

Introduction/Background

When I got to Lamanai in northern Belize, I was faced with a large collection of well-preserved pottery... the Lamanai collection is, in my opinion, one of the most important ceramic collections in the Maya lowlands...

—Aimers (2013a:xiii).

When we first got started on this project our intent was to organize and label the hundreds of digital scans of the Lamanai pottery¹ illustrations that were drawn by various illustrators throughout the Lamanai Archaeological Project. We started out thinking we would clean-up, crop, and label the illustration scan images with Photoshop, with the goal of creating a document of thumbnail, or small-size, images of the illustrations which could serve as a sort of visual index that could be used by Lamanai researchers in conjunction with the digital illustration scan files. These illustrations include those drawn both when David Pendergast was the Principal Investigator (PI) of Lamanai (1974–1986) and those drawn during the period following, when Elizabeth Graham served as PI (1998–present), and for some of this time as co-PI with Scott Simmons. Project illustrators include Louise Belanger, who did some illustrating in 1979 before joining the project full-time as an illustrator in 1980 (she has continued since then), Georgina Hosek, David Findlay, C. de Braemaeker, and others. Some illustrations were prepared by or under the directions of academic scholars as part of their dissertation/thesis research—one of these being Ruth Dickau who illustrated for Terry Powis.

What we did not realize as we got started was that there were missing illustrations and that the identification of some of the illustrated vessels, and their context, was not always immediately clear. Archaeology at Lamanai began in the 1970s—before the digital age. These illustrations were hand-drawn in the field lab and then transported abroad. For publication they were photocopied and literally cut and pasted into documents. Over time there were a number of Lamanai researchers living and studying in different cities and countries who were using the illustrations, which had to be sent via postal services, and it was sometimes hard to keep track of the illustrations. For decades the technology to scan and email a drawing simply did not exist. Most of the illustrations have now been gathered together in one location in England, and scanned, but as is often the case, there was no funding either for scanning, or for a central repository to store all of the documents that have accumulated over the five-plus decades of archaeological

excavation and research at Lamanai, so it is the personal responsibility of the project directors to curate and store everything. Similar problems are encountered with the storage, curation, and study of ceramic collections (see Aimers 2014).

Ultimately our project turned out differently than we originally anticipated, as it was determined the best approach was to make these pottery illustrations available to a wider audience by assembling them into a catalog of sorts. As a result, this publication presents the entire collection of the *illustrated* pottery from Lamanai in conjunction with basic contextual and other information. Additionally, upon the encouragement of our reviewers, we enlisted the help of several archaeologists who specialize in Maya ceramics (aka ceramicist, or ceramic analyst)—James Aimers, Robin Robertson, Laura Kosakowsky, and Kerry Sagebiel—to classify the pottery using the type-variety system. Elizabeth Graham worked with Aimers on chronology for the Late Classic and Terminal Classic polychromes, which they subsequently named.

Before presenting the illustrations, we provide some background on the Lamanai site and recording systems, ceramic illustration conventions, ceramic analysis, a survey of publications pertaining to Lamanai ceramics, and procedures used by the ceramicists for the type-variety classification of the pottery illustrated in this book.

1.1. Lamanai Site Background

Forty-five kilometers inland from northern Belize's Caribbean Sea coast the ancient Maya city center of Lamanai extends for approximately 3.5 km along the northwestern edge of the New River Lagoon, a long and narrow spring-fed body of fresh water rich with aquatic resources (Figures 1.1 and 1.2). Roughly 1.5 km north of Lamanai's Central Precinct the lagoon flows into the mouth of the New River (called Dzuluinicob in the seventeenth century [Graham 2011:49]), which meanders northward—70 kilometers as the crow flies—to meet the sea at Chetumal Bay, between the modern-day town of Corozal and the Maya site of Cerro Maya. With water borne transportation Lamanai was well positioned for trade, communication, and cultural exchange with other regions of Mesoamerica via both the sea and inland rivers. Numerous sites in northern Belize were accessible for

¹ In Maya archaeology the term pottery and ceramic are typically used interchangeably, although from a technological standpoint, they are quite different from one another (see Rice 1987a:3–6). Both words are used in this publication, with no distinction between the two.

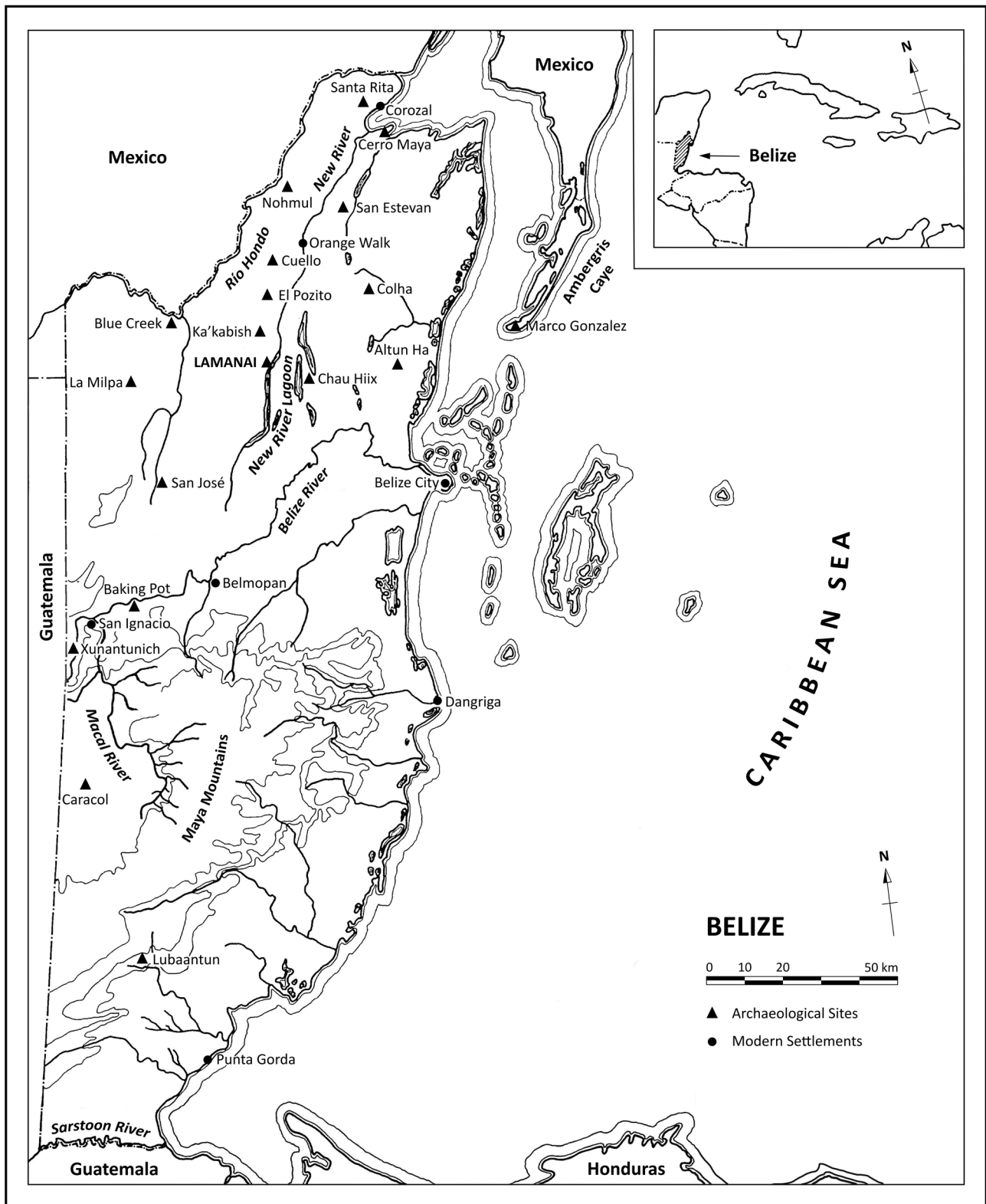


Figure 1.1. Map of Belize, showing Lamanai, other selected Maya archaeological sites, and modern towns (adapted from Pendergast 1981:30).

socio-cultural interaction via a day’s walk, with dispersed settlement between sites (see McLellan 2020, Chapter 8).

Under the direction of David Pendergast, the Royal Ontario Museum (ROM) Lamanai Expedition excavations ran from 1974–1986. The site was selected for investigation as large mounds suggested it was important during the

Classic period and the presence of a sixteenth century Spanish church indicated occupation during the Late Postclassic into Colonial times. In fact, the ancient Maya name of the city was recorded in Spanish church records as Lamanay and Lamayna—Maya linguists think the real name was probably Lama’an ayin, which means “submerged crocodile” (Pendergast 1980:20–21).



Figure 1.2. Aerial view of Lamanai: Structure N10-43 (High Temple) rises above the dense vegetation—the New River Lagoon and headwaters of the New River are visible at upper right and center (photo: Karen Pierce, June 5, 2003).

To date approximately 800 structures have been mapped within the 4.5 square kilometer area defined as the Lamanai site—about 8% of these, both elite and non-elite contexts, have been investigated to some degree (Figure 1.3; see also McLellan 2020:13). After a 12-year hiatus, investigations continued under the auspices of the Lamanai Archaeological Project (LAP, 1998 – present) with fieldwork directed by Elizabeth Graham with Laura Howard. Graham began the excavations as an Associate Professor at York University in Ontario, Canada, and from 2000 as a Lecturer at the Institute of Archaeology, University College London. She was joined by co-director Scott Simmons (University of North Carolina, Wilmington) from 2001 – 2008. The excavations following Pendergast’s project have focused on illuminating periods of cultural transition: Late Preclassic to Classic (400 BCE to 250 CE); Classic to Postclassic (circa 800 to 1000 CE); and the transition from the Postclassic to Spanish Colonial period (from about 1450 to 1700 CE) (Graham 2004). Tracie Mayfield (2015) picked up where Pendergast left off on the British colonial period.

Lamanai has one of the longest occupation spans known for any Maya site—from 1630 BCE through the arrival of the Spanish in 1544 CE and continuing into the

British period through much of the nineteenth century (Table 1.1). The earliest evidence of occupation comes from palaeolimnological and palaeoecological studies analyzing pollen and charcoal in core samples taken from the New River lagoon (Metcalf et al. 2009; Rushton et al. 2013). Indicative of agriculture, *Z. mays* (maize) and *Cucurbita* (squash) were present beginning at 1630 BCE (Rushton et al. 2013:490). Coupled with the dating of carbon associated with an unusually high concentration of corn pollen in the northern Harbor area, suggestive of ceremonial activity and dated to 1500 BCE (Pendergast 1998:56), this data is indicative of an early Preclassic occupation at Lamanai. Limited evidence of corresponding architecture from this period has been discovered in excavations in the Lamanai site core. Middle Preclassic period (900 – 400 BCE) sherds found in the building core of several excavated structures and traces of low plastered platforms suggest that Middle Preclassic architecture lies beneath the overburden of monumental structures (Horn et al. 2020:9–10; McLellan 2020). The earliest ceramic evidence featuring whole vessels is a small sample dated to the Middle Preclassic period, from a burial that was primary to an overlying Terminal Classic period (800 – 1000 CE) structure: P8-103 (Horn et al. 2020:12–13; Powis 2002:72, 444).

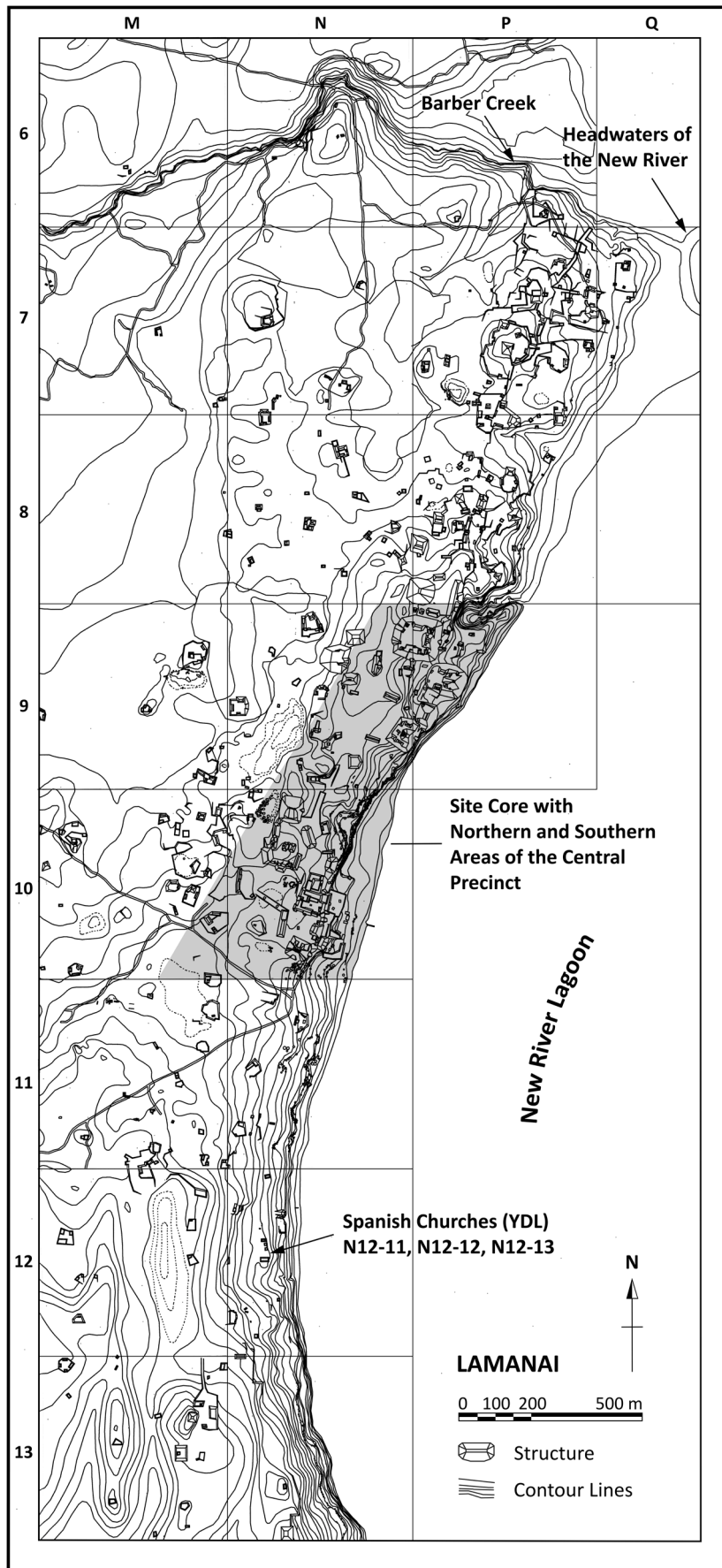


Figure 1.3. Full Lamanai site map produced by the Royal Ontario Museum Lamanai Archaeological Project, directed by David Pendegast, indicating grid square designations assigned by H. S. Loten and team. The grid square designations are referenced on all Lamanai site map excerpts that follow, which indicate the structures in which illustrated pottery was discovered (all Lamanai maps courtesy of David Pendegast).

Table 1.1. Lamanai Chronology. Dating is provisional, as more work needs to be carried out to refine the timing of cultural changes (LAP 2024: modified from Graham 2007, 2011; Hanna et al. 2016; Powis 2002).

		Phase	Period	
Present	1981	Independence	Economic and cultural orientation changes to greater involvement with North and Spanish America; greater participation in global economy.	
	1964	Self-governing crown colony	Long-distance trade continues to be characterized by relationships with Britain.	
		British settlement to 1862, then Crown Colony to 1964	British expand activities in Belize; sugar mill constructed at Lamanai in mid-nineteenth century, widespread use of ceramics imported from Britain	
CE BCE	1700	Yglesias Spanish colonial	Terminal Postclassic to Early Historic Period – distinctive ceramics, lithic change marked by widespread use of the bow and arrow, appearance of European pottery and metals after 1540	
	1500	Cib	Late Postclassic – marked by concentration of activity along the lagoon, continuity in forms and ceramic motifs from the Early Postclassic – there is very likely a period of ceramic stylistic change that occurs between Cib and Yglesias, but it has yet to be securely defined, beginnings of on-site metalworking (Simmons et al. 2009)	
	1250	Buk	Early Postclassic – marked by distinctive elite sub-complex of pottery that seems to replace Classic emphasis on polychromes, no hiatus from Terminal Classic apparent in the stratigraphy, continuity in organization of ceramic production (Howie 2003), residential buildings largely of wood, apparent increase in lagoon orientation, importation of copper objects (Simmons et al. 2009)	
	1000	Terclerp	Terminal Classic – marked by extensive masonry platform construction, superstructures largely perishable, distinctive pottery, with some forms that herald Postclassic styles	
	800	Tzunun	Late Classic – very little known about this period at Lamanai – ceramic change to Terminal Classic is gradual	
	600	Shel	Provisional Middle Classic – represented ceramically by Tzakol 3 polychromes, slab-footed cylinder vessels, stela iconographic elements	
	450	Sac	Early Classic	
	250	Zotz	Late	Late facet of the Terminal Preclassic or Protoclassic (Powis 2002)
	150		Early	Early facet of the Terminal Preclassic (Powis 2002)
	0	Lag		Late Preclassic (Powis 2002)
	100	Mesh	Late	Late facet of the Middle Preclassic (Powis 2002)
	400		Early	Early facet of the Middle Preclassic (See Powis 2002)
	600	Nott		Provisional – based on radiocarbon dates from the “Harbour” zone (Pendergast 1998:56) and palaeolimnological and palaeoecological studies from the New River Lagoon (Metcalf et al. 2009; Rushton et al. 2013)
	900			
	1630			

Evidence from residential and public architecture “indicates an extensive and well-developed occupation at Lamanai by some time prior to 300 B.C., with the beginnings of the settlement likely to lie considerably farther back in time” (Pendergast 1981:42). Evidence so far suggests that early settlement was concentrated in the northern part of the site near the Harbor area and lagoon shore, although Preclassic settlement is widespread and evident farther south in the site, extending as much as

three kilometers south of the Spanish churches (Horn et al. 2020:14; Pendergast 1981:42; Powis 2002:51). Major cultural activity in the Late Preclassic (400 BCE – 100 BCE) resulted in the construction or expansion of numerous structures and monumental public architecture including Structures N9-56 (Mask Temple), P9-2, P8-9, and Structure P8-12—tentatively identified as part of a Late Preclassic E-group architectural assemblage—which all show evidence of underlying earlier construction

(Figures 1.4 and 1.5; Horn et al. 2020:9–10, 13; Pendergast 1981:39). A substantial-sized sample of Late and Terminal Preclassic (400 BCE – 250 CE) vessels was discovered in Chultun P8-2 (Powis 2002). The focus of Preclassic site activity extended south with the construction of the initial stage of the high, terraced platform Structure N10-43 (High Temple) at Plaza N10[5] (Pendergast 1981:41). Adjacent to this plaza, Structure N10-27 (Stela Temple) also has underlying Preclassic construction (Powis 2002:280).

In the Early Classic period (250 – 450 CE) Structure N10-43 continued as one of principal structures of the site, along with the ca. 17 m high Structure N9-56 to the north. The focus of public activity shifted around the beginning of the Middle Classic to Structure N10-9 (Jaguar Temple; Pendergast 1981:35), located at the southern end of a large public plaza (N10[2]); bordered on the east by Structure N10-7 and at the north end stands the Ottawa courtyard group, Plaza N10[3]. Throughout the Classic period (250 – 800 CE) the monumental

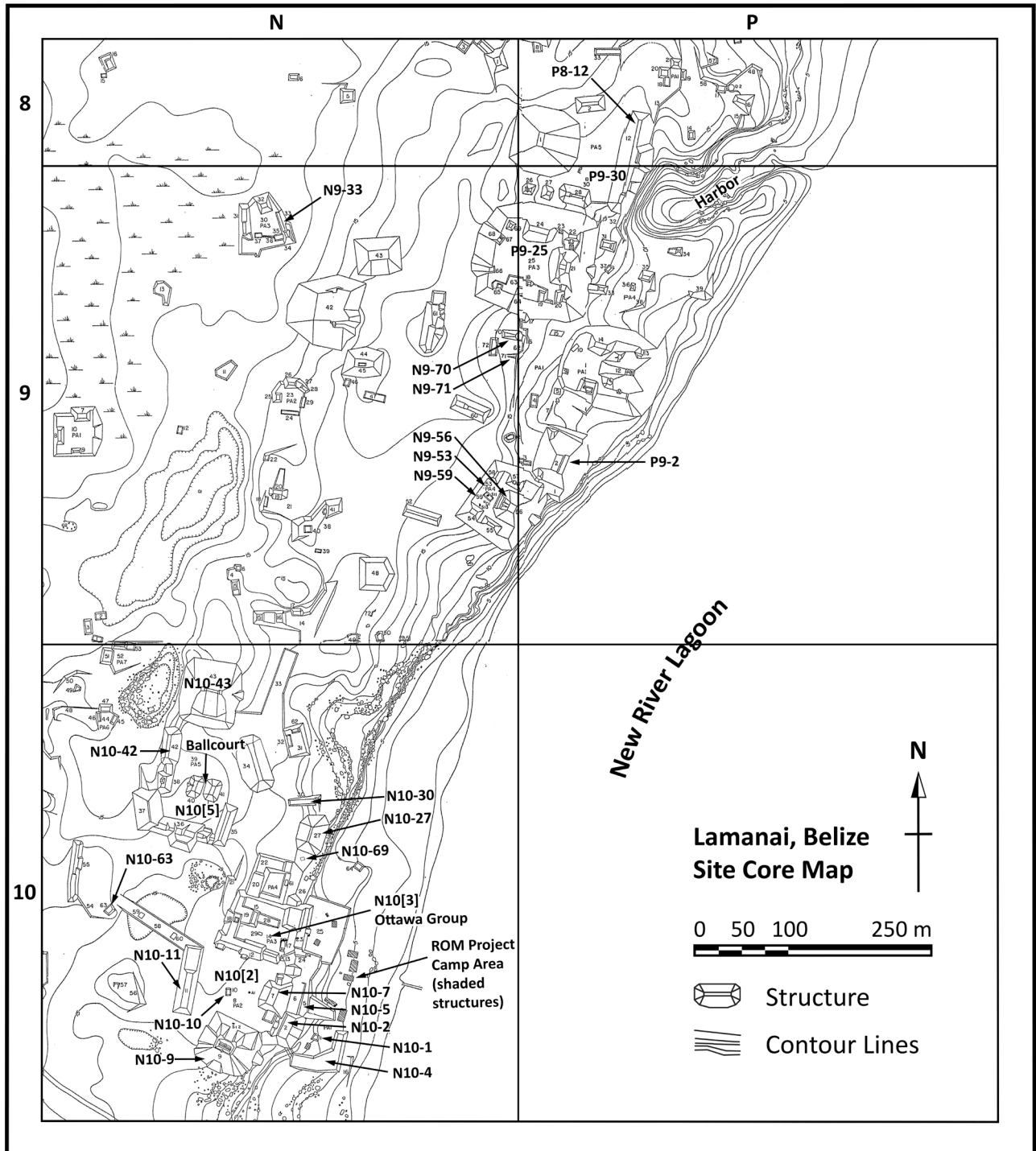


Figure 1.4. Map of the Lamanai site core area and central precinct highlighting structures where illustrated pottery was found (N9-77, N10-66, and N10-67 are not mapped; reference Figure 1.3 grid numbers for location within the full site map).

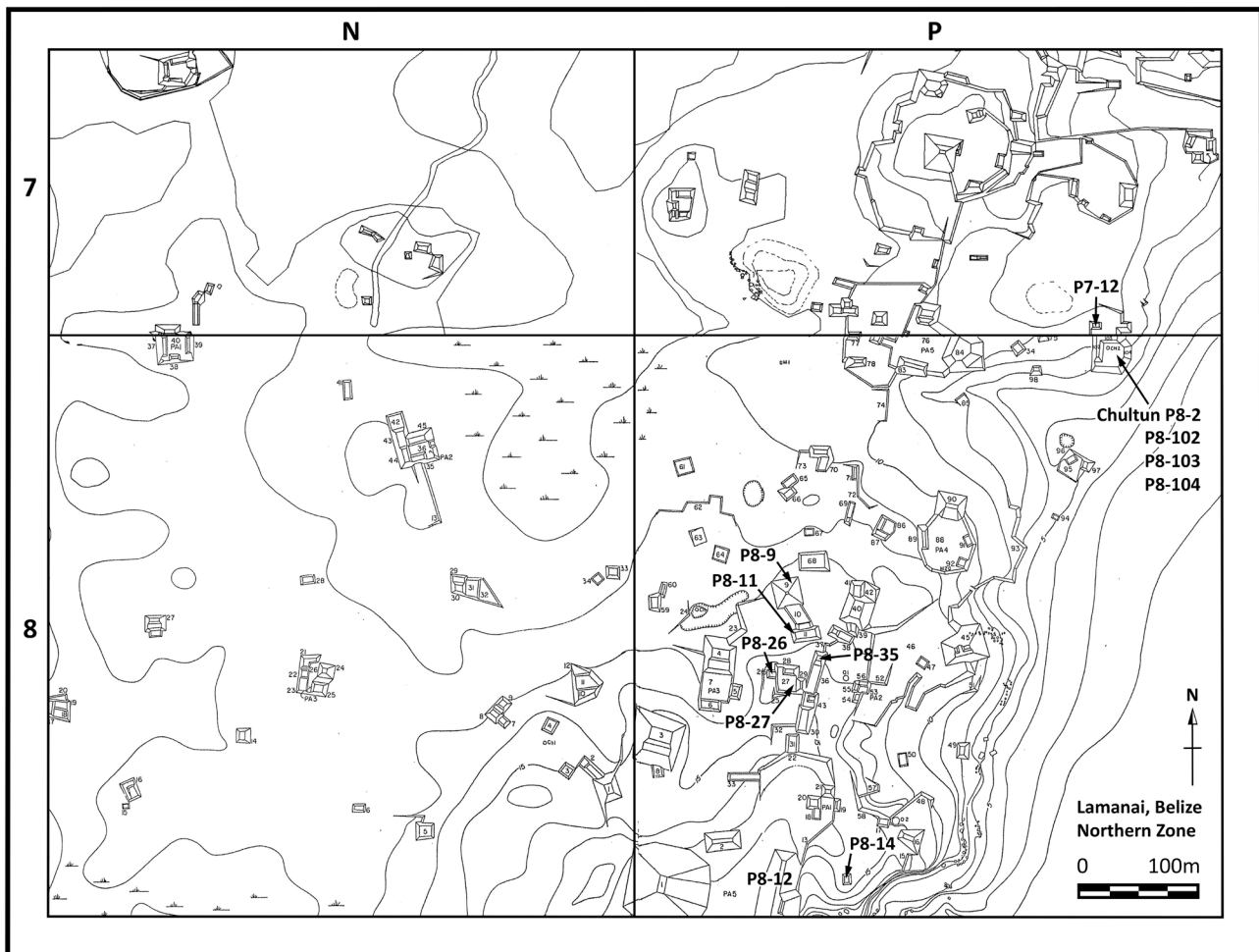


Figure 1.5. Map excerpt of the Lamanai northern zone, highlighting structures where illustrated pottery was found, including the chultun Feature P8-2, and the northern-most extent of ROM excavations at Structure P7-12 (reference Figure 1.3 for location within the full site map).

structures underwent on-going large-scale modifications. Early in the Late Classic (600 – 800 CE), the “Lamanai Building Type” (LBT), with antecedents in earlier times, became the typical architectural modification to Lamanai’s pyramidal structures. It featured the addition of a chambered building set across the central stairs of the substructure with the notable absence of a chambered building at the summit (Pendergast 1981:41–42). A series of rooms was added across the lower terrace of N10-43 and similar modifications were also made at Structure N10-9, including new stairs and stairside outsets, and at Structure N9-56. North of the Ottawa Group at Structure N10-27, a stela (Stela 9) was erected in the chambered room addition (Figure 1.4; Pendergast 1988). Although evidence suggests that the architectural arrangement of the Ottawa Group was different at an earlier point in the Late Classic period, the final Late Classic configuration of the Ottawa Group comprised six masonry range buildings situated on platforms arranged around a small courtyard, with an access passage to Plaza N10[2] on the south side (Figure 1.6; Graham 2004; Pierce 2016:209, 220).

At the transition from the Late to Terminal Classic period a massive architectural remodeling of the Ottawa Group

was underway. All masonry structures were razed, except for Structure N10-15, which continued to be remodeled in masonry. The courtyard and access passageway were filled in with boulders and the new, heightened plaza was extended to the north and west, all capped by a new floor, with new terraces and stairs added on the south side. In the Terminal Classic, and except for Structure N10-15, the Ottawa Group comprised low masonry platforms that supported wood and thatch buildings (Graham 2004:235; Pierce 2016:9).

During the Terminal Classic period (800 – 1000 CE) when many Maya cities began experiencing sociopolitical and economic decline and, in some cases, eventual abandonment, Lamanai experienced vigorous development (McLellan 2020). The Classic to Postclassic transition at Lamanai has been characterized as a time of socio-cultural continuity and change evolving over several centuries: retaining or modifying earlier traditions while incorporating new ideas, materials, and innovations, sometimes influenced by outside sources (Graham 2004; Howie 2005:39–40; John 2008; Pendergast 1986a:245). At Lamanai the changes in architecture, ceramics, and material culture are sometimes difficult to fix temporally

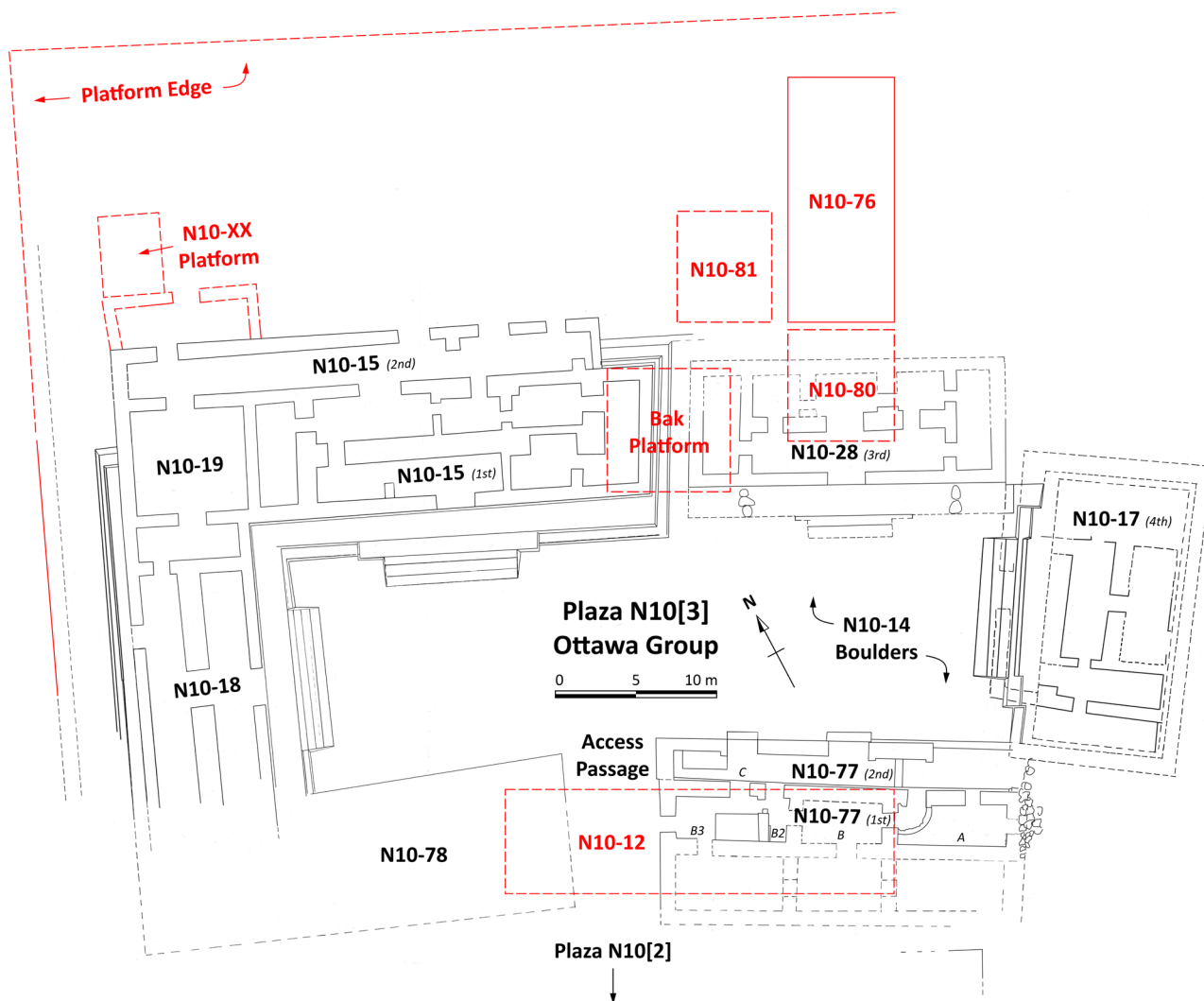


Figure 1.6. Plan of the Lamanai Ottawa Group, Plaza N10[3], indicating structure numbers for the Late Classic masonry structures (black) and overlying Terminal Classic and Postclassic platforms (red) where illustrated pottery was found. The low stone platform, Structure N10-76, is fully delineated, while other platform boundaries remain less defined. Mapped by Claude Belanger, Karen Pierce, Norbert Stanchly, and Laura Howard: 1999, 2014, 2016 (reference Figure 1.4 for location within the site core).

as certain “traits refused to come to neat ends to be supplanted by another set” (Pendergast 1986a:234).

The Terminal Classic period marked the beginning of the increased use of wood as a building material at Lamanai, while the construction at *monumental* structures diminished or ceased. Ceramics in caches deposited at this time often featured cartoonish Lamanai polychromes—different from more finely painted Classic period polychromes (Graham 2004:235). At the onset of the Terminal Classic period, the stela at Structure N10-27 had been intentionally destroyed (Graham and Howie 2021) and the structure was abandoned, with ritual refuse being deposited against the terrace faces, possibly associated with the changes occurring in the nearby Ottawa Group (Graham 2004:230). Nearby, a ballcourt was constructed in Plaza N10[5] in the shadow of Structure N10-43 (Pendergast 1981:40–41). Terminal Classic occupation in the northern residential zone (Figure 1.5) saw comparatively minor change from

the previous period (McLellan 2020; Pendergast 1985:99; 1986a:229).

By the end of the Terminal Classic period, the zone of the Ottawa Group, Structures N10-9 and N10-7 at Plaza N10[2], and the area directly east at the lagoon shore, which incorporates Structures N10-1, N10-2, N10-4, became the focus of Lamanai activity, with ambitious construction efforts undertaken at many of these structures (Pendergast 1981:44–45). At the transition from the Terminal Classic to Postclassic period a significant change in burial patterns emerged with differences in burial location, grave goods, pottery deposition pattern, and variability in body position within the burial (Graham et al. 2013; Howie et al. 2010:375–376). There was a striking change in pottery styles as a distinctive style of ceramics emerged: defined in the Lamanai sequence as the “Buk” phase (Early Postclassic), these are classified typologically as Zakpah orange-red and Zalal Gouged-incised (Graham

1987; Howie 2005; Walker 1990). These pottery types, as well as architecture, exhibited stylistic ties to the northern Yucatan peninsula and coastal centers (Aimers 2009, 2014; Graham and Pendergast 1989; Pendergast 1986a).

In the Early Postclassic (1000 – 1250 CE) period, the focus of life at Lamanai continued in the central area of the site along the lagoon shore, which was vibrant with activity and construction projects (Pendergast 1981:44–45). New wooden structures continued to be built at the Ottawa Group and deposits were still being made at the Structure N10-27 midden. Architectural modifications persisted at Structure N10-9 until the thirteenth century, with minor modifications built through the Late Postclassic. Possibly while the structure was still in use, a significant sized midden accumulated at the east side and to the south of Structure N10-7 (Howie 2005:49, 163; Pendergast 1981:44). At or after the abandonment of N10-9, Buk ceramic “chalices” were smashed and scattered over the central stair. Imported copper objects, predominantly from West Mexico, made their first appearance at Lamanai by ca. 1150 CE (Simmons et al. 2009:58). In the Early Postclassic, an increase in the occupation of the inter-site settlement zone between Lamanai and Ka’kabish might point to an influx of migrant populations or population movement (Graham and Howie 2021; McLellan 2020:135; Pendergast 1981:40, 1986:227). Evidence suggests a general abandonment of some areas of the northern suburbs of Lamanai in the earlier part of the Postclassic, with a Late Postclassic (1250 – 1500 CE) reoccupation indicated by residential construction in limited areas, as well as construction at the base of N10-56, although the sociopolitical relationship between the northern and southern residents is unclear (Pendergast 1985:99; 1986a:229).

By the Terminal Postclassic, prior to Spanish arrival at Lamanai, the focus of settlement continued to be near the lagoon shore, in the southern third of the site, with a community presence in the northern part of the church zone (Figure 1.7; Graham 2004; Pendergast 1981:51, 1986b; Wiewall 2009; Wiewall and Howie 2010). In the southernmost area of the site, south of the churches, structures were extremely dispersed. Excavations in one assemblage of buildings in this zone “embodied numerous features we had not encountered elsewhere” along with standard elements of Terminal Postclassic-Historic construction, although no secure dating of the structures was possible (Figure 1.8; Pendergast 1986c:11; note that the excavated structures were in Grid M13, not N13). During this period the previously abandoned Structure N9-56 group saw ritual activity, possibly associated with pilgrimage, that included smashing and scattering numerous Chen Mul figurine censers and other ceramics, and the re-siting of a Classic period stela (Howie et al. 2014; Pendergast 1981:51, 1986:240). Evidence of activity at the Ottawa Group and its environs continues into the Late/Terminal Postclassic to Spanish Colonial periods. Inhabitants of Lamanai began on-site copper metalworking shortly before the Spanish Colonial

period, perhaps due to European presence in the circum-Caribbean region (Simmons et al. 2009). A new style of Yglesias ceramics emerged in Late/Terminal Postclassic to Spanish Colonial periods with symbolism becoming figurative (John 2008). As Pendergast (1983/84) noted, the richness of the late fifteenth century or early sixteenth century Hunchback tomb at Structure N12-26 attests to the strength of the Lamanai community.

Spanish arrival at Lamanai circa 1544 CE soon resulted in the construction of a Christian church (Structure N12-11, aka YDL I) over the remains of a Tulum-style temple that had likely been the focus of Maya ceremonial activity prior to the arrival of the Franciscans (see Graham 2008). A larger church with a stone chapel (YDL II) was built ca. 1568 to the north of the first church—it burned in 1641—and Christian cemeteries were located in the first church and east of the second church (Graham 2011:236–238, 254; Graham et al. 1989). This investment by the Spanish suggests that there was a substantial population at Lamanai before their arrival. Locally made ceramics incorporating Maya iconography were placed in caches in both churches and may represent the appropriation of Christian sacred space and Maya resistance (John 2008:323). Spanish presence was intermittent, represented by a native *cacique* in their absence (associated with Structure N11-18; see Simmons et al. 2009:64). Maya occupation of the area may have continued into the eighteenth century (Graham 2011:254; Pendergast 1986b).

British colonists likely arrived in the first quarter of the nineteenth century with the intent of establishing a plantation settlement. In 1866, or soon thereafter, a sugar mill was constructed, but was possibly only in use for a year before the boiler blew up (Pendergast 1981, 1982a). The archaeological record attests to a long-term commitment to resource extraction on the part of the British landholders of the Indian Church plantation, but temporal evidence of their eventual abandonment is lacking (Mayfield 2015; Mayfield and Simmons 2018; Mayfield et al. 2019).

1.1.1. The Lamanai Archaeological Project Recording System

To understand more fully how to interpret the information associated with the pottery illustrations, a brief discussion of the Lamanai recording system is warranted. We refer specifically to structure numbers (reference the Lamanai site maps), lot numbers, burial numbers, cache numbers, and vessel numbers. Although Operation numbers are not important to understanding the labeled file information, they are included in Table 1.2 below, which describes the numbering system.

The Lamanai structure numbers were designated by the team who mapped the site during the initial years of the ROM Lamanai Archaeological Project, under the direction of H. Stanley Loten (Claude Belanger was one of the mappers—who continued as part of the Lamanai Archaeological Project team through 2016). The site was

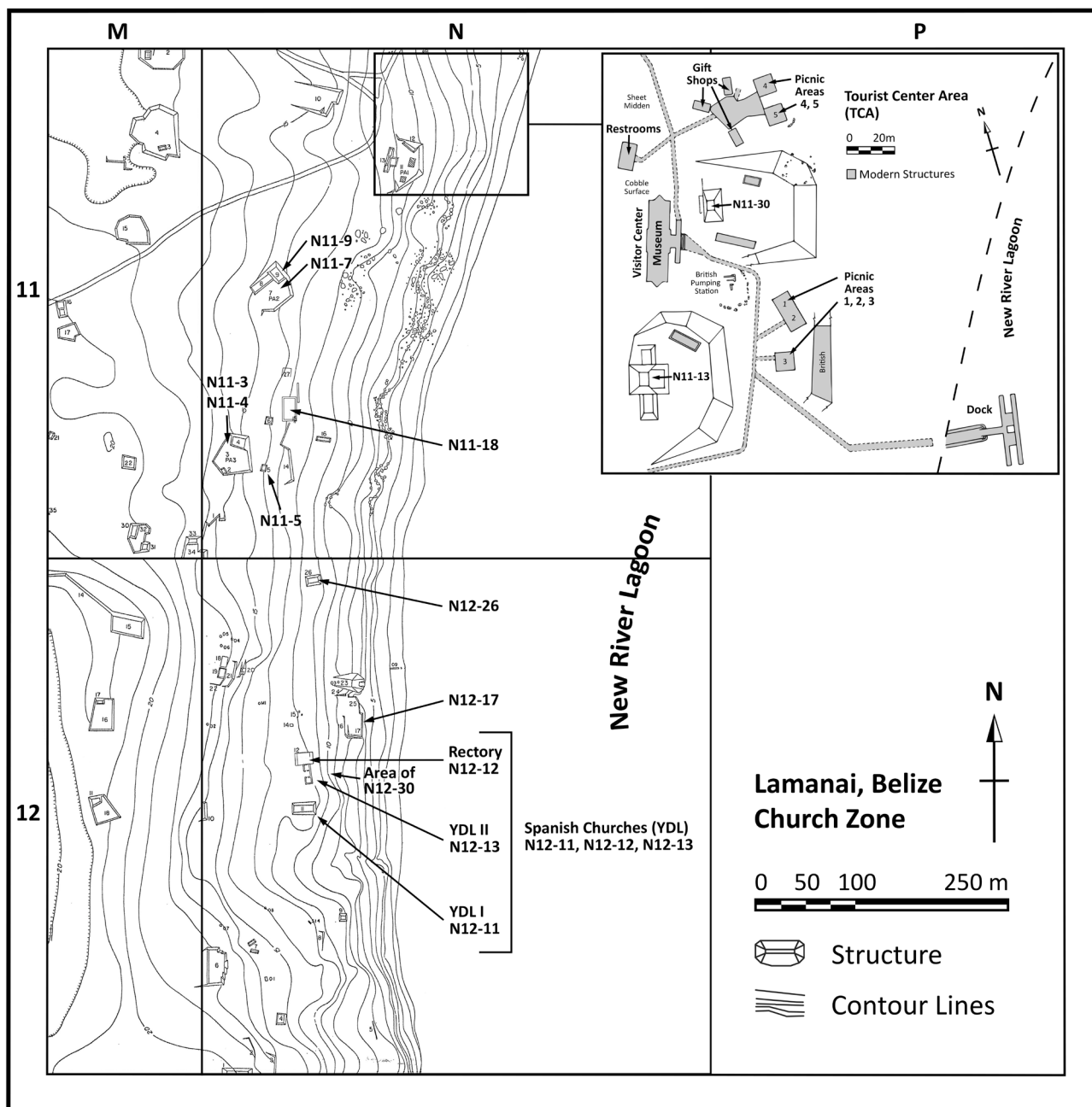


Figure 1.7. Map of Lamanai church zone, highlighting structures where illustrated pottery was found, including the modern Tourist Center Area (TCA). An archaeological assessment and impact study was conducted in 2002 before construction of TCA facilities: pottery was discovered in test pits and trenches placed where the modern structures were proposed to be built. The TCA area was surveyed and mapped by Claude Belanger, Linda Howie, Jorge Can, and Belize Institute of Archaeology staff in 2007 (reference Figure 1.3 for location within the full site map; Simmons et al. 2007:31).

divided into a grid of 500-meter squares, which each have a letter/number designation that is used as the basis for naming the structures and plazas. Columns are lettered; rows are numbered.

Plazas are also named in a similar fashion, but on the originally labeled *site map* the plaza number in each grid square is designated as PA, followed by a number. Reference to a plaza number necessitates the incorporation of the grid square designation in conjunction with the plaza number. For example, the plaza (or courtyard) of the Ottawa Group is PA3 in the N10 grid square. Today the

standard for referring to a plaza in the literature is to drop the PA label, designate the grid square, and follow it by the plaza number in brackets: for example, the Ottawa Group plaza is Plaza N10[3], but in older literature it designated in a variety of ways.

1.2. Methods to Our Madness

Unlike archaeological research and excavation projects and resulting publications that detail research methods, this section describes how we took an unlabeled digital file folder with over 800 illustration scans and ended up

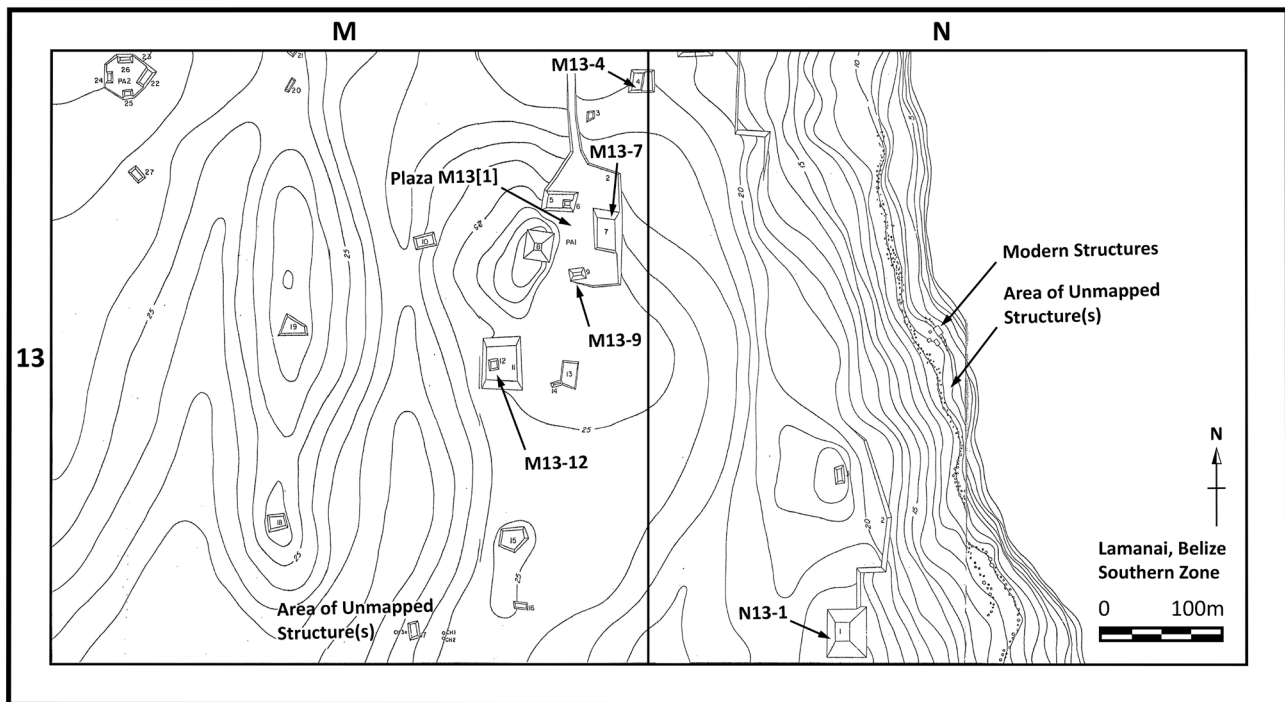


Figure 1.8. Map of the Lamanai southern zone showing structures where illustrated pottery was found: other structures with no associated illustrations are also indicated (reference Figure 1.3 for location within the full site map).

with this book—should the reader want to embark on such an adventure for their own archaeology project.

1.2.1. Summary of the Illustration Organization Process

Louise Belanger and Karen Pierce started this project to organize the Lamanai ceramic illustrations in February 2020. The majority of the illustrated ceramic objects (aka artifacts) are vessels, although other pottery objects were also illustrated. In the summary below, the term “vessel” generally applies to all pottery objects.

This summarizes our approach to the project, which included these main steps:

1. **Digital file names.** The digital files for the Lamanai pottery illustration scans were named with the vessel number in order to place the illustrations in numerical sequence.
2. **Addition of vessel information.** Pendergast’s ‘2016 List of Recorded Ceramics’ was used to add any available information on vessel form, context, and measurements to each of the illustration digital file names.
3. **Creating a working list.** Pendergast’s list was converted into a document in table format, which was expanded to include vessels discovered when Graham was PI—this became our working list (Lamanai Pottery Illustration List) for the addition of notes to keep track of whether the vessel had been illustrated and other details about the vessel.
4. **Correcting problematic vessel numbers.** Illustrations with problematic vessel numbers written on the original

paper drawings—often illegible or missing numbers—were investigated to determine their actual vessel numbers, and each of the illustration scan files was checked against Pendergast’s original list to determine which illustrations were present or missing.

5. **Adding missing illustrations.** Every effort was made using various sources, including publications, to identify and locate images of the missing illustrations—a placeholder image was added to the illustration scan file folders and vessel information was added to our working “list” document.
6. **Thumbnail-sized images.** Once all illustration files were compiled, labeled, and cross-checked to the best of our ability, a document of thumbnail-size images was created to provide a visual-reference for all available Lamanai pottery illustrations, which could be an index to the actual digital files of the scanned pottery illustrations.
7. **Preparing the digital files for publication.** Each illustration digital file had to be cropped, cleaned-up, and rescaled for publication.
8. **Creating the Vessel and Object Information List.** Our working document, the Lamanai Pottery Illustration List, was modified to include type-variety classification and other information, which ultimately became the *Vessel and Object Information List*, Section 3.1.

1.2.2. Details of the Illustration Organization Process

Further details are provided below for each of the steps outlined in the above summary. Upon our initial writing of this in 2021, we included these details in the “working”

Table 1.2. Description of Lamanai Field and Laboratory Recording Procedures and numbering system using numbers assigned for components of the 2014 excavations at Structure N10-15 as an example (modified from Pierce 2016:144, adapted from Simmons 2005:23).

Lamanai Field and Laboratory Recording Procedures		
Description	Numerical Designation (examples)	LAP System Explanation
Operation Numbers	OP14-03	OP indicates an operation, 14 (2014) indicates the year in which the operation was assigned and carried out. OP designations were initiated ca. 1998 and were not used by Pendergast. The second number is assigned in chronological order and indicates the number of operations that have been assigned at Lamanai that year. Each distinct area under investigation is assigned a separate operation that will track all lot numbers, burials, vessels, etc. that are assigned for that Operation. In 2014, the N10-15 excavation was the 3 rd operation assigned, as other Ops were undertaken in other areas of the site by different archaeologists.
Lot Numbers	LA3101 – LA3153 52 total lots assigned in 2014	Lot numbers are assigned and numbered sequentially within each operation (the numbers start from the last number on the Lamanai Master Lot List). A lot is a distinct area under investigation and can include, but is not limited to, an architectural feature, a 10–20 cm (or other) arbitrary level of soil, or any other significant deposit. A lot form is completed for each distinct area under investigation and provides information such as thickness of deposit, date of deposit, and relationship to datum and/or surface. A master list of lots is maintained for reference and to aid in assignment of available lot numbers.
Small Finds (aka Special Finds)	LA3140/1 1 total Small Find recovered in 2014 from Sub-Op16	Culturally and/or temporally significant artifacts—termed Small Finds by Graham, and Artifacts by Pendergast—are pulled from their lot and given a distinct catalog number. Attribute analyses are conducted and a separate form is completed for each small find that contains information such as measurements, weight, provenience, and illustration. A master small finds list is maintained for reference and ease in assignment of catalog numbers. All small finds are labeled and stored in the secure bodega at Lamanai, or sent to the Belize IA.
Cache and Burial Numbers	3 caches discovered in 2014: Cache N10-15/9 Cache N10-15/10 Cache N10-15/11	Cache and burial control numbers have typically been assigned according to the structure number and numbered in sequence, normally in the order of discovery. Lot numbers are also assigned to respective caches and burials.
Vessel Numbers	Vessels found in caches in 2014: <u>Cache N10-15/9</u> Vessel LA3108/1 <u>Cache N10-15/10</u> Vessel LA3107/1 Vessel LA3107/2	Vessels are numbered in sequence according to the lot number in which they were found, (e.g., the lot number assigned to a burial, cache, midden, collapse, etc.). The Lamanai Master Lot List can be consulted for contextual information. To date, specific information on vessels is recorded on vessel cards and pottery forms. Digital recording of this information is ongoing.

document that we provided to Pendergast and Graham to inform them about how we arrived at the compiled thumbnail document and to help determine how to proceed with finding missing information and finalizing the document. We have elected to retain these details here to explain our process.

1) *Digital File Names for the Scanned Illustrations.* The Lamanai pottery illustrations that are hand-drawn on paper and housed in England were digitally scanned in 2016. Pendergast then provided Belanger the digital files for the illustration scans and a ‘List of Recorded Ceramics’ that he had compiled from his vessel cards (see Section 1.1.1, *The Lamanai Archaeological Project Recording System*). Pendergast noted that the “list is drawn from the pottery vessel cards, and is a complete listing of all recorded ceramics through the 1986 season. Pieces with

the notation “nd” in the measurement column are almost all fragments or non-reconstructable vessels, and some with only a height measurement are also fragmentary; for pieces in these two groups there will generally not be an illustration corresponding to the lot and object number.”

There were a total of 894 digital images of illustrations sorted into three main file folders with 32 subfolders dividing the illustrations into numerical groups of 10 or 50 roughly sequenced vessel numbers. After eliminating the non-pottery artifact illustrations, we found there were approximately 753 pottery vessel illustration scans. The illustration scan files did not have a vessel number in the digital file name, so our first task was to open each file, find the vessel number that was written on the original illustration, and record that number as part of the computer file name. This allowed the files to be numerically ordered

within each sub-folder. It appeared that the drawings had been scanned in a somewhat numerical order, so we kept them in their original sub-files to aid with unknowns. It was a tedious task because some of the vessel numbers were difficult to read, or were missing from the drawing, so those drawings were temporarily labeled with an LA.XX, but kept in their original folder.

2) *Addition of Vessel Information.* With the digital illustration files in numerical order by vessel number, it was now easy to use Pendergast's numerically-ordered '2016 List of Recorded Ceramics' (for the years he was PI) to add additional information on form, context, and size, to the already numbered digital files. The illustration file names were then re-labeled, first with the pottery vessel number, which contains the lot number and therefore provides the structure number when used in conjunction with the Lamanai Master Lot List. This is followed by the vessel form/shape, general contextual information, and a single measurement for the diameter or height of the vessel. Some vessels required more than one illustration (multiple views) in order to convey additional details. In these cases, the labeled digital file name repeats the vessel number on each illustration, but it is followed by the notation, for example, 1 of 3, 2 of 3, 3 of 3, reflecting the actual number of illustrations existing for the same vessel number. In this way one will know if there are additional illustrations for the vessel, and how many. We did not number additional illustrations as a, b, c, because of the confusion this would cause with some vessels already assigned numbers/letters in this manner, such as vessels with two components—e.g., 392/1 a & b: a jar with a lid. In this case the letters represent separate pottery components, rather than different illustrations. Due to computer file naming restrictions, the digital file names substitute a period (.) for a forward slash (/) in the vessel, structure, burial, and cache numbers. The vessel size information is recorded in centimeters as either the diameter (cmd) or height (cmh). The digital files can be computer-searched by vessel number, form, location, dimensions, or can be searched, for example, for caches (Ca) or burials (Bu). Lest the files ever go astray, all file name labels include LAMANAI, BELIZE Pottery Drawings.

3) *Creating a Working List.* The first two steps in labeling alerted us to inconsistencies, missing illustrations, missing information, and additional illustrations not included on the list. It was apparent that a system for note-keeping was needed in conjunction with Pendergast's original '2016 List of Recorded Ceramics'. Additionally, we wanted to add the vessels discovered in excavations during Graham's tenure as PI. The information from Pendergast's list was inserted into a table format with a column added for notes, which became our working document from that point forward—the 'Lamanai Pottery Illustration List'.

4) *Correcting Problematic Vessel Numbers.* As previously noted, there were some discrepancies and other problematic issues encountered as the files were labeled with the additional details and cross-checked with Pendergast's

information. We also found there were some illustrations that had not been included on Pendergast's original list, and some of the illustrations that were presumed to have been scanned were missing. Cross-checking each vessel illustration scan using the newly-formatted pottery information list, we found that some of the missing/illegible vessel numbers became apparent when the illustration clearly matched a vessel description on the list. Other missing vessel numbers were determined by using descriptive information from vessel cards, Pendergast's reports, and other sources. There were instances in which we found two different illustrations of one vessel, with subtle differences in color or detail, so there were some illustrations to be eliminated by researching the recorded vessel descriptions and determining which one was correct. There were other instances in which two completely different vessels appeared to have the same vessel number written on the illustration (often because the number was not written clearly or the scan was too light), which also required some research. If we found there was no scan of a known illustration, we used a scanned photocopy or photo as a placeholder in the digital files. We kept track of all of problematic or missing illustrations in the notes column on the 'Lamanai Pottery Illustration List'. Ultimately, we managed to address numerous required clarifications through different means of cross-checking.

5) *Adding Missing Illustrations and Information.* Every effort was made to add missing illustrations to the file folders. We used various sources to find and add these missing illustrations, which sometimes resulted in a lesser-quality second-generation .jpg image substituting for a scan of the original pottery illustration. Belanger had illustration lists, photos, photocopies, or scans of some of the illustrations, or sometimes a photo of the actual vessel (see Belanger's Lamanai Pottery Photographs, Appendix B). We also had photocopies of many of the reduced-size photocopies of illustrations kept in notebooks stored in the lab at Lamanai. This compilation of illustrations also includes illustrations of vessels discovered during Graham's tenure as Lamanai PI (beginning with lot number LA1100). Because there was no easily accessible informational "vessel card" type of list for Graham's vessels, Belanger and Pierce used different methods and sources to provide that information for both the file name labels and for the 'Lamanai Pottery Illustration List', including the Photoshop measuring tool to determine vessel dimensions from the illustrations, the Lamanai Master Lot list for contextual information, and Graham's publications. We also devoted time to sort out the context for some of the vessels when there was conflicting information or if information was unclear. To augment contextual information, four Lamanai site map excerpts were created from the original site map and labeled to highlight the structures where illustrated pottery was found.

6) *Creating a Document of Thumbnail-sized Illustrations.* Our final step was to create a document with numerically-ordered thumbnail-sized images of each illustration. To achieve this, each illustration digital file folder was

opened on the computer in the “Extra Large Icon View.” Screenshots were taken of groupings of the file-icons and inserted into a document of illustration thumbnails. This method allowed for the complete digital file name to display along with the thumbnail-size image of the illustration, so all details are included within the screenshot images. Viewing this document on a computer at ~200–250% (using the zoom slider on the status bar) yields a decent image of the illustration and easily read text. This document also went through numerous iterations as the illustrations were sorted.

7) *Preparing the Digital Files for Publication.* The final version of the illustration thumbnail document is the typesetting guide for this publication. The digital file for each of the 950+ illustrations had to be cropped, cleaned of stray lines and marks, and re-scaled to the size in which it is presented in the book: 1:4, 1:2, or 1:1 of the actual vessel or object size. A separate “Figure Caption List” was prepared to provide the captions that accompany each illustration, which include the vessel number, form, context, one measurement, and the type-variety classification.

8) *Creating the Vessel and Object Information List.* After *innumerable* iterations, our working document—the Lamanai Pottery Illustration List—became the *Vessel and Object Information List*, Section 3.1. This final list incorporates the type-variety classification information, form, context, temporal assignment, dimensions, and additional notes for the illustrated, as well as some non-illustrated pottery that had been on the initial lists of *possibly-illustrated* vessels.

1.3. Ceramic Illustration Drawing Conventions and Vessel Forms

This book presents *technical illustrations* of Lamanai pottery—referred to as *illustrations*, rather than *drawings*, because they are not realistic or artistic renderings of the pottery. Instead, they are technical illustrations that conform to a set of rules, standards, and symbols in the way they are presented. The following is a synopsis of these

conventions, which apply to the illustrations presented in this book, and an overview of Maya vessel forms.

1.3.1. Pottery Reconstruction and Illustration

In archaeology, Maya pottery is technically illustrated using specific conventions and symbols (see Ishihara-Brito 2011; Orton et al. 1993). Illustrations of symmetrical vessels use a central vertical line to divide the vessel, with the right side of the illustration representing the exterior of the vessel and the left side depicting the vessel wall thickness and interior details. Vessels with complex designs and surface treatments may require multiple illustrations.

Some of the vessels recovered at Lamanai were whole vessels, but many were broken or incomplete. When possible whole vessels that had been smashed in the location of their deposition were reconstructed by gluing the pieces back together. Incomplete vessels can often be reconstructed through illustration. A rim sherd can be measured with a diameter-measurement-template to determine the vessel’s diameter. A combination of rim, body, and base sherds can allow determination of the vessel height, shape, and size (see Rice 1987a:222–224), and it can be illustrated even though pieces are missing. Many of the Lamanai vessels were reconstructed through illustration and are thus subject to minor interpretative differences (for example, see the two different illustrations for LA81/1). This can be especially noticeable concerning vessel measurements.

1.3.2. Color Representation Symbols

Different symbols are used on the inked illustrations to indicate the color of the pottery slip, a system devised by Smith (1955) for the presenting the ceramic sequence at Uaxactun (Figure 1.9). With these symbols black and white illustrations depict both form and *color*, and can be used in non-color publications and still convey color information. See Figure 1.10 for an example of the use of color symbols on a technically illustrated pottery vessel.

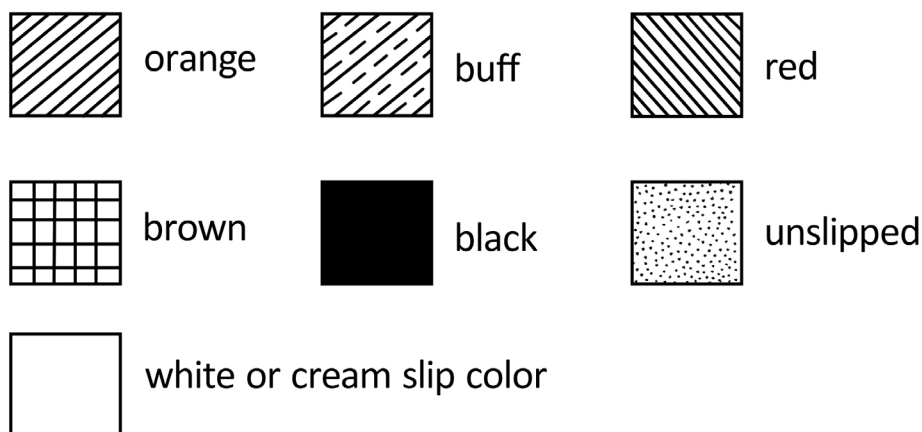


Figure 1.9. Symbols used on pottery illustrations to represent slip colors (adapted from Smith 1955).

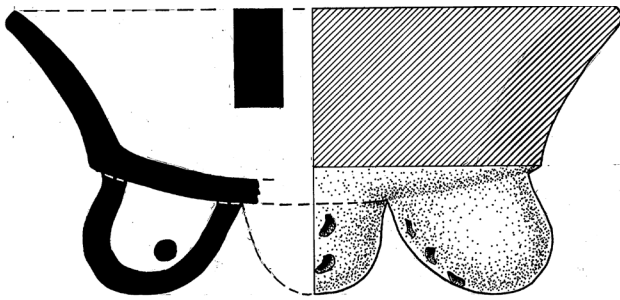


Figure 1.10. Vessel illustration example demonstrating pottery illustration conventions and the use of color symbols to indicate black slip on the interior, orange slip on the upper exterior, and unslipped base and vessel feet (Lamanai vessel LA469/1).

1.3.3. Drawing Scale and Measurements

Technical illustrations are typically drawn at 1:1 scale—actual size, although very large vessels may be drawn at half scale. Rim diameters are commonly used to express the size of dishes and bowls. The rim diameter of a vessel is the outside measurement of the exterior rim edge, rim-to-rim. For jars however, the standard measurement usually focuses on height rather than rim diameter, because the rim diameter is typically smaller than the diameter of the body. Additional measurements are often included with detailed vessel descriptions (orifice diameter, rim thickness, etc.), but we list only basic diameter and height measurements in Section 3.1. For publication, illustrations are predominately scaled at 1:4, and presented with a scale bar. The original digital files of the scanned Lamanai pottery illustrations allow measurements to be determined with the Photoshop (or other computer software) ruler tool, as most digital scan files of full-sized illustrations do.

1.3.4. Vessel Forms in the Maya Area

Illustrators deal with a range of vessel forms in Maya archaeology. Standard practices in ceramic analyses typically apply the general vessel form terminology defined by the Seibal project: plate, dish, bowl, vase, and jar (Sabloff 1975:22–23, Figs. 9–13). These basic forms, or primary classes, are illustrated in Figure 1.11; however, additional form terms are used at Lamanai, as they are at numerous other Maya sites.

1.3.5. Additional Vessel Form Terms Used at Lamanai

The basic vessel forms were often modified by the addition of appendages—spouts, handles, different foot types (e.g., nubbin, hollow mammiform, oven, slab, effigy, etc.), and lids. Additive, subtractive, and penetrative decorative techniques, including the application of different slip colors and painted pottery, were commonly used approaches by Maya potters (Sabloff 1975:27–28, Figs. 18–19). Examples of additional vessel forms and terms assigned to the Lamanai pottery are shown in Figure 1.12.

We acknowledge inconsistency in the use of form names in this book. Our information was drawn from various documents and publications in which there were often different form names assigned to a particular vessel. In general, we have opted to use the form names assigned by Pendergast for vessels excavated while he directed the ROM archaeology project at Lamanai. Some of the form names follow those established by Sabloff (1975), while others are idiosyncratic form names used for Lamanai vessels. There are additional form names found in various ceramic-related publications, but we will leave it to the ceramicists authoring future monographs on Lamanai pottery to determine applicable form names.

1.4. Ceramic Analysis and Lamanai Publications

This section presents a survey of research at Lamanai that primarily focuses on ceramic (aka pottery) analysis, as well as some peripheral studies which directly incorporate ceramic vessels and assemblages. It is not meant to be an all-inclusive review of different types of ceramic analyses, but rather is meant to highlight the ceramic research that has been done at Lamanai and provide references for the publications incorporating this work.

Since the birth of modern archaeology, Maya pottery has been used to reconstruct the cultural history of Maya civilization through chronology and classification and is crucial for interpreting the archaeological record. The most common method of pottery classification used in Maya archaeology is type-variety, also referred to as type: variety-mode method depending on the researcher (Aimers 2013a:xiv–xv). The type-variety system for Maya pottery has its origins in the original work of Smith and Gifford (1966) at Uaxactun and the Lowland Maya Ceramic conference that set up the framework (Willey et al. 1967). The use of type-variety was established as the standard for analyzing Maya pottery by the publications of Adams (1971) at Altar de Sacrificios, Sabloff (1975) at Seibal, Gifford (1976) at Barton Ramie, and Ball (1977) at Becan. Based on combinations of surface treatment and paste (aka fabric) attributes, this method organizes ceramics hierarchically into wares, groups, types, and varieties. Shape, form, and morphology information can be subsumed within the type description or be more specifically defined in a modal classification (Howie et al. 2014:39–40). Today most ceramic analysis also takes into consideration pottery contexts, assemblage composition, and depositional patterns in conjunction with a type-variety analysis. A contextual pottery analysis has long been advocated by Arlen Chase and David Pendergast (see also Graham 1994:135–248). A contextual framework incorporates an “analysis of what and how vessels co-occur in conjunction with other archaeological data” (Chase 1994:182). As Pendergast (1979:28) expounded, “it is my belief that the best method of reporting involves cultural units which were significant to the ancient Maya.”

These days, many Maya pottery studies go beyond the classification of pottery into stylistic types and ceramic

Primary Classes of Vessel Forms

Examples of Lamanai Variations

Plate: vessel with height less than 1/5th its diameter.

Stand



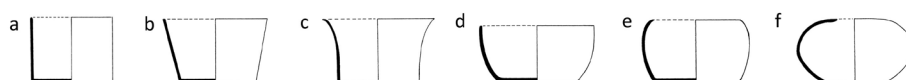
Dish: vessel with height between 1/3 and 1/5 its diameter.

Pedestal-based dishes



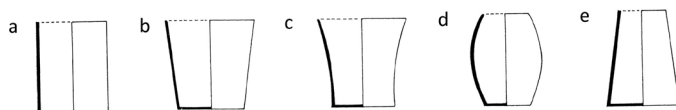
Bowl: vessel with height no more than equal but no less than 1/3 of its diameter.

Tripod and tetrapod bowls



Vase: vessel with height greater than diameter.

Pedestal-based vases



Jar: necked vessel, whose height is greater than its maximum diameter, with an independent restricted orifice.

Pedestal-based jars

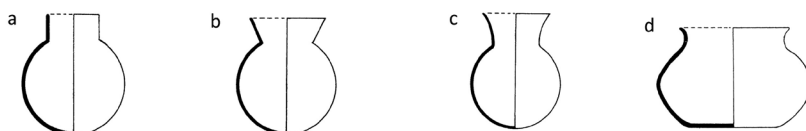


Figure 1.11. Primary classes of vessel forms in the Maya area (adapted from Sabloff 1975:23-27, with Lamanai variation illustrations modified from John 2008).

complexes (the full range of types and forms used during a given temporal phase) to incorporate technological studies and a materials science analysis of the pottery. Advances in epigraphy provide another avenue for analysis, as do art historical approaches incorporating iconographic and stylistic analyses. Ethnoarchaeology can aid in understanding ancient production, and ethnohistory has the potential to enhance Spanish contact period and later ceramic analyses (Foias 2004; e.g., Pendergast 1986b; Graham 2011; Graham et al. 2013). This enhanced pottery analysis then provides data for interpretation about ancient Maya people's behaviors and beliefs. Beyond pottery being just a chronological tool, the expanded study of ceramics can enlighten us on social, political, and economic structures and dynamics, as well as ritual activities, ideology, and religion. Today in the analysis of Maya pottery, there is a growing and vital collaboration between archaeologists and geologists, soil specialists, chemists, epigraphers, art historians, ethnoarchaeologists, and modern Maya potters (Foias 2004:163).

1.4.1. Pottery Analysis at Lamanai

Lamanai excavations have produced a large collection of well-preserved pottery. David Pendergast (1979:33) has argued against the use of type-variety classification and instead supports a contextual approach that is based on "analysis and comparison of the many and varied multi-vessel assemblages recovered from excavation" to derive a series of successive *phases* based on stratigraphic relationships, as detailed in the Lamanai chronology chart (Table 1.1). This relative chronology classification scheme is ultimately dependent on comparisons with ceramics from primary deposits at Maya sites in which the deposits (e.g., caches, burials) have been stratigraphically linked to dated monuments, as at Uaxactun.

There have been a number of different approaches utilized by Lamanai researchers in the study of the ceramics excavated at the site. These include cultural and chronological analyses using contextual associations

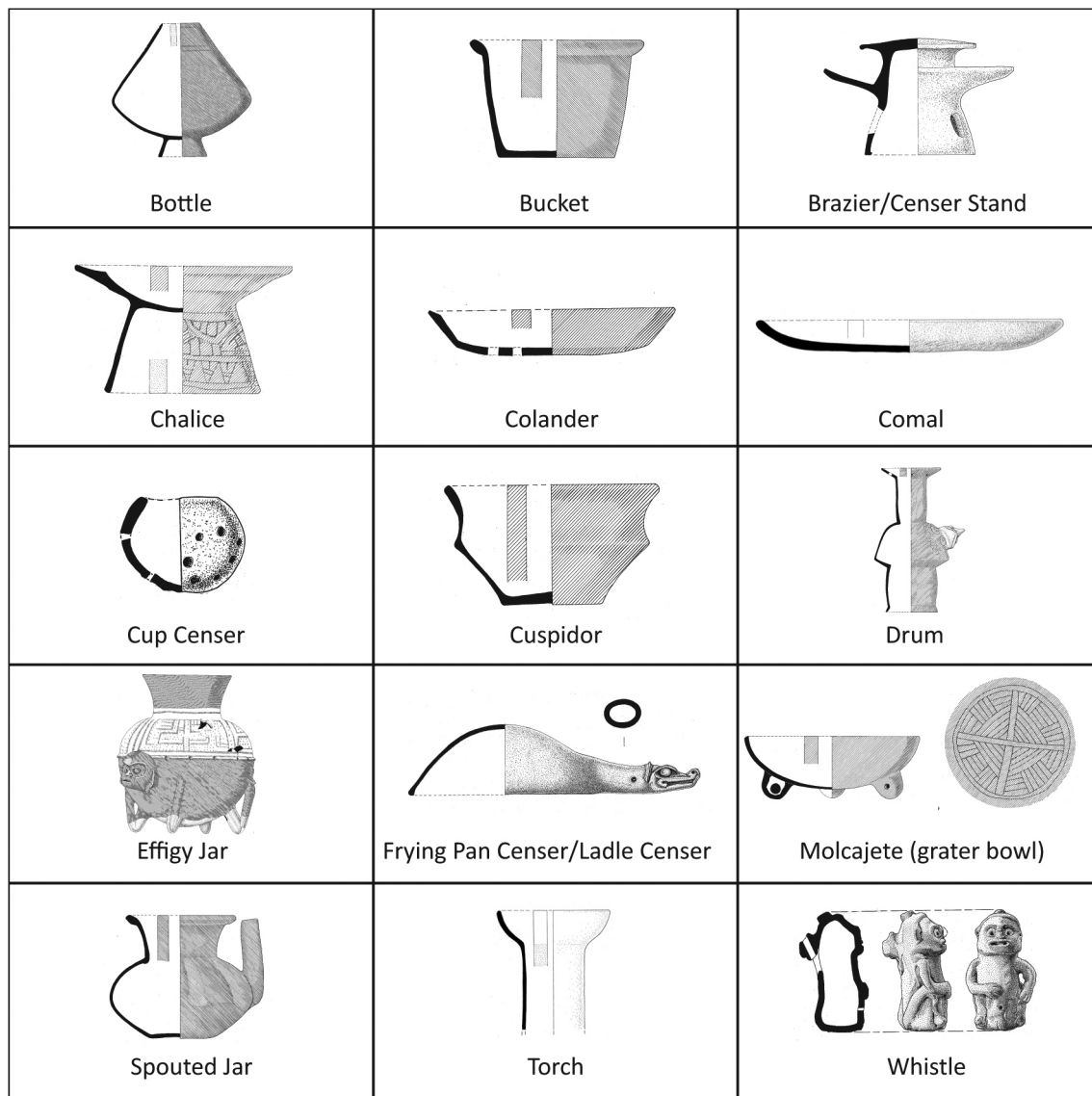


Figure 1.12. Additional vessel forms and terms commonly used at Lamanai (see John 2008 for other vessel forms).

(for example, using contexts such as primary deposits in burials and caches), ceramic chronological phase classification, type: variety-mode classification (which also assigns phases/complexes), scientific and materials science approaches, and iconographic analysis. There is inescapably much cross-over between analytical categories and many of these studies integrate the type-variety system within a contextual interpretive framework that incorporates the physical data from scientific, macroscopic, and materials science techniques. The main goals of Mesoamerican pottery analysis are the establishment of a site's chronology, stylistic comparison to assess economic, religious, and other forms of interaction, and technological analysis to assess the sources of raw material and the production techniques.

During Graham's tenure as Lamanai Principal Investigator, she facilitated research on ceramic analyses of a number of students for their PhD dissertations and master's theses, including Linda Howie, Jennifer John, and Terry Powis.

Additionally, as Project Ceramicist, Jim Aimers has conducted archaeological ceramic analysis at Lamanai since the early 2000s, and he continues to analyze and publish on Lamanai pottery to this day. The broad range of Lamanai published ceramic research is introduced below.

1.4.2. Contextual and Stylistic Analysis

A method employing a cultural and chronological analysis using contextual associations has been advocated by Pendergast and Graham. This involves a *contextual* analysis of whole vessels from primary contexts (e.g., graves and caches) "based on associations of objects from stratigraphic contexts" (Aimers and Graham 2013:91) and subsequent assignment to chronological phases. In contrast, a *stylistic* analysis typically uses some version of type: variety-mode classification and can be accomplished with sherds found anywhere (e.g., the core of structures, fill, surface finds, middens, etc.) for classification and assignment of chronological complexes or phases, which

is the method that Aimers uses. Both of these methods are sometimes used in conjunction with materials science and scientific methods. Publications incorporating ceramic analyses by Pendergast (1981, 1982b, 1983/84, 1985, 1986a, 1986b, 1998, 2006a) and Graham (1987, 2004, 2008, 2011; Graham et al. 2013; Graham and Howie 2021; Graham and Pendergast 1989) generally focus on the Terminal Classic to Postclassic and Historic periods and primarily use the contextual method in which pottery “has been grouped and described as representative of successive phases based on stratigraphic contexts” (Aimers and Graham 2013:91) with each phase having a proposed range of forms and colors.

The use of ceramic phase classification at Lamanai has made it difficult to compare ceramics from other sites. Recognizing this problem, Aimers and Graham (2013) have explored employing the type-variety classification system at Lamanai, and presented case studies to highlight the role of ceramic “systems” in this approach and the challenges and benefits of incorporating information from contextual, iconographic, and materials science analyses into a type-variety system. Throughout Aimers’s research at Lamanai, which targets “mapping Lamanai’s affiliations through style” (Aimers 2009:249), he has approached Lamanai ceramic classification through the type: variety-mode system. Because of problems related to the ware category, he advocates the incorporation of ceramic system assignments as a first-step in type-variety analysis (Aimers 2007, 2009, 2014; Aimers and Graham 2013). A systems approach looks at surface treatment and decoration to group stylistically similar ceramics from across the Maya area, enabling comparison among sites and regions, and assessment of intersite and interregional interaction. As Aimers (2007) notes, ceramic styles and motifs can help map the exchange of ideas across the Maya world and beyond. Aimers (2009, 2014) has applied systems assignments in several case studies of Lamanai Postclassic pottery to explore connections to a coastal and peninsular stylistic interaction system. In another study looking at stylistic linkages, Aimers (2008) considers “style” and a stylistic change with the introduction of sinuous serpent and reptilian motifs on Lamanai Postclassic pottery. Aimers (2010 and 2013b) took a different approach to consider the production, function, use-life, and deposition of Terminal Classic and Postclassic vessels to interpret everyday life at Lamanai by incorporating theoretical ideas from material culture studies that consider objects as having forms of agency. He discussed the role of ritual and how objects create identity.

Terry Powis’s (2002; also see Powis 2001) dissertation research on the Late Preclassic Ceramics (ca. 400 BCE to 250 CE) at Lamanai is an example of an integrative approach to ceramic analysis to reconstruct both ceramic and cultural developments during the Late Preclassic period. Powis employed the type: variety-mode system to vessel analysis, considered in conjunction with their contextual units at the time of deposition, vessel function drawing on ethnographical and ethnoarchaeological

studies, and technological aspects of the pottery. In another publication Powis (2004) explored vessel function by examining contexts for Late Preclassic elite and commoner pottery assemblages.

Several studies compare ceramics among sites in Northern Belize. Sherman Horn and colleagues (Horn et al. 2020) explore aspects of Preclassic settlement and community development at Lamanai and Altun Ha, which includes a discussion of the context of four vessels from a single Middle Preclassic burial at Lamanai. Looking at ceramic types, forms, contexts, and assemblages, Robin Robertson and colleagues (2016) undertook a macro-comparison study of Late Preclassic whole vessels from Lamanai, Cerros, and Colha to examine political relationships. On a broader scale of regional analysis, Lamanai ceramics are considered within the northern Belize regional ceramic sequence (Kosakowsky et al. 2020). Using type: variety-mode analysis, Eleanor Harrison-Buck (2023) proposes that a Terminal Classic Ik’hubil Ceramic Sphere extends across a broad area of north-central Belize, with new ceramic types in the Ik’hubil Complex that suggest stylistic attributes stemming from the Gulf and northern Maya Lowlands. Included in this complex is a distinctive polychrome type prevalent at Lamanai.

1.4.3. Iconographic Analysis

Jennifer John (2008) studied the iconography on Lamanai ceramics dating to the Terminal Classic to the Early Historic Period (ca. 800 – 1700 CE), focusing primarily on Early Postclassic Buk phase ceramics to assess ideological and stylistic continuity and change at Lamanai. (See also John and John [2018] who examine Maya art from a new perspective).

1.4.4. Materials Science and Technological Analysis

Linda Howie (2005, 2012) has examined patterns of pottery production and consumption at Lamanai spanning the Terminal Classic and Early Postclassic periods (800 CE – 1250 CE). In these studies, Howie examined stylistic and technological variation in the ceramic assemblage. She emphasized a materials science approach and used thin-section petrography, neutron activation analysis, and scanning electron microscopy (SEM) to examine the range of variation in fabric and production technology of Lamanai pottery deposited in burials, caches, and middens through ritual activities. Petrographic and chemical analyses can help identify production location and help trace the movement of vessels.

In a study of Chen Mul Modeled human effigy censers, multiple techniques of analysis were used to investigate different aspects of ceramic variation (Howie et al. 2014). Here a technological approach using petrographic examination to characterize compositional attributes was combined with ethnohistoric, stylistic, iconographic, and contextual analysis in an examination of a collection of anthropomorphic feet from the elaborate Late Postclassic

and Spanish Colonial period (as early as 1350 CE to as late as 1700 CE) Chen Mul Modeled censers found at Lamanai. The broad stylistic and technological variation suggested that the censers may have been associated with pilgrimage to the site.

To characterize patterns and networks of socioeconomic interaction and exchange among communities in the same region, Howie, Graham, and Powis (Howie et al. 2016) studied the movement of pottery between Chetumal Bay and Lamanai by examining the compositional characteristics of the pottery through petrography in conjunction with a study of local raw materials available for pottery making. The study focused on exchange during periods of transition when changes in community interaction were most evident—the Late Preclassic to Terminal Preclassic, Terminal Classic to Early Postclassic, and Late Postclassic to Spanish Colonial periods.

Integrating petrographic and stylistic data, a study by Powis, Howie, and Graham (Powis et al. 2006) examined a sample of Late Preclassic and Protoclassic sherds recovered from a number of primary contexts at Lamanai to look at local pot-making activities, ceramic technologies, the relationship between the stylistic and technological characteristics of pottery vessels, and patterns of production, consumption, and circulation of these ceramic goods.

Examining the stylistic, technological, and provenance relationships of pottery assemblages from four house lots dating to the Terminal Postclassic to Spanish Colonial periods, Darcy Wiewall (2010) and Linda Howie's analysis integrates macroscopic methods and microscopic scientific techniques—thin-section petrography—with contextual information. The study characterized local production and household consumption patterns reflected in these pottery assemblages, and looked at continuity and change in these patterns. It also aimed to distinguish between local versus non-local pottery, and to consider the implications of access to non-local pottery and regional connections.

Carmen Ting's (2013, 2017) research employed thin-section petrography and SEM-EDS analyses on fine-ware ceramics—Ahk'utu' vases and Zakpah ceramics—from various sites across Belize. Her study did not directly involve scientific testing of Lamanai pottery; however, drawing upon Howie's (2005, 2012) analyses, stylistically similar Lamanai Zakpah (Buk phase) ceramics are incorporated into her discussion.

1.4.5. Indirect Methods Associated with Lamanai Ceramic Analysis

Residue/Chemical Analysis. Lisa Duffy (2021) used artifact residue analysis to investigate ancient Maya foodways at sites in Guatemala and Belize, including Lamanai. In this study she analyzed the organic chemical signatures left on pottery vessels and stone tools using liquid

chromatography-mass spectrometry and microscopic analysis of starch grain residues. Duffy integrated the analysis of vessel style, function, and context with the scientific analysis to gain insight on associations between foods, tools, vessels, and the people who used them.

Terry Powis and colleagues (Powis et al. 2002) explored the function of Maya spouted vessels (sometimes referred to as chocolate pots), including several examples from Lamanai, by looking at their spatial and temporal distribution in conjunction with the results of chemical analyses (High-Performance Liquid Chromatography coupled to Atmospheric Pressure Mass-Spectrometry [HPLC-APMS]) of dry residue collected from Colha spouted vessels.

Carbon Dating. Another tool for refining ceramic chronology is the scientific method of ¹⁴C radiocarbon dating. Organic samples/carbon that are stratigraphically associated with ceramics found in primary contexts can be tested to establish dates. Most Lamanai publications only mention radiocarbon dating in passing (Pendergast 1981, 1986a; Loten 1985), although Graham (2007) presented a conference paper on Lamanai radiocarbon dates. However, in one particular study at Lamanai, Jonathan Hanna and colleagues (Hanna et al. 2016) used a set of radiocarbon dates (primarily from carbon found in pottery cache vessels and burials) to build Bayesian models to assess the chronology of two architectural groups: the Ottawa Group Plaza N10[3], and a small plaza-like group incorporating Structure N10-2. Previous ¹⁴C samples from Structures N10-7 and N10-9 were reevaluated. The results of this study buttress the Late Classic/Terminal Classic ceramic chronologies at Lamanai.

Architectural Sequences. Karen Pierce (2016) established the Late to Terminal Classic architectural sequence of Structure N10-15 in the Ottawa Group, Plaza N10[3]. She then examined the context, content, and ritual/symbolic associations of the 14 identified caches in the masonry Structure N10-15 to assess the caching patterns present throughout the different architectural stages and considered how changes in the patterns suggested ideological changes among Lamanai elite. Pierce next examined later burial and pottery assemblages associated with ill-defined masonry platforms (presumed to have supplanted the masonry structure N10-15) to assess change and the possible foreign influence this represented.

Bioarchaeology. Using contextual data, Linda Howie and colleagues (2010) combined stylistic and compositional analyses of both skeletal remains and ceramic material from Lamanai Terminal Classic to Early Postclassic residential-complex burials as a means to reconstruct ethnic and class identity and explore ways in which food and ceramics were used in ritual and as funerary offerings and to signal identity. The biological record was used to examine styles of head shaping and dental modification, along with stable isotope analysis, which uses the carbon- and oxygen-isotope compositions of bones and teeth

to derive dietary and geographic identities. This bioarchaeological analysis was used in conjunction with the stylistic analysis of pottery shapes and decorations along with ceramic microscopic compositional analysis (thin-section petrography). As Gabriel Wrobel and Elizabeth Graham (2015:9) noted, this method “provides an excellent model by which to utilize skeletal remains to test the significance and meaning of contextual data that can point to nonlocal influence.”

Research by Wrobel and Graham (2015) combined a bioarchaeological approach with contextual and ceramic data from Lamanai Early Postclassic burials to explore foreign cultural influences. The Buk phase Zakpah-group ceramics are distinctive, as are the burials containing these ceramics, many of which contained copper and gold artifacts. Individuals with the presence of cranial modifications, dental filing, and a specific “VPLF” position (ventrally placed, legs flexed, or “frogged”) burial position were found in the majority of these burials. This study took into consideration previous analyses and used “odontometric data and nonmetric epigenetic dental traits to test whether the Buk phase elites at Lamanai were morphologically (and by extension, genetically) distinct from earlier groups living at the site” (Wrobel and Graham 2015:88).

Elizabeth Graham and Linda Howie (2021) incorporated ceramic-production petrographic analyses and osteological isotopic analyses in conjunction with observations of material cultural and burial patterns to examine the issue of Terminal Classic/Postclassic trade and mobility at Lamanai, Marco Gonzalez, and in northern Belize.

1.5. Type-Variety Classification for Illustrated Lamanai Pottery

Our goal with this book is a comprehensive presentation of the *illustrated pottery* that has been recovered at the site of Lamanai. This is not intended to be a ceramic monograph on type-variety, nor a comparative monograph on Maya Lowland ceramics. We will leave that to the Maya ceramicists. However, we recognize that the inclusion of type-variety descriptions will be beneficial for readers. As previously discussed, Lamanai pottery has generally not been analyzed using the type-variety system. In his multiple publications on the Lamanai ceramics, Aimers considers type-variety, but most of these publications do not explicitly provide type-variety classification for specific vessels. Only Terry Powis (2002) has systematically analyzed Lamanai Preclassic vessels to assign type-variety. As neither of us authors are qualified to undertake type-variety analysis, we reached out to several ceramic analysts for that: primarily James Aimers, Robin Robertson, Laura Kosakowsky, and Kerry Sagebiel. The type-variety names they have assigned, when known, are included in the captions of the vessel illustrations and in the *Vessel and Object Information List* (Section 3.1), which also incorporates additional notes by Aimers, Robertson, and Kosakowsky pertaining to the

classification and physical characteristics of many of the vessels.

Under circumstances that were far from ideal, these ceramicists have provided type-variety assignments as best they could. Their analyses were performed using the illustrations, some descriptive notes, and where available, photographs of the vessels. Aimers has had a hands-on look at some of this pottery at Lamanai over the years, but in many cases the pottery was excavated so long ago that it has been lost through the ravages of time in a tropical locale. Additionally, there was not always adequate contextual information for the vessels, and time for this analysis was limited.

1.5.1. Procedures for Classifying the Late Preclassic Ceramics

The Late Preclassic pottery from Lamanai was initially classified more than twenty years ago (Powis 2002) and has been updated for this volume with changes in type-variety designations and vessel forms in light of recent work done at other Maya sites. Fortunately, type-variety is designed as a flexible system of classification that lends itself to revision and the incorporation of new data. We turned to Robin Robertson, who had previously done a preliminary re-analysis of the material with Powis (Robertson et al. 2016), and to Laura J. Kosakowsky to participate. Both have experience analyzing Preclassic pottery in Northern Belize. The reanalysis of the Late Preclassic vessels reflects their joint work.

Together, Robertson and Kosakowsky reviewed the descriptions and illustrations of each Preclassic vessel and assigned a new type-variety designation when appropriate. They identified and described important attributes of vessels in the “Notes” column of the vessel information list in Section 3.1, which users of the text might find helpful with comparing their material to that of Lamanai. They standardized the type designations using the Principle Identifying Attributes of the established types and checked for consistency with select published ceramics from sites throughout the Maya Lowlands (Gifford 1976; Kosakowsky 1983, 1987; Kosakowsky and Pring 1998; Kosakowsky et al. 2020; Powis 2002; Pring 1977; Robertson 1980, 2016; Robertson et al. 2016; Sabloff 1975; Smith 1955; Smith and Gifford 1966; Willey et al. 1967).

Using Sabloff’s (1975) categorization of forms they also reviewed the forms assigned. It quickly became apparent that the condition of the Lamanai vessels (i.e. warped or with irregular rims) and discrepancies between the measurements provided in reports and the illustrations did not allow a strict adherence to the precise measurements advocated by Sabloff. Additionally, in some instances, it was not clear whether the vessel was whole or had been based on a sherd profile, and in those cases the vessel form designations are less secure. The ceramic phase/complex assignments designated by Powis (2002) for the Preclassic

vessels that he analyzed are indicated in the *Vessel and Object Information List*. When used in conjunction with the Lamanai chronology (Table 1.1) these provide a temporal framework for the Preclassic vessels.

1.5.2. Procedures for Classifying the Classic through Postclassic Ceramics

For the classification of the Classic through Postclassic period pottery, we turned to Jim Aimers, who has conducted research on the Lamanai pottery for two decades. Aimers agreed to assign system, supersystem, and/or type-variety names, but he declined to deal with the form names. Therefore, for the Classic through Postclassic vessels we have primarily retained the form names used by Pendergast in his vessel notes, which may not strictly adhere to Sabloff's (1975) form naming system. Aimers conferred with Kosakowsky and Sagebiel about some of his classifications, as they had both analyzed Classic period ceramics from other sites in northern Belize.

Aimers (this volume) describes the identification and classification of pottery as an iterative process, which he approaches slowly, carefully, and with a reluctance to create new type names at Lamanai. He is more interested in similarities than differences in pottery styles and advocates for the use of ceramic systems as a first step in type-variety analysis (see section 1.4.2). For the illustrated vessels, Aimers assigned type names when he had physically handled both the Lamanai pottery and examples of that named type in another collection. The vessels and other artifacts for which Aimers was reasonably confident about identifying have been assigned ceramic type or group names and a basic Maya period name (Late Classic, Terminal Classic, etc.). These period assignments are gross temporal assessments for the pottery types identified. For vessels that cannot confidently be identified, usually because they are very rare or very common, or often because their context is not well understood, Aimers has used the designation of "currently unclassified." In some cases Aimers has given these "currently unclassified" vessels a ceramic type, group, or system suggestion, but has not assigned time periods for these. A ceramic system or supersystem was typically designated for Lamanai vessels that Aimers had not had in-hand, or when he had not seen a stylistically similar named type from another site. Aimers notes in Section 3.1 provide additional information on his type-variety classification for some vessels. Together Aimers and Graham named new types at Lamanai and these are also identified in his vessel notes. Aimers describes his analytical approach in greater detail in Appendix A, *Introduction to Classification Procedures: Classic Period and Later*.

