycle was clearly understood. The cycle begins with excavating limestone from bedrock. The limestone (calcium carbonate, $CaCO_3$) was then burned to produce the very caustic quicklime (calcium

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oxide, CaO), releasing carbon dioxide (CO_2) into the atmosphere. In the next step, water (H_2O) was added to the calcium oxide to produce the more stable but still alkaline slaked lime [calcium hydroxide $Ca(OH)_2$]. Slaked lime constituted the base component that can be combined with other ingredients to make mortar or plaster; the same product can be used to make nixtamal. When mortar or plaster hardens after application, carbon dioxide from the air completes the lime cycle, releasing water and essentially re-creating the chemically identical original limestone ($CaCO_3$).

The elegant logic of the lime cycle was clearly not lost on pre-Mamom peoples. First, limestone is intertwined with the maize cycle. As bedrock, it is the base from which maize plants grow, and, after it is burned to produce slaked lime, it is cooked with maize to make it more nutritious. Limestone is also an essential component in the Preclassic process of placemaking. Several researchers have described this process in pre-Mamom times, which included (1) clearing a hilltop location of topsoil to reveal the limestone bedrock, (2) carving the bedrock into raised platforms with plazas, as at Ceibal (Inomata chapter 7), and (3) excavating holes in bedrock to form quadripartite caches that mimic the maize cycle. At Cival, for example, greenstone axe "seeds" were "planted," also symbolic of *milpa* preparation. They were then "watered" by breaking jars filled with liquid during the depositional rite (Estrada-Belli 2011:80).

It is interesting that the first limestone "buildings" in the lowland Maya region are the product of extractive technology; that is, platforms were sculpted by carving away part of the bedrock around them, leaving a permanent platform with an associated plaza. Only in the late facet pre-Mamom is there consistent evidence for the use of cut limestone blocks in an additive, constructive sense to build up permanent stone structures. One theoretical implication of this extractive process affects our dating of the Preceramic to ceramic transition in places where habitation continued close to or on the same location. Lohse (2010) summarized a number of settlements in northern Belize that spanned this transition, for example, Colha, which sits on an important chert source, and probably also Cuello. If we understand the extractive process properly, then it appears that in clearing away the topsoil to reveal the limestone caprock for the first time, pre-Mamom place-makers would have disturbed any in situ Archaic or Preceramic remains, including burned wood suitable for radiocarbon assay. It is likely, then, that during the course of placemaking, pre-Mamom pottery debris may have been mixed with Archaic or Preceramic remains, and that some surprisingly early dates, as at Cuello (Hammond et al. 1979), can be explained as the result of pre-Mamom modifications to the limestone caprock that conflated later ceramics with earlier residues in midden lenses.

In addition to intensive maize agriculture and new entanglements with limestone, exchange systems were integral to the development of pre-Mamom

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settlements across the Maya lowlands. Once again, we expect these systems were already in place during the Preceramic period, but the evidence is equivocal. What is clear is that the pre-Mamom phenomenon consisted of a set of contemporary cultural adoptions, and pottery technology was only one of them (Lohse 2010; see also Reese-Taylor chapter 18). Comparative research described here indicates pre-Mamom communities participated in long-distance trade in several exotic materials. Obsidian blades were probably imported as cores, but most evidence to date consists of flake and blade segments. Greenstone axes were imported for ritual deposits, and worked Caribbean conch shell beads were traded widely (Crow and Powis chapter 6). Furthermore, pre-Mamom potters created their own ceramic figurines and incised designs on pottery, yet they followed broader Mesoamerican decorative incision styles on their locally produced pieces (Neivens chapter 9; Sullivan and Awe chapter 5), indicative of direct connections to the symbol sets used in other parts of Mesoamerica (Love chapter 17). The catalogue of shared incised designs on Cunil pottery, for example, has been linked to the maize cycle (Garber and Awe 2009), closing the loop on yet another connection to increased dependence on maize.

We assume perishable goods were traded long distance as well, particularly along water routes, but the evidence is equivocal. Certainly, by late facet pre-Mamom times, cacao beverage production is suggested in the spouted vessels found in several complexes (see Callaghan chapter 11), and its documented antiquity in other parts of Mesoamerica as a ritual drinking and feasting complex (Powis et al. 2007) implies a strong impetus to begin long-distance trade in the first place. In sum, trade systems established in prior periods intensified during the pre-Mamom period, inspiring the bulk adoption of a series of pan-Mesoamerican industries, entangling the Maya lowlands for the first time in intensive maize production and its consequent sedentism. The pottery we are discussing here is but one aspect of that bulk adoption.

ORGANIZING THE PRE-MAMOM VOLUME

This volume is anchored in a relatively brief but dynamic period of time, generally in the range of 1000–600 BC. The introductory chapters expand on how we define this period, while the balance of the volume is arranged geographically, considering sites in Belize, then Peten, Guatemala, and finally Mexico. A comparative section and two appendices complete the volume.

In chapter 2, Jon Lohse focuses on the end of the prior Preceramic (Late Archaic) period, summarizing the growing body of radiocarbon evidence for the 1200–1000 BC beginning date for pottery production, thanks in part to recent innovations in dating method accuracy. He also outlines our most productive chronometric strategies going forward: systematic selection of materials for dating and a more standardized reporting method (see appendix 1). In chapter 3,

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Robert Rosenswig takes on the larger issues of early pottery industries across Mesoamerica, fitting the Maya lowlands in at the tail end. He suggests broad cultural connections must have been in place prior to adoption, so Preceramic lowland residents were aware of the pottery traditions across Mesoamerica long before they began making their own vessels. In his view, the principal cause for the adoption of pottery in the Maya lowlands was based on more productive maize varieties that came on the scene about 1000 BC, allowing for settled life away from the lowland rivers and lakes where Preceramic peoples had congregated and practiced horticulture for millennia.

The next set of chapters stem from work at Belizean sites. In chapter 4, Kerry Sagebiel and colleagues describe Swasey ceramic sphere, first identified in Corozal District, northern Belize, and later studied in detail at Cuello, in Orange Walk District, by Laura Kosakowsky, who defined Swasey sphere. Describing a largely northern Belize phenomenon, Sagebiel details the contemporary Swasey sphere Mormoops complex from Ka'kabish and suggests that this early pottery was involved in an instance of placemaking, marking public spaces at Ka'kabish that remained ritually important for many generations. Moving to the Belize Valley, in chapter 5, Lauren Sullivan and Jaime Awe describe the Cunil pottery first defined from Cahal Pech, and later reported from a number of sites in the valley. Cunil pottery producers used incised design to illustrate important ritual themes that the authors suggest stem from elite actions associated with emerging complexity. The authors note that the distinctive Cunil pottery shows clear developmental ties to later pottery from the Belize Valley, implying a continuity of populations. Finally, in chapter 6, Kaitlin Crow and Terry Powis detail the Mai complex at Pacbitun, which has ties to late facet pre-Mamom. Potters at this remarkable site produced a large amount of Savana Orange pottery, to the exclusion of nearly all other types. Pacbitun was the site of a vibrant Caribbean conch shell jewelry production facility, with material imported at least 80 km upriver from the coast and finished goods exported widely to sites along the trade network.

Moving on to Peten, Guatemala, Takeshi Inomata takes on Real Xe pottery from Ceibal in chapter 7. He stresses the importance of detailed stratigraphy, including collecting multiple radiocarbon samples from primary contexts to ensure the best results. Inomata used Bayesian statistics and modal analysis to refine Real complex into three facets with very precise timelines, enabling us to study the development of Real pottery through time. In chapter 8, Jarosław Źrałka and colleagues report on new research at the site of Nakum. They argue that the Preclassic northern group comprises an instance of placemaking, evidenced by a two-chambered carved bedrock steam bath contemporary with pre-Mamom Chämach complex ceramics. Nakum is one of only a few sites to exhibit continuity from the Preceramic period, with material evidence in the

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stone tool industries as well as early radiocarbon dates, thus suggesting great antiquity to populations in the region. In chapter 9, Nina Neivens reviews the pre-Mamom K'awil complex pottery from Holmul, comparing it with early Eb complex pottery from a chultun deposit at Tikal. She constructs an argument that K'awil pottery comprises a feasting subcomplex meant for use in special public contexts. She points to large-diameter plates as indicative of communal feasting events. Incised decoration on many of these plates and tecomates varies between the Tikal and Holmul collections, reflecting the potters' preferences and the development of local identity. In chapter 10, Katherine South and Prudence Rice draw on the earliest ceramics from the uniquely gridded Preclassic site of Nixtun-Ch'ich' in the Peten lakes region. They propose that these earliest ceramics comprise two sequential and distinct pre-Mamom complexes, termed K'as and Chich. They further assert that pre-Mamom materials should fall within the Early Preclassic period rather than the early Middle Preclassic and, more precisely, that K'as complex should be considered late Early Preclassic (LEP), while Chich should fall in the terminal Early Preclassic (TEP) period. They also document the use of ash temper in K'as and Chich pastes. In the final Peten offering, chapter 11, Michael Callaghan reviews the regional evidence for late facet pre-Mamom Mars Orange Paste Ware from the perspective of the site of Holtun. He notes that this ware was produced and exchanged at multiple locations but is rare or absent from sites outside the Belize Valley and central Peten region. Based on contextual analysis, he suggests the pottery was featured in ritual beverage consumption and may have related to a social and economic exchange system.

Moving on to Mexico, in chapter 12, I describe the recently excavated pre-Mamom Macal complex from Yaxnohcah in the CKU of southern Campeche. Somewhat surprisingly, the material falls within Xe sphere. Thanks to lidar, this large Preclassic site is now known to have an extensive Middle Preclassic occupation, including a widely dispersed Macal component that can be accessed within 1 or 2 meters of ground surface without significant Classic overburden. Moving north, in chapter 13, Will Andrews and George Bey outline the case for Ek complex, covering the history of its excavation and description at Komchen, and documenting its secure pre-Mamom dating at Kiuic and other recently excavated sites in Yucatan. Next, in chapter 14, Betsy Kohut and colleagues discuss the history and current interpretation of Yotolin Pattern-burnished, previously thought to be restricted to a single bottle form and dating to the Early Preclassic. Recent research has expanded the number of sites, vessel forms, and types contemporary with Yotolin. The authors propose that these materials now constitute a newly expanded Ecab complex, which predates Ek complex, positing two sequential pre-Mamom complexes for the region. Due to a lack of radiocarbon samples, it is as yet unclear whether Ecab dates to the late Early Preclassic or early Middle Preclassic period.

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In chapter 15, Travis Stanton and colleagues report on very recent excavations into the E Group at Yaxuna, Yucatan. The Laapal complex includes early and late facets. Late facet Laapal shares traits consistent with the transition to waxy ware monochromes of the related Mamom sphere and is similar to Komchen's Early Nabanche complex. Although only a very limited sample of early facet material has been excavated to date, it is related at least peripherally to the pre-Mamom Ek ceramic sphere of northern Yucatan. Finally, in chapter 16, Jerald Ek reports on the pre-Mamom Ch'ok complex, an unanticipated result of his recent Champoton River survey that targeted later phases. The first early Middle Preclassic material identified in the region was found stratified below Mamom sphere pottery at several sites on the coast and also upstream. He suggests the coastal material is slightly earlier, with expansion upriver as agriculturalists adapted to the new environment.

We conclude the volume with comparative and summary discussions. In chapter 17, Michael Love offers a comparative look at pre-Mamom pottery from the perspective of Conchas Phase La Blanca on the Pacific coast. Love describes his analytical method, which is based on wares rather than type: variety-mode. He finds that some formal attributes seem universal, such as the flat-bottomed bowl, but that in general Conchas is not very closely related to pre-Mamom. He suggests that the extent of communication between the regions is in ideas rather than specific goods. In chapter 18, Kathryn Reese-Taylor circles back to the Olmec heartland and draws broad comparisons between the development of sedentary societies in early Middle Preclassic eastern Mesoamerica with the Isthmian lowlands to the west. She musters the data from various material data sets to document region-wide connectivities that developed between 1000 and 700 BC, connections that forged a new regional identity that we refer to as Maya today.

Appendix 1 lists selected radiocarbon dates from sites described in this manuscript, and elsewhere in print, that represent the earliest and best dates we have in clear association with the Preceramic to pre-Mamom transition. We recognize that some pottery may be mixed with Preceramic or even Archaic charcoal deposits that cannot be discerned in excavation. What is significant about this table is that the growing number of dates from recent research cluster around the same time range, solidifying the case for a real and broadly distributed pre-Mamom component. Jon Lohse is responsible for the organization of appendix 1 and for calibrating all dates to the same standard (IntCal20) for better comparison.

Appendix 2, suggested by two anonymous reviewers, was added as a complement to the chapter texts. It provides a shorthand view of the principal types and varieties that define the pre-Mamom ceramic complexes presented here. The tables are reported by ceramic sphere. Each table is organized by ceramic group and includes principal identifying attributes related to slip, paste, form,

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and decoration. It also includes a column for presumed function. In the final column, the reader is referred to author(s) and relevant chapter(s) in the text for further reading.

RECONSIDERING THE PRE-MAMOM ERA

Originally an afterthought to the Uaxactun ceramics report, the pre-Mamom period is now taking shape. Building on the first generation of investigators, and following the spate of recent research, what we know now about pre-Mamom peoples can fill volumes, as evidenced here. By compiling the data sets available to us, some general themes play out repeatedly at sites from Komchen in the north to Ceibal in the south, from Cuello in the east to Champoton in the west. First is the idea of place and placemaking. The karstic landscape of Yucatan and its impenetrable forests, much of it lacking navigable rivers, required specific subsistence strategies to become "home" to the first potters. Permanence did not happen immediately, but over relatively few generations, home became a context for the accumulation of material surplus and wealth, some of which was returned to the earth in placemaking rituals at sites such as Ceibal and Ka'kabish. Pre-Mamom placemaking revolved around the maize cycle, evidenced in the earliest E Group architectural alignments, which provided a giant calendar for organizing planting and harvesting (Milbrath 2017). First carved from karst outcrops on high ground, and later built of cut limestone blocks and mortar, public architecture itself required substantial community investment to succeed in the venture of placemaking.

To some extent, pre-Mamom ceramics are proxies for ancient communications networks through which ideas about material objects passed. The pre-Mamom horizon constituted a renaissance throughout much of Mesoamerica—where ideas, technology, and exotic goods moved at an increasing pace along well-established exchange routes, by land, river, and sea, bringing new crops, new ideas, intensified social relationships, and the technology to support those novelties. The vehicle for such intensified interaction apparently was embedded in new forms of social relationships, including public feasting and drinking events, evidenced in substantial midden deposits. For example, the special deposit PNT-006 at Tikal, described by Nina Neivens (chapter 9), comprised a chultun-like feature dug in front of an early version of Structure 5D-87. The pit held 10 cubic m of black soil and ash deposits that excavators interpreted as the redeposited remains of public rituals (Laporte and Fialko 1993:11–12). Amid the ashes, the pit held 10,000 Eb complex pottery fragments, chert, bone (some burned), ceramic disks and pendants, and 11 solid figurine fragments, some painted, only one of which had head and body attached (Laporte and Fialko 1995:46, fig. 5). Inclusion of a burned interior base of a Calam Buff cylinder censer indicated ritual activity. The agricultural year was embedded in these rites in part through the use of

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serving plates and drinking vessels incised with a common set of designs reflecting aspects of the maize cycle (Garber and Awe 2009).

Although this adaptation to nixtamal and permanence was relatively rapid, independent communities of potters interpreted the new technology in very localized ways; hence, ceramicists have identified a set of distinct but overlapping ceramic complexes and spheres for the pre-Mamom period. These smaller spheres—Xe, Eb, Swasey, Cunil, Ek, and others—share formal and symbolic sets of modes but reflect clear local identities, a corollary to placemaking. The situation reversed over the generations, certainly by 700 BC, when the intensity of interaction increased and populations probably reached a critical threshold. By 600 BC, Mamom sphere emerged as the single, widely accepted pottery standard throughout the region. Pre-Mamom potters may not have thought of themselves as members of a larger ethnic community when they began making pottery, yet from those first efforts they forged a regional ceramic identity. We do not know how they acknowledged this collective identity or what they called themselves; today we refer to them as the earliest lowland Maya. Some of their stories are rendered in this volume in the descriptions of the pottery they made and the contexts in which it was used.

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