Potographies and Biographies: The Role of Food in Ritual and Identity as Seen Through Life Histories of Selected Maya Pots and People

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Introduction

The centrality of food, drink and feasting in religious and ceremonial activities of the Lowland Maya, especially the nobility, is well recognized, and has also been tied to political economies (see Foias 2007). Numerous representations of drinking, serving and storage vessels appear in historical and mythological scenes depicted on figure-painted polychrome vessels and other media. These depictions testify to the integral role of consumption, offering and sharing of food and drink in religious and ceremonial proceedings. These ritual acts and forms of reciprocity signified, solidified, symbolized and reinforced conventional and appropriate social practices – proper and a distinctly Maya way of conducting affairs. Such practices, however, were not confined to the face-to-face interactions of the living but also played an important role in funerary and mortuary rites, and in ancestor veneration, when they would symbolize and reinforce relationships between the living and the dead, and among the ancestors and their descendents.

The interment of serving and drinking vessels along with the deceased appears to have been one of the few universal characteristics of Maya mortuary practice until at least the Terminal Classic period (Welsh 1988). The presence of these items in burials is most often thought of as incidental, and their functions may have varied. As containers for food and/or drink offerings, pots are thought to have been placed with the deceased as a final commemorative act or as necessary sustenance for the journey to the underworld. Burial vessels have also been perceived as personal belongings of the deceased and as objects that characterize office, status, age or sex (Ruz 1965). It has also been suggested that they might have served as a "metaphor for *pibs*, "earth ovens" where the gods, like food, were transformed or conjured" (Mock 1998:7; see also Freidel et al. 1993; Houston 1993).

Although the occurrence of pottery in burials is a widespread and long-lived practice among the Lowland Maya, assemblage composition (stylistic and functional

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J.E. Staller and M.D. Carrasco (eds.), *Pre-Columbian Foodways: Interdisciplinary Approaches to Food, Culture, and Markets in Ancient Mesoamerica,*
DOI 10.1007/978-1-4419-0471-3_15,

types and quantities) and depositional patterns (specific placement and condition of vessels) can vary greatly. Furthermore, not all burials contain pottery. This variation strongly suggests that there were no standard or prescribed customs with regard to: (1) specific details of the rites and ceremonies involving food and drink (or simply their containers), (2) the kinds, quality and quantity of vessels to be interred, and (3) location of placement within the burial. This study explores factors contributing to variation in the use and deposition of ceramic containers for food and drink within the context of mortuary ceremonies.

Understanding individual identities is the key to moving from the incomplete physical remnants of what is really a complex series of acts, to understanding the performance of these acts. Differences in biological identity created by age and sex are relatively easily deduced from skeletal remains, but the "social persona" (*sensu* Goodenough 1965) as identified through characteristics such as relative position in a social unit, socioeconomic status, and affiliation of the deceased with other social groups is most often inferred from indirect evidence. This evidence can vary in form, but conventionally has included characteristics such as: the position and orientation of the body, the expense of grave preparation, grave location, and the quantity and quality of grave goods (e.g., Carr 1995). As discussed recently by Gillespie (2001:77–78), however, the assumption that burial treatment can be considered to reflect the "terminal status" of the individual interred is problematic because it ignores the fact that mortuary rituals have as much to do with "the relationships negotiated by the survivors between themselves and the dead and/or the ancestors the dead will become." She argues further that mortuary rituals also reflect "the relationships within and among the social units that were involved with the deceased, including political and economic relationships" (2001:78), using as an example child burials, which are more often accorded treatments more commonly given to high status adults. Although few would deny the possibility that the political and economic aspects of social identity might shape mortuary treatment in individual cases, how does one go about recovering this level of information about the individual from the evidence available in burials, and is it even possible to do so?

We frame our understanding of Maya food and ritual using Barrett's (2001) argument that less visible aspects of social identity can be brought to light through the study of execution of ritual, its historical context and the physical remains it produces. Accordingly, we reconstruct the materially invisible lives of pots and the people with whom they were interred. Just as the social biographies of deceased individuals are encrypted in the biology of their skeletons, pots also have their own identities conferred upon them by the choices of their makers and then by their users from their initial creation to their final deposition. Looking beyond the observable characteristics of mortuary treatment and skeletal remains, we use the composition of human tissues and ceramic fabrics along with their forms (body modification and ceramic styles) to investigate the geographic origins of the deceased. This approach enables the application of practice theory to understand the behavior of the deceased and actions of the living funerary participants that lay outside of the actual mortuary ritual. We show how food (as a biological entity), and pottery vessels (as material creations) signal forms of social identity in

Terminal Classic to Early Postclassic period burials, using four residential complexes at the Maya city center of Lamanai to illustrate this approach.

Historical Context: Lamanai During the Terminal Classic to Early Postclassic Period

The Maya city center of Lamanai is situated on the northwest bank of the New River Lagoon in the interior of northern Belize (Fig. 1). The site is perhaps best known for its lengthy and continuous history of occupation, spanning the Middle Preclassic to Spanish Colonial periods (Graham 2004, 2008; Pendergast 1981a:31, 1988). A robust and well-preserved record has emerged from the Terminal Classic (A.D. 770 to 960/1000) to Early Postclassic period (A.D. 960/1000(circa. AD 770 to AD 1200/1250) (Graham 2008), the earlier end of 1200), which coincides with the Classic Maya collapse. Material evidence of this time period is particularly rich, being represented by extensive artifact and architectural assemblages, and numerous burials and offerings. A large body of evidence on the construction history, use and maintenance of different residential and public areas has revealed that the Terminal Classic to Early Postclassic community at Lamanai experienced continued prosperity and a degree of stability, marked by construction projects that varied in scale at a time when many other Maya city centers were undergoing economic

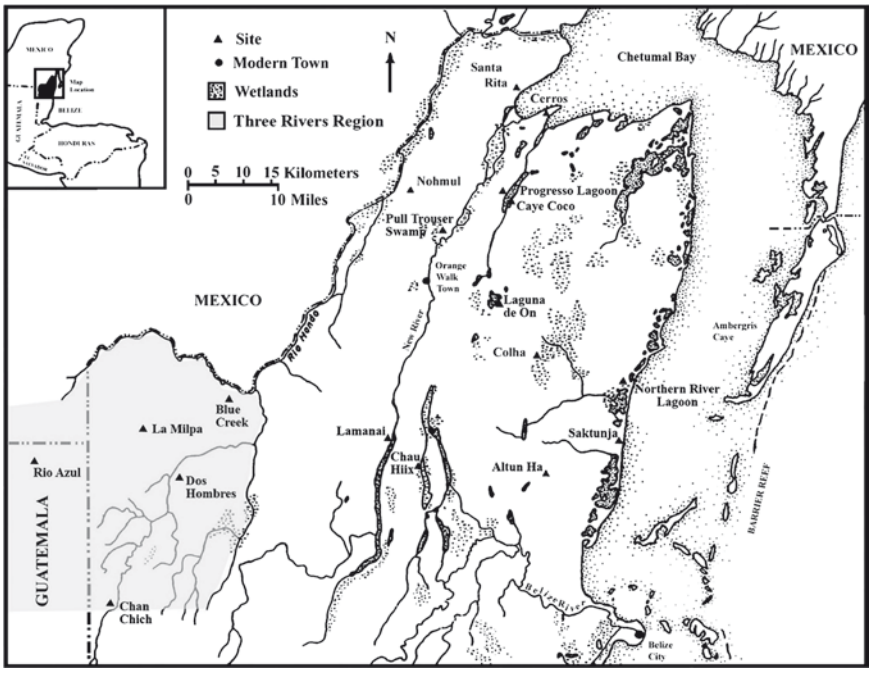


Fig. 1 Map of northern Belize showing sites mentioned in the text

decline and socio-political upheaval on an unprecedented scale. Accompanying these changes to the built environment, are equally conspicuous shifts in burial patterns, mortuary and offertory practices and in material culture inventories, particularly pottery. These highly visible instances of change did not occur simultaneously, but appear to have emerged over at least three centuries amidst an undercurrent of continuity in socio-political and economic organization and infrastructure, as well as religious and ceremonial practices (Graham 2004, 2006; Pendergast 1986).

This pervasive dynamic of stability and change appears to have been integral to the community's ability to survive in the face of changing world conditions on the regional level. In considering cultural developmental processes that contributed to the evolution of material manifestations of Classic versus Postclassic period Maya culture, it appears that this dynamism was instrumental in shaping a complex and fluid community history in which earlier traditions were retained, sometimes in a slightly modified form, alongside shifts in direction and obvious instances of innovation. Some of the changes that can be observed in the material record (such as presence of a 'Yucatecan style' columned building, Str. N10-2, similar to examples found in the northern Yucatan Peninsula, two elite residential and administrative buildings and the dramatic shift in pottery styles) appear to be based on new ideas, which originated either from local innovations or other geographic areas (Pendergast 1981a). Others (such as approaches to building construction and ceramic manufacturing technologies) appear, however, to result from the merging of new ideas with established conventions (1986; Graham 1987). It is this blending of the "new" with the "old" that provides the potential for understanding patterns of variability across time and space in community-based activities such as the interment of the deceased.

There are at least two underlying factors that appear to have contributed to the continued well-being at Lamanai: (1) the site's lake side location within a major river system, and (2) the nature and qualities of community leadership Pendergast (1981a, 1992, 1990:171–172). The New River Lagoon would have provided an abundant source of protein from fish and other aquatic species and an ample supply of water to fulfill a range of community needs, including the possible use of the raised field system situated to the north of the site. Studies of paleodiet and dental pathology provide direct evidence of the good health of the population during the Terminal Classic and Postclassic periods, and indicate a uniform mixed diet that became more dominantly maize-based during the Postclassic period (White and Schwarcz 1989). The New River would have enabled trade and communication with sites in both the southern and northern lowlands (Fig. 1). The Peten and northern Yucatecan influences observed in Classic and Terminal Classic to Early Postclassic architecture, respectively, provide evidence of the flow of ideas from these areas into the local community (Pendergast 1981a, 1985, 1986). Likewise, the occurrence of nonlocal material items, such as marine shell deriving from coastal regions and ground-stone implements of granite from the Maya Mountains, attest to economic links to different areas within the lowland region. Participation in long distance exchange networks is suggested by the presence of material culture created from distant raw materials from Mexico and the highlands of Guatemala and Honduras, such as liquid mercury (Pendergast 1982) and items made of jade, obsidian, copper, gold and metal alloys (Pendergast 1990:173, 1992). Although interaction with communities situated to the north of Lamanai were

well established by at least Late Classic times (Howie 2005), it would appear that Lamanai strengthened ties to the northern lowlands during the Postclassic period, probably because the collapse caused the loss of southern lowland trading partners.

It would seem that continued resilience of the community was due, in no small part, to the stability and effectiveness of community leadership. Community leaders at Lamanai were still able to complete large-scale communal construction projects during the Terminal Classic and Early Postclassic periods, as demonstrated by the major reshaping of the Ottawa Group elite residential and administrative complex (N10[3]), the construction of new ceremonial structures in the N10-9 and N10-2 plazas groups (Fig. 2), and new, presumably, nonelite residences (Pendergast 1981a:40, 1986:229–233, 1992:74). In addition, considering the effort expended by elites to provide appropriate living quarters and settings for religious, ceremonial and administrative activities, it would seem that they continued to receive the full support of the community. The community's ongoing support of the local nobility could have derived from a reduced demand of labor tax in comparison to other centers. Pendergast (1992:73) has noted that the tendency to modify the front of major ceremonial structures, rather than completely transform them, started in Late Classic times, and may reflect a scaling down of public work projects requiring labour tribute. He also observes that the comparatively small number of structures that conform to the "Palace" building type at Lamanai might imply the presence of fewer elites (Pendergast 1992:66–67). Accordingly, the ongoing stability of the site from Late Classic times onwards might be due, at least in part, to the fact that the community was not plagued by the internal factional conflicts and associated interelite competition that contributed to the instability and rapid decline of other southern lowland centers.

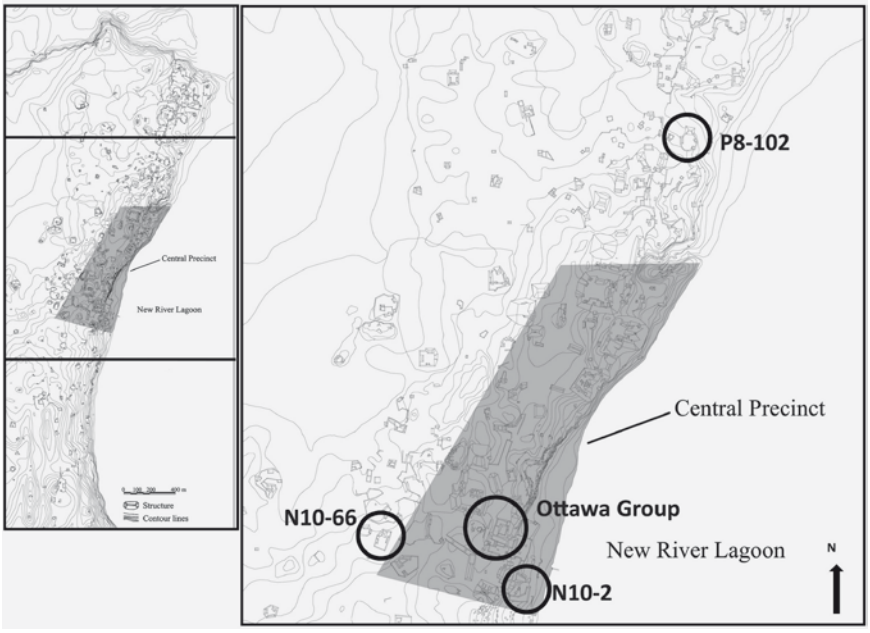


Fig. 2 Map of Lamanai showing building groups mentioned in the text

There is abundant evidence that the community leaders at Lamanai actively sought to maintain and preserve the central place of ceremonial and religious activities in community life, as well as their traditional role at the head of these activities (Pendergast 1992:77). For instance, the general focus of construction activities appears to have been predicated on the establishment and maintenance of physical links between the past and present, as well as the affirmation of traditional religious beliefs. The placement of new ceremonial structures and facilities, including a ball court, literally in the shadows of buildings that were major sites of ceremonial activity in the Classic period and earlier, would give a strong physical and psychological sense of continuity in the built setting of religious and ceremonial events.

In the face of this conservatism rises the issue of whether individuals from other communities played a part in the Lamanai polity in Terminal Classic or Early Postclassic times. The current evidence of outsiders (i.e. immigrants) is ambiguous. is ambiguous. The construction of new residential structures on the periphery of the central precinct starting in the Terminal Classic might suggest their acceptance, as has been the case of other sites in northern Belize (e.g., Hammond and Tourtellot 2004; Sullivan 2002). At Lamanai, however. there is little corroborating evidence from architecture, construction approach or pottery styles to identify the inhabitants of these new residences specifically as immigrants (Pendergast 1992:77).

Terminal Classic to Early Postclassic Burials in Residential Complexes

The burials that are the focus of this study, excavated during David Pendergast's investigations at the site between 1974 to 1987, were found in four building complexes: groups P8-102, N10-66, N10[3] (also known as the "Ottawa group"), and N10-2 (Fig. 2). All of these building groups comprise a central plaza (or courtyard in the case of the Ottawa group) around which different structures are arranged, at least one of which is presumed to have served as a residence (Pendergast, 1975, Pendergast, 1981a, b, 1985, 1986). Groups P8-102 and N10-66 were constructed during the Terminal Classic period in residential areas that border the central precinct on the north and west, respectively. The P8-102 group was built in an area that was previously abandoned during the Preclassic period, whereas no earlier buildings were detected in the vicinity of the N10-66 group (Pendergast 1981a:40, 1986:227–229). The Ottawa group has been interpreted as an elite residential and administrative complex at Lamanai, first established during Preclassic times (Pendergast 1985:93–95, 1986:232–233; Graham 2004:18–21). This building group underwent a major reshaping during the Terminal Classic period. Given the central and prominent location of this building group, as well as the considerable and on-going effort dedicated to modifying its architectural and design features, it can be concluded that the elite group who occupied it most likely had an important role and status within the community. The N10-2 plaza group is situated just to the east of the plaza group onto which the Ottawa Group fronts (N10-9 plaza group). The earliest phases of at

least some of the buildings in this group (e.g., N10-2) date to the Preclassic period (Pendergast 1975, 1981a:44). The largest structures, N10-2 and N10-4, underwent several episodes of modification and rebuilding until the Early to Middle Postclassic period. Based on their architectural features, N10-2 appears to have functioned as a ceremonial structure, whereas N10-4 appears to have served as an elite residential and administrative building (Pendergast 1981a:44–51, 1986).

These four building groups conform to the "typical" Maya residential grouping i.e., a domestic compound that would have housed an extended family of relations over multiple generations (e.g., Ashmore 1981; Gillespie 2001). The household members shared living arrangements and economic and ritual activities, and consequently would have maintained a collective identity (Hendon 1999). Burials encountered within these contexts are presumed to represent family members, who, for reasons unknown, were interred within the physical space of the household as opposed to some other location. The comparatively small number of burials found within residential complexes up until the Terminal Classic at Lamanai, and elsewhere (c.f. Welsh 1988), indicates that only certain family members were accorded this special treatment. The evidence for continued ritual activity at these locations (e.g., incense burning) suggests that these deceased family members remained important in the day-to-day lives of the living (Chase and Chase 1994).

Terminal Classic to Early Postclassic Burial Patterns

Although a detailed synthesis of community level patterns in mortuary treatment at Lamanai is yet to emerge, some general observations of Classic vs. Terminal Classic and Postclassic patterns can still be made. Burials dating to the Terminal Classic and Postclassic periods constitute the predominant portion of the burials documented during Pendergast's excavations of various structures and building groups, including the four residential complexes that are the focus of this study. (White 1997). Nevertheless, since Classic period construction phases of these structures and building groups were as intensively investigated as later phases, the greater number of Terminal Classic and Postclassic burials would seem to imply that the interment of deceased members of the community within building cores and foundations became a more common practice in these later time periods. For example, ceremonial structures built in the Terminal Classic and Early Postclassic periods such as N10-7, N10-2 and N10-1 were found to contain a large number of burials (in some cases more than fifty), while those built in the Classic period or earlier such as N9-56, N10-43, N10-27 and N10-9 contained comparatively few (Pendergast 1981a). The prevalence of interments dating to the Terminal Classic and Postclassic periods also suggest a broadening of the function of some ceremonial buildings, which in effect, took on an additional role as burial repositories. Our sample was selected from residential complexes occupied during the Terminal Classic to Early Postclassic period not only because they provided a large number of skeletons and ceramics, but also because the people who lived in these complexes were involved in a range of ritual activity.

Other characteristics of the mortuary pattern that appear to represent a clear departure from earlier practices include the types of objects included as grave goods, and possibly the positioning of body within the burial. Terminal Classic and Early Postclassic burial accompaniments comprise a range of items similar to those in Classic period burials including pottery vessels and objects of worked stone, marine shell and bone (Pendergast 1978, 1981a, 1988), but obsidian artifacts diminish (Pendergast 1986:241) and metal artifacts appear (Pendergast 1975, 1981a). The metal artifacts, imported as finished products are significant because they provide evidence of distant trade contacts at a time when the central precincts at many other Maya centers in the southern lowland region had been long since abandoned (Pendergast 1986; Graham 2004). Perhaps more importantly, they also reflect the emergence of new forms of material wealth and prestige within the community.

The Terminal Classic period also marks a significant change in the depositional pattern of ceramics in the context of burials. During the Classic period and earlier, pottery vessels are used in the burial as grave accompaniments for the corpse and, at least in some cases, as containers for food, drink and other perishable and nonperishable substances (Pendergast 1981a). With the emergence of Early Postclassic pottery styles, the production of which was well established by least A.D. 1050 (Graham 2008), the ceramics within burials exhibit patterns of preinterment breakage – i.e. whole vessels are usually entirely absent, and the fragments of broken vessels are placed alongside and scattered over the corpse. Given the specific placement of the pottery fragments within these burials, and since they are largely restorable into complete forms, it would appear that the original vessels were intentionally smashed just prior to interment as part of funerary rites. In addition, in every instance where smashed vessels were interred, pieces of each of the vessels recovered from the burial are missing, suggesting that the fragments were retained by participants in the burial ceremony, perhaps as a memento of the occasion or for some other purpose such as maintaining ancestral connections. By the end of the Terminal Classic period, therefore, changes are evident in: (1) the nature and kinds of grave goods that were included in burials, (2) the established form of funerary ceremonies, which come to incorporate new forms of ritual behaviour, and (3) the patterns of use of pottery vessels. These changes, including the interment of smashed pottery, become standard practise during the Early Postclassic period. The implication of such changes is that beliefs about the function and appropriate treatment of pottery within the context of mortuary rites had changed.

In considering Lamanai burial patterns within their broader historical context, the main questions that emerge are: (1) how are new ideas about appropriate mortuary rites translated into "common practice," and, (2) is change the result of the flow of new ideas or new people (i.e. immigrants) into the community? Because local community development was contingent upon both external and internal economic, social, political, and ideological influences, understanding these processes depends on historically contextualizing the material record of funerary activities and reconstructing the identity of the participants. Burials present material remains of these activities in their historical and social contexts. They also offer some evidence of the conditions, beliefs and values that underlie ceremonial practices. If we consider mortuary practice to reflect equally the identity of both the deceased and participants (direct and indirect), then we can understand the identities of the social and economic groups involved with the deceased.

Pottery-Based Reconstruction of Identity

Differences in identity among residential burials were investigated through a comparative study of the stylistic (morphology and surface treatment) and provenance (origin of manufacture) characteristics of vessels interred within individual burials and in different household contexts. Within burial contexts, vessel styles reflect the choices of living participants in mortuary events, and are indicative of group values, tastes and consumption practices.

Vessel provenance relates specifically to the compositional characteristics of ceramic bodies, particularly the characteristics of raw materials (e.g., clays, rocks and minerals) used in their manufacture, which vary across the landscape because of differences in natural geological processes of formation and alteration. Ceramic bodies can be analyzed under the microscope in thin section (thin section petrography) and compared to geological specimens of known origin, or geological maps and descriptions of the region under study, in order to determine where they were made (c.f. Whitbread 1995; Freestone 1991).[1] Therefore, the origin of ceramic vessels provides insight into the economic relationships and interactions of the people involved in mortuary ceremonies.

The choice of particular raw material ingredients and paste processing techniques also reflects the specific practices of particular potters/groups of potters. Potters working within the same geological zone, may or may not follow the same approach to paste making – i.e. use the same clay deposits or tempering materials and prepare them in the same way. Hence, even when vessels are stylistically equivalent it is often possible to discriminate the products of potters working in the same locale based on compositional characteristics (c.f. Day et al. 1999). Thus, *vessel composition* not only reflects pottery produced within specific resource zones, but also particular manufacturing traditions. These linkages between pots and specific geographic locales or geological deposits, and among pots that have the same or different stylistic characteristics, are used to reconstruct consumption patterns that reflect economic practices, as well as relationships with particular economic groups (groups of producers).

The provenance of a vessel produced in a distant location or from nonlocal raw materials is a measure of its perceived value, and the occurrence of "exotic" ceramics in burial contexts is often used as an index of relative wealth and/or status. Accordingly, knowing where a vessel was produced in comparison to where it was deposited can offer insight into other aspects of social identity, including the tastes and values of a

[1] The burial vessels included in this study were analysed as part of a larger project investigating the stylistic, technological and provenance characteristics of the late Late Classic to Early Postclassic ceramic assemblage at Lamanai (Howie 2005). This study examined the stylistic characteristics of over 2000 individual vessels deriving from burials, offerings and midden deposits. Over 700 of these vessels were analysed petrographically (in plane- and cross-polarized light at magnifications between 25x and 100x) and compared to fired samples of 35 different local clays and numerous rock samples. Provenances of "non-local" pottery fabrics (pastes) were ascribed using a broad range of comparative geological information, including maps, published descriptions of formations and sediments and geological specimens. For detailed descriptions of the different fabric (paste) types discussed here, as well as the regional and local geology see Howie (2005).

social group with respect to acknowledged forms of material wealth or prestige. It is assumed that such vessels were used in ritual and, when functioning as containers, an important category of ritual use must have been feasting and drinking.

Biological Reconstruction of Identity

Three lines of evidence were used to reconstruct identity from the biological record: head shaping, artificial dental modification, and stable isotope analysis. The fragmentary nature of most of the skeletons precludes full osteological analysis of morphological distinctions. Cranial and dental modification styles were categorized according to Tiesler Blos (1998) and Romero (1970), respectively. These are thought to be markers of group or regional identity, but they become embodied at different life stages. Cranial modification is done during infancy, whereas dental modification is done on permanent teeth, presumably in early adulthood. Dietary and geographic identities were derived from the carbon- and oxygen-isotope compositions of bones and teeth based on the premise that "we are what we eat and drink." Details of the theoretical basis and methodology used in isotopic analyses are provided in previous publications (White et al. 2000, 2001a, b).

A permanent record of food and drink is created in enamel during the time of its mineralization, but bone continuously remodels and, therefore, reflects a longer term, more homogenized record (10–15 years) (Parfitt 1983). Movement to a new environment will result in a reequilibration of isotopic compositions, a process that will occur more quickly in children because their remodeling rates are higher. *In vivo* relocations can be identified by comparing the isotopic compositions of enamel and bone.

The oxygen isotope composition ($\delta^{18}O$) of bones and teeth reflects that of body water, which is derived from imbibed meteoric water which, in turn, is determined by climatic and environmental variables (Longinelli 1984; Luz et al. 1984). Intrasite variability can be caused by seasonality, use of different local water sources, consumption of imported foods with high water content, and the presence of breastfed children, who are enriched in ^{18}O because their water source is mother's milk (Wright and Schwarcz 1999; White et al. 2000). The environmental difference among sites must be distinctive enough for $\delta^{18}O$ values to be effective discriminators of geographic origins.

Isotopic variation that exists among plants and trophic levels is the basis of paleodietary reconstruction (for a more detailed review of the principles and interpretation of paleodietary isotopic analysis, see Ambrose 1993). Briefly, there are three photosynthetic categories (C_3, C_4, CAM) each with different $\delta^{13}C$ values for all plants. C_3 plants have the most negative values (modern average is $-26.5^0/_{00}$, O'Leary 1988), and comprise most wild plants, trees, nuts, fruits and vegetable cultigens. C_4 plants have less negative $\delta^{13}C$ values (modern average is $-12.5^0/_{00}$, O'Leary 1988). The only C_4 staple in Mesoamerica was maize. To provide the most complete dietary reconstruction, we have analysed both collagen and structural carbonate in our samples. Normally, collagen reflects the protein component of the

diet as it is derived from plants, and structural carbonate reflects whole diet (Krueger and Sullivan 1984; Ambrose 1993).

Because humans are omnivores, their isotopic compositions reflect both the plants and animals that they consume. Diets from coastal Mesoamerica include marine/reef resources, which confound dietary interpretations because they emulate C_4 plants. To deal with this problem, we use nitrogen-isotope ratios in collagen ($\delta^{15}N_{col}$) to establish the trophic level and source of dietary protein (DeNiro and Epstein 1981; Schoeninger 1985). In this food web, the highest $\delta^{15}N$ values are found in marine mammals and the lowest in legumes and blue-green algae (Schoeninger 1985). We also use the spacing between $\delta^{13}C$ collagen ($\delta^{13}C_{col}$) and structural carbonate ($\delta^{13}C_{sc}$) values because it provides a measure of the degree of carnivory versus herbivory, and marine resource consumption appears as exaggerated carnivory (Krueger and Sullivan 1984; Lee Thorp et al. 1989; White et al. 2001b). Previous isotopic analyses for Lamanai indicate that its inhabitants depended less on maize and more on marine foods than those from other regional sites, and that the C_4-based diet there included C_4-consuming animals such as dogs or deer and C_4-like marine resources (Coyston et al. 1999; White and Schwarcz 1989).

The integrity of preservation of isotopic compositions of carbonate was assessed using the CO_2 yield, calcium/phosphate (C/P) ratio, and crystallinity index (CI). We assume that $\delta^{18}O$ values were well preserved as no significant correlations were found between them and CO_2 yield (Pearson's $r = -0.14$, df=37), C/P (Pearson's $r = -0.01$, df=37), or CI (Pearson's $r = 0.29$, df=37). Similarly, there were no significant differences between mean $\delta^{18}O$ values for first molar/bone pairs ($27.6 \pm 0.9/27.1 \pm 0.4‰$) or premolar/bone pairs ($27.9 \pm 0.8/27.6 \pm 1.2‰$) excluding one outlier (N10-4/9 Ind – a premolar). This is not the case, however, for the $\delta^{13}C$ values of structural carbonate. For samples that have C/P values over 0.30, there is a highly significant correlation (Pearson's $r = 0.47$, df=37, $p < 0.01$) in which the $\delta^{13}C_{sc}$ values are all lower than −2.0‰. We have excluded these results from our calculations and interpretation and taken the precaution of excluding all other $\delta^{13}C_{sc}$ values that are lower than −2.0‰.

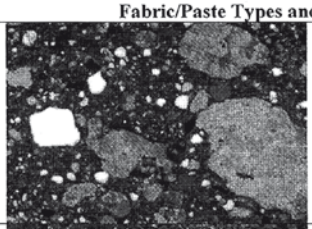
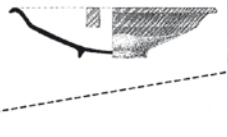
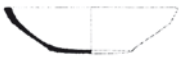
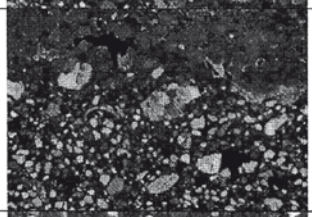
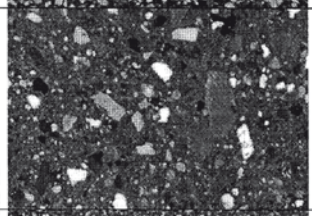
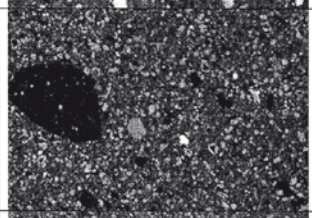
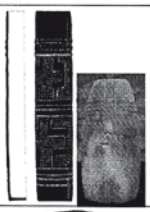
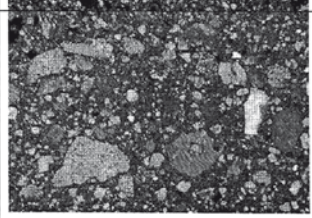
The collagen in these samples was well preserved. The mean collagen yield is high for this region of the world ($6.1\% \pm 2.7$, range = 0.6–13%) (Table 1). Only two samples (N10-7/3 and dentine collagen of N10-7/1) did not yield sufficient collagen for analysis. All other collagen samples gave C/N ratios within the acceptably defined range of 2.9–3.6 (DeNiro 1985).

Terminal Classic to Early Postclassic Burials in Residential Complexes

General Statements

The pottery – The burials within the different household complexes examined contain a striking array of stylistically different vessels, in terms of their individual morphologies and decorative treatment and this diversity is reflected in

Table 1 Isotopic data for selected building groups at Lamanai, Belize

Burial	Pottery Styles	Fabric/Paste Types and Provenance	
102/1			**'sandy sascab-tempered'** a sandy calcareous clay, tempered with sascab **Local** - clay is comparable to deposits situated at the north side of the site (outwash area); temper is comparable to cretaceous sascab outcrop southwest of the central precinct.
102/2	 		**'non-local calcite-tempered'** a calcareous clay containing shell fragments and rounded siliceous inclusions tempered with a white, sugary textured, (containing distinctive quartz) **Non-local** – distinctive temper; riverine clay from inland areas of northern Belize
102/3			**'grog-tempered'** calcareous clay tempered with grog and varying amounts of sascab and crystalline calcite. **Local** – comparable to clays at the site (subsurface and associated with weathering limestone)and on the north side of the site (outwash area)
102/10b			**'dolomitic marl-based'** sandy-textured marl deriving from weathered dolomite, likely untempered **Non-local** - associated with dolomite formations (Cayo Group) in east and northeast northern Belize
102/15			**'calcite and sascab-tempered'** a calcareous clay containing discrete calcite grains, and lesser quantities of other minerals, tempered with sascab and finely to medium crystalline limestone **Local** - comparable to clays at the site that are associated with weathering limestone
104/2			

their compositional characteristics, with multiple local and nonlocal fabric types represented. This pattern of variability is also consistent with the styles and compositions observed among pottery found in other Terminal Classic to Early Postclassic contexts at Lamanai, such as refuse deposits associated with domestic

and ceremonial structures, and caches and offerings (Howie 2005; Graham 1987; Pendergast 1982). In the majority of burials, the styles of vessels are visually similar to established pottery types that characterize the late Late Classic through to Early Postclassic periods.[2] Therefore, it is likely that the kinds of vessels interred as part of funerary ceremonies at these building groups were not strictly produced for this purpose, but also used in a range of other activities and contexts. The range of functional categories of the vessels in the burials examined is, however, restricted. As a group, they comprise stylistic types that are generally thought of as standard decorated table wares (or fine ware) – i.e. generally used for serving, eating, and drinking in various social and ritual contexts. Conspicuously absent in these burials are utilitarian wares, such as storage jars, cooking pots and other, generally undecorated, vessel forms that were used in food preparation and other domestic activities.

The skeletal remains – The $\delta^{18}O$ values of the individuals interred in the different building groups range from 25.7 to 30.5‰ (Table 1), which is wider than the 2.0‰ range normally found in control samples at Mesoamerican sites (White et al. 2007). There are no differences in mean $\delta^{18}O$ values among the building groups, and because this range is so continuous, no foreign locations can be identified. A comparison of enamel and bone values indicates that some relocations likely occurred during childhood (Fig. 3), but it is likely that the catchment area for inhabitants of the site is also a lowland coastal region. Similarly, the cranial modification style (with one exception N10-4/9) is fronto-occipital, which is consistent with the broad regional distribution of this form of identity (Tiesler Blos 1998).

P8-102

Ceramic Evidence

A range of different Late to Terminal Classic vessel styles and fabric types is found in the P8-102 group burials (Table 2), and all vessels except 104/2 were interred whole and preserved intact. Single vessels were included in four burials (102/1, 102/3, 102/10b, and 104/2), and two were included in Burials 102/2 and 102/15. Stylistically different bowls occur in the majority of the burials containing only one vessel, and these include a red-slipped flaring bowl, a polychrome composite silhouette bowl with a ring base and a monochrome black deep bowl with out-curving sides and groove-incised decoration. Of the remaining three burials containing pot-

[2] 2 – We have purposely not used established Type:Variety designations in referring to the vessel styles that occur in the Lamanai burials to avoid any unsubstantiated interpretive implications concerning compositional equivalency and origin of manufacture.

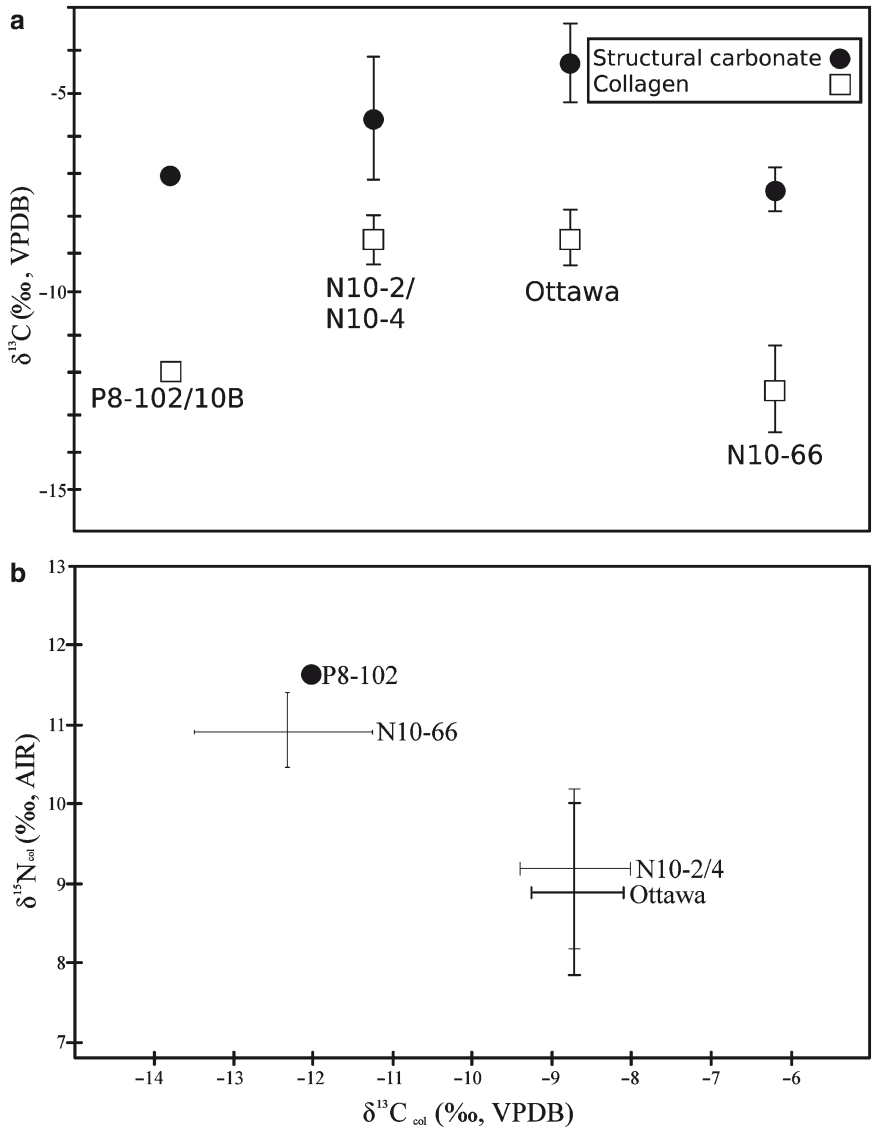


Fig. 3 Means and standard deviations for (**a**) $\delta^{13}C$ values of Lamanai collagen and bone bioapatite structural carbonate and (**b**) $\delta^{15}N$ vs. $\delta^{13}C$ values of Lamanai bone collagen

tery, Burial 102/4 contains a bi-chrome basal-break dish, Burial 102/2 contains two differently shaped orange-slipped dishes, and Burial 102/15 contains two monochrome black vases (one cylindrical and one barrel-shaped) with different decoration. In the two cases where two vessels occur, both vessels are stylistically different examples of the same general shape class and, therefore, clearly had the same

Table 2 Stylistic and fabric/paste characteristics of vessels from burials in the P8-102 building group

				Structural carbonate					Collagen				
BUR #/ individual	Sex	Age	Bone/ tooth	$\delta^{13}C^{0}/_{00}$	$\delta^{18}O^{0}/_{00}$	Yield CO_2	CP	CI[b]	$\delta^{13}C^{0}/_{00}$	$\delta^{15}N^{0}/_{00}$	C/N	YIELD% col	$\Delta^{13}C_{col\text{-}sc}$
P8–102/10B	F	A		−7.4	27.7	0.6	0.34	3.1	−11.9	11.3	3.2	4.5	4.5
			PM	−6.7	28.6	0.5	0.35	2.9	−12.1	11.8	3.2	11.3	5.4
N10–66/1	M	A		−7.2	25.7	1.0	0.48	3.0	–	–	–	0.6	–
N10–66/3	?	A		−7.6	26.7	0.9	0.50	2.8	−12.2	10.7	3.2	7.0	4.6
N10–66/3			PM	−7.1	29.1	0.5	0.28	3.2	−13.1	11.5	3.2	6.4	6.0
N10–66/12	?	?		−7.6	26.7	0.8	0.45	2.8	−13.2	10.7	3.2	3.2	5.7
N10–66/12			M1	−7.7	28.8	0.9	0.37	2.9	−13.5	10.8	3.2	4.9	5.8
N10–67–1	?	A		−7.9	27.1	0.9	0.44	2.8	−11.5	10.5	3.2	5.4	3.6
N10–67–1			M1	−6.4	26.7	1.0	0.33	3.0	−10.8	11.7	3.1	7.7	4.4
Mean				−7.4	27.3				−12.4	10.9			5.0
s.d.				0.5	1.2				1.1	0.5			1.0
Ottawa Group													
N10–7/1	F	45+		−4.2	27.9	0.9	0.52	2.7	−8.7	8.2	3.2	6.7	4.5
			PM	−4.2	26.9	0.5	0.26	3.2	–	–	–	–	–
N10–7/2	?	A		−3.3	27.0	0.8	0.42	2.9	−9.0	7.7	3.2	3.9	5.7
N10–7/3	?	A		−5.0	27.0	0.5	0.39	2.8	–	–	–	1.2	–
N10–7/3			M1	−3.4	27.1	0.5	0.30	3.0	−8.4	10.9	3.2	7.0	5.0
N10–14/1	M	A		−5.0	27.0	1.0	0.49	2.7	−8.2	8.7	3.2	4.5	3.2
N10–14/1			PM	−3.3	27.4	0.4	0.33	3.0	−7.8	9.1	3.2	8.3	4.5
N10–15/1	M	A		−5.9	27.1	0.8	0.59	2.7	−8.7	8.2	3.2	7.5	2.8
N10–15/1			M1	−2.0	28.5	0.5	0.32	3.0	−8.8	8.3	3.2	8.8	6.8
N10–17/2	M	A		−4.8	26.3	0.7	0.48	2.7	−9.7	10.3	3.2	6.1	4.9
Mean				−4.3	27.2					−8.7		8.9	4.3
s.d.				0.9	0.6					0.6		1.1	1.0
N10–2/18	M	40–50		−6.0	26.8	1.1	0.31	3.1	−7.5	8.8	3.2	3.4	1.5

(continued)

Table 2 (continued)

BUR #/ individual	Sex	Age	Bone/ tooth	Structural carbonate					Collagen				
				$\delta^{13}C^{0}/_{00}$	$\delta^{18}O^{0}/_{00}$	Yield CO_2	CP	CI[b]	$\delta^{13}C^{0}/_{00}$	$\delta^{15}N^{0}/_{00}$	C/N	YIELD% col	$\Delta^{13}C_{col\text{-}sc}$
			PM	−1.4	27.7	0.4	0.23	3.6	−7.7	9.4	3.3	7.6	6.3
N10–2/49	?	14	M1	−1.8	28.6	1.1	0.30	3.1	−8.7	8.5	3.2	7.8	6.9
N10–2/49	?	child		−8.4	25.9	1.1	0.42	2.9	−9.6	8.5	3.3	3.5	1.2
N10–4/2 Ind A	?	14–18		−5.1	27.7	0.7	0.38	2.8	−9.0	8.6	3.2	3.8	3.9
N10–4/2 Ind A			M1	−2.6	27.9	0.5	0.33	2.9	−8.6	9.0	3.2	6.0	6.0
N10–4/2 Ind B	F	40+		−6.7	26.7	1.0	0.50	2.6	−8.8	9.3	3.1	6.7	2.1
N10–4/2 Ind B			M1	−4.2	26.3	0.4	0.34	3.0	−7.7	8.2	3.2	3.6	3.5
N10–4/9 Ind A	F	50+		−6.7	26.3	1.0	0.43	2.7	−8.8	9.9	3.2	4.2	2.1
N10–4/9 Ind A			PM	−1.0	30.5	0.5	0.32	3.0	−9.4	10.3	3.2	13.0	8.4
N10–4/9 Ind B	F	21		−5.1	26.8	0.8	0.50	2.7	−8.9	9.4	3.2	5.7	3.8
N10–4/12 Ind B	F	50+		−5.9	26.7	0.9	0.44	2.7	−9.4	8.9	3.2	9.6	3.5
N10–4/13	F	OA		−4.9	27.4	0.8	0.43	2.8	−9.5	8.3	3.2	5.5	4.6
N10–4/14	?	A		−4.0	26.5	1.0	0.43	2.9	−8.9	9.9	3.2	2.7	4.9
N10–4/20	?	18–20mos		−6.2	26.5	0.8	0.34	3.0	−8.1	10.8	3.2	4.4	1.9
N10–4/20			dm2	−1.9	28.4	0.6	0.34	2.9	−7.5	11.8	3.2	6.6	5.6
N10–4/30	F	50+		−6.8	26.2	1.0	0.48	2.7	−8.7	7.8	3.2	5.0	1.9
N10–4/30			PM	−1.1	27.7	0.5	0.38	2.8	−8.9	8.2	3.2	10.1	7.8
N10–4/41	F	A		−7.2	26.1	0.9	0.43	2.8	−9.6	.1	3.2	6.7	2.4
N10–4/41			PM	−4.7	28.2	0.6	0.34	2.9	−9.5	9.5	3.2	9.8	4.8
Mean				−5.6	27.2				−8.7	9.2			3.2
s.d.				1.5	1.1				0.7	1.0			1.5

Values excluded from averages because of suspected diagenesis

A adult, *OA* old adult, *M1* first molar, *PM* premolar, *dm2* deciduous second molar

intended function. The dishes in Burial 102/2 are vessels for serving food, whereas the vases in Burial 102/15 are vessels for serving liquids and drinking.

The diversity of vessel styles that occur in the P8-102 burials is mirrored in their composition, with five distinct fabric types represented. Three of these fabric types can be linked geologically to raw material resources available in the immediate vicinity of the site, providing strong evidence that the related vessels were manufactured locally. Differences between these local fabric types in terms of their mineralogy, textural properties and other compositional characteristics relate to natural geological differences in the specific local clays and tempering materials used, as well as processing techniques, and hence, can be considered to represent the paste-making approaches employed by different local potters/groups of potters. Two of the burials in the P8-102 group (102/2 and 102/10b) contain vessels that were not produced in the local area. The compositional characteristics of the orange-slipped rounded dish in Burial 102/2 link it geologically to clay deposits that generally form along waterways underlain by limestone in inland areas of northern Belize. Its provenance is certainly nonlocal since geologically comparable clays and crystalline calcite (used as temper) have not been identified in the immediate vicinity of Lamanai (Howie 2005). Similarly, the compositional characteristics of the black groove-incised bowl in Burial 102/10b also indicate a nonlocal origin in northern Belize. This fabric type is geologically connected to the northeast coast of northern Belize and southern Yucatan and adjacent areas, including the lower reaches of the New River, where sandy marls overlie dolomite and dolomitic limestone (most likely of the Tertiary Cayo Group) (see King et al. 1992 and Howie 2005 for descriptions of this formation). These vessels might come from the Altun Ha area of northern Belize as their fabrics are strikingly similar to the dominant fine ware fabric type found there during the Late Classic period (Howie et al. 2004; Howie-Langs 1999).

The compositional variation among the monochrome black burial vessels from the P8-102 group is also of particular interest. Howie's (2005) study of the technological characteristics of this stylistic group at Lamanai showed that monochrome black vessels nearly always have dolomitic fabrics identical to the "dolomitic marl-based" fabric type observed in the deep bowl in Burial 102/10b. These vessels are also distinguished by the surface treatment and firing techniques used in their manufacture. The two vases in Burial 102/15, however, are technologically different in several respects, exhibiting the characteristics of one of the most prevalent Terminal Classic technological groups at Lamanai, including a "calcite and sascab-tempered" paste. These two vessels, therefore, look like they are "nonlocal" in terms of their general style but were in fact made locally (i.e. using local raw materials and surface treatment and firing techniques).

Skeletal Evidence

The diet of the only individual available from this building group (P8-102/10B) is unlike that seen at all other building groups except N10-66 (Table 1, Fig. 4b). This

woman had less maize in her diet and took her protein from a fairly high tropic level, but her collagen-carbonate isotopic spacing indicates that her diet was not coastal. The $\delta^{13}C_{sc}$ and $\delta^{18}O$ values for enamel versus bone samples also suggest that she may have relocated since age 6, but only within the region (Table 1). She appears to have had high social status as there are traces of a red powder (cinnabar or red ochre) on her teeth.

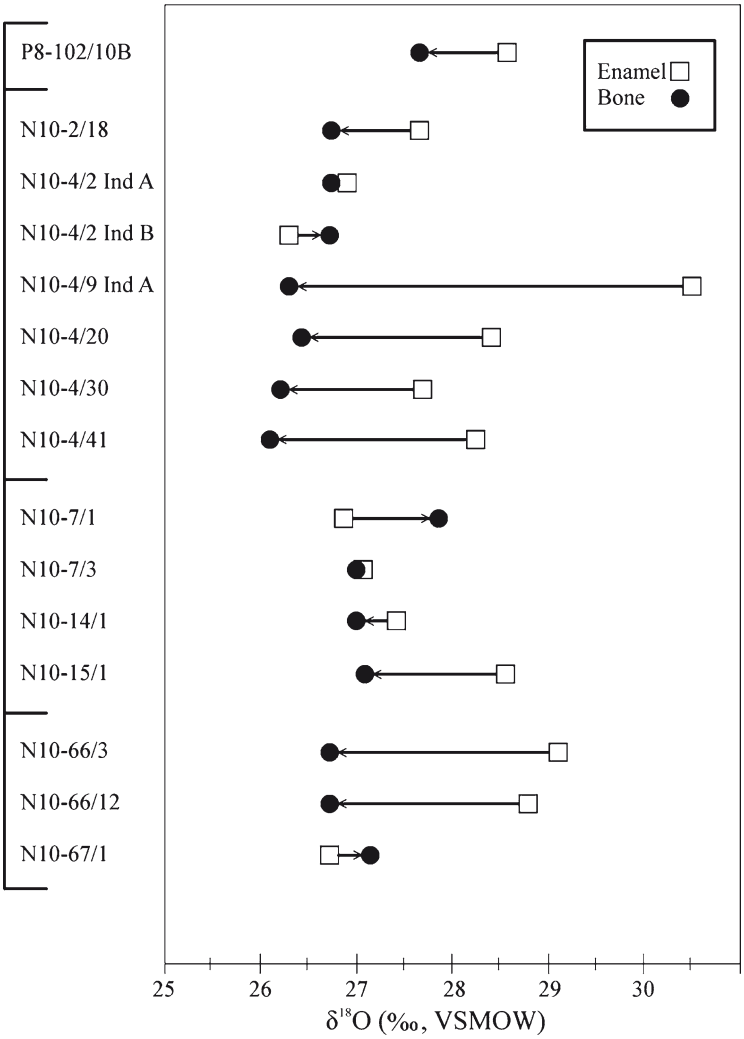


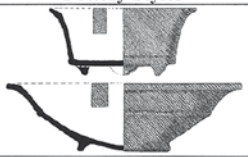
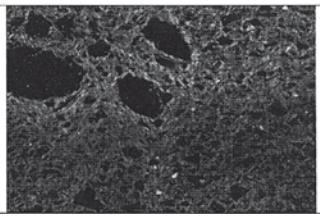
Fig. 4 Comparison of enamel and bone structural carbonate $\delta^{18}O$ values at Lamanai

N10-66

Ceramic Evidence

As with the P8-102 group, a range of stylistically different vessels were interred in burials in the N10-66 residential compound (Table 3). In all these cases, whole vessels were interred and three of the four burials contain a single vessel. The monochrome black vase and deep bowl that were included in Burials 66/3 and 66/4, respectively, have the same dolomitic marl-based fabric as the stylistically similar deep bowl interred in Burial 102/10b of the P8-102 group. Connections are,therefore, indicated to a production area situated most likely in northeastern northern Belize. Burial 67/1 also contains a vessel of nonlocal origin. The fabric is unique at Lamanai and it contains volcanic ash temper, as indicated by the presence of tough and volcanic glass fragments (Howie 2005). Provenance cannot be ascribed, however, because heavy processing of the clay resulted in a lack of sufficiently distinctive rock and mineral inclusions. Nonetheless, it probably came from outside of northern Belize and the Yucatan Peninsula; the absence of carbonate inclusions in this fabric suggests usage of raw materials from areas not underlain by limestone.

Table 3 Stylistic and fabric/paste characteristics of vessels in burials in the N10-66 building group

Burial	Pottery Styles	Fabric/Paste Type and Provenance
66/1		Local 'calcite and sascab tempered fabric' Same as found in pots from burials in P8-102 group (102/15 and 104/2)
66/3		Non-local 'dolomitic marl-based fabric' Same as found in pots from burials in P8-102 group (102/10b)
66/12		
67/1		 'volcanic ash-tempered' calcareous clay, likely heavily processed to remove rock and mineral inclusions, tempered with volcanic ash **Non-local** – unknown but from outside of northern Belize/Yucatan region

Burial 66/1 is the only burial in this residential group that contains more than one vessel (a red-slipped tripod bowl and the orange-slipped basal-break dish) and although the two vessels differ in form and surface treatment, their compositional characteristics indicate a local provenance. Both have "calcite and sascab tempered" fabrics that are compositionally identical to those observed in the black vases and bichrome dish interred in Burials 102/15 and 104/2 of the P8-102 residential compound. There is also a stylistic similarity between the tripod bowl included in Burial 66/1 and the nonlocal example in Burial 67/1. This general tripod form, with a flat bottom, a basal ridge and solid foot supports, is comparatively rare at Lamanai, suggesting that the local tripod might be interpreted as a reproduction of a nonlocal style.

Skeletal Evidence

Although the ceramics at this residential compound are composed of both local and nonlocal fabrics, all of the dietary measures for this group contrast sharply with the other building groups analysed (except P8) (Table 1, Fig. 4a, b). They were consuming significantly more C_3 resources, including animal protein, and their $\Delta^{13}C_{col\text{-}sc}$ values indicate that their diets included more plants than animals. One individual (N10-67-1) has a dental modification style not previously recorded anywhere else (Table 4). In two of three individuals analyzed, the enamel $\delta^{18}O$ values are also significantly higher than bone (Table 1, Fig. 3), which suggests that some minor relocation could have occurred since childhood, although some portion of the higher dental values could have resulted from breastfeeding.

Ottawa Group

Ceramic Evidence

The vessels interred in burials of the Ottawa residential complex are stylistically typical of the Terminal Classic to Early Postclassic period and in all cases (except Burial 14/1) the vessels were broken before interment with the deceased. All of the vessels have an orange slip and three display gouge-incised and modeled zoomorphic decorative elements that become prevalent by Early Postclassic period (Table 5). Different bowl forms, with and without foot supports, were included in four of the burials and, significantly, the vessel included in the remaining burial is a bell-chambered drum. The only other instance of a musical instrument being interred in a burial occurs in the N10-2 building group (Burial 4/5). The comparative lack of stylistic diversity among the vessels interred within this residential complex is mirrored in the compositional evidence. All of the vessels have local fabric types that can be linked geologically with raw material

Table 4 Patterns of dental modification for the individuals interred in the different building groups

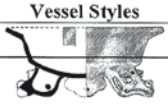
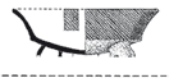
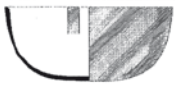
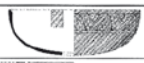
Dental Mod. Styles	N10-2/N10-4	N10-14/N10-15	N10-66
(Romero 1970)			
A4 	×	×	
B4 	×		
C2 	×	×	
C3 	×		
C4 	×		
C5 	×		
F4 	×		
unreported			
1 			×
2 			×
3 	×		
4 	×		

resources available in the immediate vicinity of the site and two distinct fabric types are represented. Both of these fabric types also occur in burials in the P8-102 residential compound.

Skeletal Evidence

Although this group does not contain distinctively foreign ceramics, there are several features of the isotopic data that are worthy of note. The combined isotopic measures of diet indicate that the inhabitants of this structure consumed a C_4-based

Table 5 Stylistic and fabric/paste characteristics of vessels in burials in the Ottawa Group

Burial	Vessel Styles	Fabric types and Provenance
14/1		Local 'sandy sascab-tempered' fabrics Same as found in pots from burials in P8-102 group (102/1 and 102/2)
15/1		
		Local 'grog-tempered' fabrics Same as found in pots from burials in P8-102 group (102/3)
14/2		
28/1		

protein (similar to the N10-2/ N10-4 Group) (Fig. 4a, b). Their whole diet, as indicated by $\delta^{13}C_{sc}$ values, again indicates strong C_4 reliance, but none of the $\Delta^{13}C_{col\text{-}sc}$ values are low enough to indicate heavy consumption of marine foods. It is possible that they were consuming maize-fed terrestrial animals, a practice that has been noticed among elites at other Maya sites (White 2005; White et al. 2001a).

The $\delta^{18}O$ values of the bone-enamel pairs indicate the greatest degree of locational stability among the groups analysed (Fig. 3). The interpretation that the members of this group lived locally all their lives is reinforced by the low variability among the other $\delta^{18}O$ values for the Ottawa individuals. They all fall within an approximate 2.0‰ range of (26.3–28.5‰), which can likely be taken as a baseline for the site.

Both the locational stability and the consumption of maize-fed animals would be consistent with the elite status of these individuals. There are, however, only two individuals who show dental modification (Table 4) and their styles are not distinctive in any way, which does not support the commonly held assumption that dental modification was a restricted elite activity.

N10-2

Ceramic Evidence

The vessels interred in burials in the N10-2 building group conform to stylistic conventions that become the standard by Early Postclassic times and all vessels were interred in a fragmentary state. A broad range of vessel forms is represented,

and all of the vessels have an orange slip, which is often accompanied by gouge-incised decoration (Fig. 5, Table 6). The occurrence of different jar forms (Burials 4/3, 4/12, and 4/41) and a "stand" (a special purpose vessel of unknown function) (Burial 4/14) is of particular significance because they represent functional categories not seen in the other residential building groups.

All but three of the vessels in this building group have grog (crushed pottery) tempered fabrics that can be linked geologically to local raw material resources. The three vessels (Burials 4/14, 4/20, and 4/5) with fabrics that derive from nonlocal raw resources can be linked geologically to clays that form in association with sandy deposits, which occur along the northeast coast of northern Belize and southern Yucatan and adjacent areas. Two distinct fabric types are represented, both untempered, and the mineralogical and the textural differences between them relate to the geology and provenance of the clay used in each case. Connections to two different production loci within the same broad geographic zone are, therefore, indicated. The vessels made from these fabrics are also stylistically unusual. The tripod bowl interred in Burial 4/20 has distinctive foot supports, a form which is rare at Lamanai, and the stand and ovoid-chambered drum interred in Burials 4/14 and 4/5, respectively, represent vessel forms that are not only rare at the site, but also do not occur in any other burials.

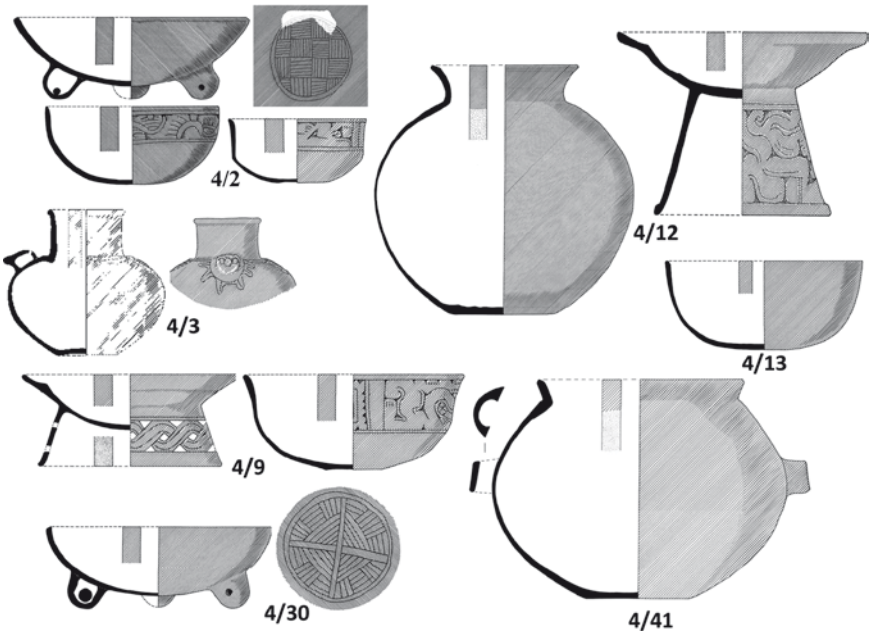
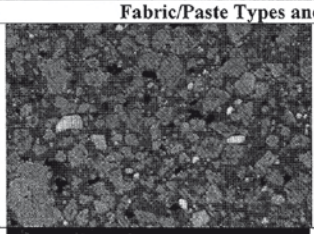
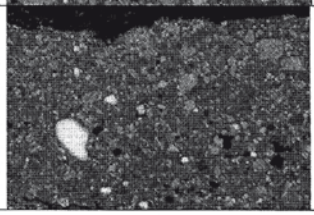
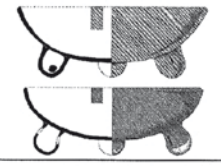


Fig. 5 Burial vessels from the N10-2 building group with local "grog-tempered" fabrics

Table 6 Stylistic and fabric/paste characteristics of the pottery in burials in the N10-2 group in cases where nonlocal vessels are present

Burial	Pottery Styles	Fabric/Paste Types and Provenance
4/14		 **'calcareous marl-based'** a sandy-textured highly calcareous marl, likely untempered **Non-local** – associated with coastal deposits containing calcareous sands(micritic grains) in northeast northern Belize, extending into southern Yucatan
4/20		
4/5		 **'sandy marl-based'** sandy-textured dolomitic marl containing calcite and quartz sand, likely untempered **Non-local** - associated with coastal deposits in northeast northern Belize, extending into southern Yucatan and adjacent areas, where sandy marls overly dolomitic limestone
		Local 'grog-tempered' fabrics Same as found in pots from burials in P8-102 group (102/3) and the Ottawa group (15/1, 14/2 and 28/1)

Skeletal Evidence

The samples from Structures N10-2 and N10/4 not only have mean $\delta^{13}C_{col}$ and $\delta^{15}N_{col}$ values that are indistinguishable from the Ottawa Group, but exhibit the same degree of variability (Table 1), which may mean that they shared sources of protein. Although the $\delta^{13}C_{sc}$ values indicate that variability in whole diets among the members of this group was greater than at any other structure (Table 1), their mean $\Delta^{13}C_{col\text{-}sc}$ value indicates that they were generally more carnivorous, and their $\delta^{13}C_{sc}$ values indicate fewer C_4 sources in the whole diet (i.e., carbohydrates, proteins and lipids combined) than in the Ottawa Group.

Of the seven individuals for whom bone-enamel comparisons were possible, five (N10-2/18, N10-4/9 Ind A, N-10-4/20, N10-4/30, and N10-4/4) had $\delta^{18}O$ values different enough to suggest some intraregional relocation (Fig. 3) (Table 1). This group also had the largest proportion of individuals with dental modification, representing eight different styles, most of which have been found elsewhere in Belize (Williams and White 2006), and two of which are shared with the Ottawa Group. Four styles used by the elderly women, N10-4/9 and N10-4/2 Ind A, have not been found elsewhere to date. Although both of these women were buried in keeping with local ceramic styles, one (N10-4/9) also has a form of cranial modification (lambdoidal flattening) not found elsewhere at the site (White 1996). Cranial modification must be done during early childhood and the timing of the process probably overlapped with the formation of the analysed premolar, which had the highest $\delta^{18}O$

value at the site. These two indicators of identity strongly suggest that this N10-4/9 was born in a foreign location. The presence of the unusual dental modification further suggests that she probably did not come to Lamanai until after adolescence, and the similarity of her diet to the others in her group indicates that she had lived locally for at least 10–15 years.

Discussion and Conclusions

Our methodological approach of combining both stylistic (pottery shapes and decorations, artificial modifications) and compositional (petrography, stable isotopes) characteristics of people and pots has enabled reconstruction of both performance and identity at Lamanai. When framed within the broader Terminal Classic to Early Postclassic context of ceramic patterns, the pottery that occurs in residential burials provides some insight into the performance of funerary rites involving food and drink. This pottery was the same as was used in other day-to-day activities, ranging from offertory rituals to communal feasting and serving daily family meals. It appears that common tablewares acquired a special or different status under specific conditions – through their use and deposition in funerary ceremonies. The fact that these rites did not involve special pottery indicates a basic congruency in pottery usage across a broad spectrum of religious and ceremonial practices and, perhaps also in performances of specific rituals and ceremonies. The temporal continuity in these conventions is striking considering that they appear to have persisted despite other changes in the enactment of funerary rites (e.g., the treatment of interred funerary vessels). The shift towards the preinterment breakage of funerary vessels and the subsequent retention of pieces of them by funeral participants is also significant because these acts transformed and extended the functions of vessels. Pieces of these vessels were intentionally kept in active use, remaining a part of daily life as material expressions of the shared experiences and interrelationships of members of the family, both living and deceased. The prevalence of this practice among the ruling elite, in particular, probably also speaks of their particular lineage-derived authority.

The apparent overlap in the vessel styles and functional categories that occur in the different residential groups is indicative of fundamental similarities in their funerary ceremonies. The predominance of container ceramics (bowls and dishes) in all of the groups might also be taken to imply that food and drink, whether consumed by funeral participants, or offered as a commemorative gift, probably played a central role in these proceedings. Nonetheless, the isotopic data provide some evidence of specific differences among the households in this respect. We cannot determine, however, whether the foods consumed by funeral participants during these ceremonies were the same as those consumed by the deceased in day-to-day life.

The vessel compositions provide insight into the economic relationships between specific households and specific pottery producers or production areas.

Group P8-102 shows the greatest number of ties to different pottery producers, with connections to three different local manufacturers and two different production localities within northern Belize. One of these localities was situated in the interior region of northern Belize, possibly on one of the major rivers, and the other was likely situated to the east or northeast of Lamanai in areas adjacent to the coastal region. Although we have only one individual from this group, she also appears to have had a nonlocal diet characteristic of inland resource consumption. This particular production locality is also connected both petrographically and isotopically to the people who lived in N10-66 building group. The diets of the P8-102 and N10-66 groups are similar and indicate the most restricted consumption of coastal resources at the site. Unlike the P8-102 group, however, the N10-66 group also had ties to a ceramic production locality situated outside of northern Belize and to only one local producer.

The N10-2 group also has connections to both local and nonlocal producers, but the nonlocal producers are clearly different from those associated with the other household groups. Both of these production localities were situated in the broad geographic region encompassing coastal regions to the northeast of the site, extending into southern Yucatan. This interpretation of origins is supported by the isotopic data, which indicate the presence of a number of individuals who have coastal diets.

The Ottawa group is the only residential group that appears to have obtained burial vessels solely from local producers. Considering that this building group likely served as the residence of the Lamanai ruling family, the absence of foreign or "exotic" pottery, which is normally viewed as a reflection of material wealth or prestige, is most unusual. Furthermore, the fact that foreign pottery was obtained and used in ceremonies by other households indicates that access to such items was not restricted to the upper echelons of society, despite what has often been suggested (e.g., Masson and Freidel 2002). The distinctively localized consumption pattern evident in the Ottawa group might also be viewed as reflecting active attempts on the part of community leaders to maintain and reinforce their higher socio-economic position through support of local producers, and the creation of strong economic ties to them. Similarly, their isotopic compositions are the most uniform among the groups examined. They ate the same foods and lived locally throughout their lives. One might speculate that this kind of stability and form of political economy may have contributed significantly to the unusual long-term survival of the site.

Differences among the economic and food consumption practices of individual households reflect differential access not only to resources and material goods, but also to economic relationships with other specific social groups. Although the oxygen-isotope values provide some evidence for movement of people, it occurred within a restricted region, and the geographic resolution is insufficient to reconstruct areas of origin. Dietary distinction among residential groups at neighboring Altun Ha has previously been interpreted as a reflection of social identity, perhaps derived from lineages (White et al. 2001a), but the ceramic evidence and historical context at Lamanai would suggest that the dietary

differences seen here are a reflection of immigration. In both cases where the individual has distinctive dental modification, the associated pottery is nonlocal (Burials P8-102/10b and N10-67/1). The question now is whether these individuals can be considered as immigrants – i.e. "household founders" who brought their local pottery with them? If so, then the local imitations of "foreign" vessel styles that occur in both the P8-102 and N10-66 groups (Burials 102/15 and 66/1, respectively) might be as viewed active attempts on the part of the household/funeral organizers to maintain homeland traditions by interring vessels that conform to vessel styles used in funerals in their area of origin. Their apparent maintenance of a homeland diet would also support a strong "doxa" or conservative identity behavior. Thus, the life histories of people and pots involved in mortuary rituals where food and feasting were important components have given us a glimpse into more than just performance of the living and identities of the dead, but the social structure and political economy too of this ancient Maya site.

Acknowledgments We thank the following individuals for their contribution to this study: Elizabeth Graham and David Pendergast for their meticulous excavation and documentation of the building groups and for allowing us to study the burial assemblages; Jaimie Awe and the Institute of Archaeology of Belize for permission to take and export samples for analysis; Grace Yau for sample preparation, and Cliff Patterson for his assistance with some of the figures. We are also grateful to the following funding bodies for their generous support: The Canada Research Chairs program, The Natural Sciences and Engineering Research Council of Canada, The Social Sciences and Humanities Research Council of Canada and The Association of Commonwealth Universities.

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