Chapter 4
A Case Study of Funerary Cave Use from Je'reftheel, Central Belize

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Abstract Bioarchaeological analysis of mortuary deposits from Je'reftheel, a small cave located in the Roaring Creek Works of central Belize, focused on characterizing the nature of mortuary activities conducted in the cave to determine whether the site was used for funerary or sacrificial purposes. In contrasting caves and cenotes, ethnographic, ethnohistoric, and epigraphic accounts of cave use by the Maya fairly consistently mention mortuary events that occur in caves, as funerary. The combined osteological and isotopic analyses from Je'reftheel are also consistent with models of funerary behavior among the Maya. The skeletal deposits comprise both primary, articulated bodies, and secondary deposits. Other data suggest that most of the individuals were of local origin and may have been closely related. Together, these results provide a strong analogy to funerary behavior documented in tombs throughout the Maya region and beyond.

4.1 Introduction

Maya archaeologists have recently devoted increased attention to caves, which provide a particularly important source of data for investigating the roles of ritual within the broader sociopolitical structure of communities. Archaeological projects increasingly incorporate regional cave surveys in their research designs, integrating these contexts and investigations of other natural and constructed features of

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the landscape and significantly expanding the overall diversity and number of cave samples. Furthermore, researchers have begun to utilize a wider variety of both methodological and theoretical approaches. As a result, speleoarchaeologists have made great advances in their efforts to differentiate and identify specific rituals by their material culture signatures, to understand the underlying symbolic meaning of caves to the Maya, to reconstruct sets of behaviors associated with cave use, and to document important shifts in the nature of their use over time that denote broader patterns of culture change (see Brady 1989, 1997; Helmke 2009; Moyes 2006; Rissolo 2005; among others).

As part of this intensification of cave research, investigations focused on interpreting the nature of human remains deposited within caves represent an exceptionally promising avenue of study that can bring unique insight to questions about how Maya groups conceptualized and used caves in specific circumstances. In particular, the majority of the studies describing bodies or individual bones found in caves has directly or indirectly described them as representing the remains of one of two broad ritual categories, namely, funerary or sacrificial. In this chapter, we compare these competing hypotheses with a case study of mortuary patterns in Je'reftheel (aka, Franz Harder Cave), a small cave in central Belize, using multiple lines of evidence from archaeological context, taphonomy, biogeochemical assays, and skeletal data to demonstrate that the ritual patterns are consistent with funerary behavior.

4.2 Mortuary Cave Use in Ethnohistoric, Ethnographic, and Epigraphic Records

Most researchers proposing behavioral models for the presence of bones found in Classic period cave contexts have relied heavily on ethnographic and ethnohistoric analogy to argue for both funerary and sacrificial explanations. Until relatively recently, the vast majority of archaeological studies of caves with mortuary deposits have proposed funerary explanations (see Scott and Brady 2005). In his review of ethnographic documentation of cave use, Brown (2005, p. 382) states that "descent groups' worship of lineage ancestors created an association between caves and settlement units related to kinship groups. The use of caves for ancestor worship of corporate or territorial groups appears to be a pan-Maya phenomenon" (also see Brady 1997, p. 28 and Stone 1995, p. 44). This ubiquitous use of caves by lineages extends to the Colonial and pre-Contact periods, during which it is clear that such rituals often involved the deposition and curation of bodies and bones. In seventeenth-century Highland Chiapas, Bishop Nuñez de la Vega described the worship of bones thought to be those of founding ancestors located in caves (Thompson 1975, p. xxxiii). Villa Rojas (1969, p. 215) reported that the Tzeltal Maya placed the remains of important patriarchs in caves even into the twentieth century. Finally, Cucina and Tiesler (Chap. 9, this volume) describe shrines of the modern Lacandon in caves and rockshelters that incorporate human bones likely dating to the Early Colonial period, which they believe are their ancestors.

Because human sacrifice associated with rain ceremonies in and around both cenotes and caves is well documented in Mesoamerica (see Domenici, Chap. 3, this volume), archaeologists have begun to more consistently consider sacrificial ritual as a possible explanation for skeletal deposits in caves. Many ethnohistoric sources mention human sacrifice associated with caves, but the vast majority of these specifically refer to cenotes in the Yucatan (see review by Tiesler 2005, p. 342). Similarly, Vail and Hernández (2007, Fig. 6.3a, Table 6.3) have identified an image depicting a bound live captive above a cenote within the Madrid Codex, which they suggest is an indirect reference to sacrifice (i.e., they presume this is the fate of captive). Similarly, the basal register of Stela 14 at Uxmal shows a pair of naked captives, arms tied behind their backs and paper strips inserted into their earlobes (Graham 1992:108). Significantly, this basal panel is framed by the stylized pincers of a centipede, here possibly denoting a cenote (Taube 2003:413–418). The use of cenotes for human sacrifice has been confirmed by bioarchaeological investigations (Anda Alanís 2007; Beck and Sievert 2005; Rojas Sandoval et al 2008, p. 148; Tiesler 2005) although comparable documentation is limited to only a few sites. While the testimony by Landa (Tozzer 1941, p. 180) suggests that sacrifices associated with a "cenote cult" were relatively common in the northern Yucatan, it is not certain whether these practices had direct antecedents in Classic period Southern Lowlands culture. Ethnohistoric literature that specifically refers to sacrificial ritual associated with caves is relatively scarce (Fuentes y Guzmán 1932, p. 336; Scholes and Roys 1938, pp. 614–615). While the general lack of ethnohistoric references to human sacrifice in caves may mean that it was highly unusual, we must also consider that caves could also have functioned to make such rituals less visible, especially to the Spanish, who actively suppressed sacrificial rituals (Chuchiak 2006). As Scott and Brady (2005, p. 276) have noted, questions still remain regarding the extent of such practices.

Current behavioral models explaining the mortuary use of caves during the Classic period have focused almost entirely on archaeological and ethnohistoric data, largely ignoring the written glyphic corpus. Statements of death and burial related to caves in the Classic period iconographic record are far less common than statements referencing royal accessions and births, but appear in the corpus in the context of funerary rituals and subsequent tomb reentry ceremonies (Stuart 1998, pp. 380–381, 397–399; Fitzsimmons and Fash 2003; Fitzsimmons 2006).

What is significant is that not a single glyphic text makes clear and irrefutable mention to human sacrifice in caves, or to decapitation, the preferred means of executing captives in the Classic period (Helmke 2009). However, references to inhumations are known, involving the verb *muk* 'to bury', which refers to the interment of royal figures. El Cayo Panel 1 dates to AD 763 and records events in the life of *Chan Panak*, lord of Yaxniil, the ancient toponym of the archaeological site of El Cayo (Zender 2002, pp. 167–170; Lacadena and Wichmann, n.d., pp. 16–17, 22):

i-CHAM-mi	**mu-ku-ja**	**tu-CH'EN**	**YAX-ni-la**	[D12–C14]
*i-cham-i[']	*mu[h]k-[a]j*	*t-u-ch'e['']n*	*yaxn-iil*	
'and died,	was buried	in the cave of	Yaxniil'	

It is unclear who was buried because sections of the text are eroded. It may refer to the father of the protagonist *Chan Panak*, who, after the interment, "went up" to Piedras Negras in the company of its current king, *Ik'naah Chak ? Yo'nal Ahk(ul)* III (see Stuart 2004, p. 3; Martin and Grube 2008, p. 151).

Another example is found in the text of Dos Pilas Stela 8. After recounting events in the life of "Itzamnaaj" *K'awiil*, the second ruler of the site, the text goes on to record his death on the 22nd of October AD 726 (Mathews 2001, pp. 402–403, 407–414; Martin and Grube 2008, pp. 58–59). Four days later in the night of the 26th:

This additional reference to inhumations taking place in caves, including those of royal individuals, may be supported by a fragmentary ceramic vessel bearing a partial glyphic text found in one of the funerary structures of Naj Tunich,

mu-ka-ja	**TAN-CH'EN-na**	**[CHAHUK]CHAN?-HA'**	**3-WINAK?-HAB-AJAW**	
mu[h]k-aj	*ta[h]n-ch'e'n*	*chahuk-chan?-ha'*	*ux-wina[a]k-ha[a]b-ajaw*	
GOD.D-**K'AWIL**	**yi-IL-ji**	**8-WINAK?**	**a-AJAW[TAK]**	
? k'awi[i]l	*y-i[h]l-[a]j*	*waxak-wina[a]k*	*ajaw-ta[a]k*	[H14-I16a]

'Was buried in the middle of the Dos Pilas cave, the 3 K'atun King, "Itzamnaaj" *K'awiil,* 28 kings witnessed it'

which refers to an individual bearing the title *ajaw* "king" (see Brady 1989, pp. 135–136; Helmke and Brady 2009). Alternatively, the reference on Dos Pilas Stela 8 to the burial of "Itzamnaaj" *K'awiil* within a cave has been argued to be an allusion to a tomb, functioning as a symbolic cave (e.g., Coe 1998; Vogt and Stuart 2005), following the discovery of an elite tomb in the temple in front of which Stela 8 was erected (Demarest 1993). Even if the latter interpretation is correct, it still serves to emphasize the close symbolic relationship between caves and tombs.

Further evidence for inhumations in caves is also found at the end of the text of Ojo de Agua Stela 1, where the father of the local lord is said to:

ha['i]	**pa-sa-wi**	**ka-ba**	**tu-CH'EN-na**	**[?-ka-NAH]AJAW**	[A11–A12]
haa'	*pas-aaw*	*kab*	*t-u-ch'e'n*	*?ka[l]-na[a]h ajaw*	
'he	opens	earth	in the cave of	the *?kal Naah* king'	

The verb *pas-* "open, expose," when used in conjunction with *kab* "earth," is employed here and elsewhere with the sense of "to exhume." Examples are found on Altar 5 at Tikal, Stela 23 at Naranjo, and Altar 1 at Xunantunich, where the *ubaak ujo'l* "skull and bones," which is to say the "skeletons," of various nobles were exhumed (Grube and Schele 1994; Grube 2000, pp. 259–260; Helmke et al. 2010, pp. 118–119). These exhumations appear to have been undertaken with the purpose of desecrating the tombs of antagonists, or of repatriating human remains from territories under hostile control. This suggests that the text of Stela 1 at Ojo de

Agua references an exhumation that took place in the cave of a Lacanha king, based on the emblem glyph title at the end of the clause. However, the emblem glyph in question is also shared at times by Bonampak (see Mathews 1978, pp. 60–61; Palka 1996). In turn, because the exhumation took place in a cave, it follows that human remains were previously interred in that locality, and thereby further corroborates the existence of such funerary practices in emic terms. This is consistent with evidence in the form of speleothem growth atop toppled walls suggesting that the masonry mausoleums in the entrance to Naj Tunich were sacked or looted in antiquity (see Brady and Colas 2005, pp. 152–153, 162; Helmke and Brady 2009). In addition, since exhumations are frequently cited in the context of desecrations, the case of Ojo de Agua Stela 1 appears to continue the militaristic theme in which the ritual propriety of caves was undermined by rival forces. Unfortunately, the consequences of this action went unrecorded, but considering the martial verbs often used (see Helmke 2009, pp. 86–145; Helmke and Brady 2009), it is likely that the repercussions were immediate and dire.

The glyphic texts are significant because they clearly denote the funerary nature of the natural deaths and subsequent interments of the individuals within caves. In contrast, an extensive review of the currently known corpus of glyphic texts shows that references to human sacrifice in caves are notably lacking.

4.3 The Bioarchaeology of Maya Caves

Most studies of caves have relied almost entirely on archaeological context and underutilized or ignored potential data from skeletons in large part because of the inherent difficulties of analyzing bones from caves (see Cucina and Tielser, Chap. 9, this volume), as well as the lack of participation of physical anthropologists in field excavations. Most early studies mentioning Maya bones found in caves suggest that they were funerary in nature, based either on loose analogy with ethnohistoric accounts of ritual activities performed in caves associated with ancestor cults (Thompson 1959, p. 129, 1975) or speculation (Blom and La Farge 1926, p. 157; Ruz Lhuillier 1968, p. 165). Other archaeologists have attempted to identify patterns of mortuary treatments consistent with nonsacrificial funerary behavior in caves (Scott and Brady 2005). For instance, elaborate (although looted) masonry enclosures at Naj Tunich (Brady 1989; Scott and Brady 2005) and Balam Na Cave 4 (Garza et al 2002), which also produced jade, pyrite, and stone beads, have been convincingly identified as elite tombs. Specialized mortuary treatment of individuals or placement within unusual cave settings has been used to identify funerary rites for ritual specialists (Prufer and Dunham 2009; Thompson 1938). Although rare, cremations found in caves are consistently interpreted as funerary in nature (Blom 1954; Thompson 1975, p. 123, Wauchope 1942) on the basis of Colonial sources linking cremation to the funerals of particularly important individuals (Tozzer 1941, p. 130) and ethnographic analogy (Brady 1989, p. 346).

Secondary deposition of bones also has been considered to be deliberate burial in most cases (Halperin 2005, p. 80; Healy et al 1996; Scott and Brady 2005, p. 271), although not all (Scott and Brady 2005, p. 274). Additional contextual data often attributed to funerary status within the Maya cave archaeology literature include orderly body arrangement (Pendergast 1971, p. 17; Scott and Brady 2005, p. 271), burial (as opposed to surface deposition; Lucero and Gibbs 2007, p. 67), and the presence of grave goods (Garza et al. 2002; Lucero and Gibbs 2007, p. 67; Prufer and Dunham 2009).

In contrast, contextual clues often cited as indicative of sacrifice include lack of grave goods (Brady 1989, p. 351,362; Gibbs 2000, p. 147; Kieffer 2009; Owen 2005, p. 331; Peterson 2006, p. 93), presence of offerings not considered to be grave goods (Kieffer 2009; Scott and Brady 2005, p. 278; MacLeod and Puleston 1978), prone body position (Owen 2005, p. 332), disorderly or haphazard body position (Brady 1989, p. 351; Brady and Stone 1986; Gibbs 2000, p. 147; Lucero and Gibbs 2007, p. 60; Owen 2005, p. 332), location of body in wet, muddy, or high-traffic areas (Brady 1989, p. 362; Brady 2010, p. 222; Gibbs 2000, p. 147; Kieffer 2009; Owen 2005, p. 332; Owen and Gibbs 1999, p. 200; Peterson 2006, p. 93; Scott and Brady 2005, p. 278), association with architecture (Pendergast 1971, p. 18; Peterson 2006, p. 93), and "child" age (Brady 1989, p. 363; Brady 2010, p. 222; Brady and Stone 1986; Gibbs 2000, p. 147).

In general, a large percentage of the human remains found in caves do not fit neatly within the categories discussed above and are not often associated with obvious markers indicating the nature of the interment. Furthermore, extensive taphonomic and human disturbances, which are typical in most cave settings, complicate attempts by archaeologists to decipher and reconstruct aspects of primary contexts as they existed immediately following rituals, such as body position (including distinguishing primary vs. secondary burials) and the presence or absence and the location of grave goods. Recently, Scott and Brady (2005, pp. 276–77) have argued for the primacy of context when interpreting human skeletal remains from caves, in part by emphasizing some of the limitations related to the ability to identify physical evidence of sacrifice. They point out that marks of trauma may be obscured because of poor preservation and accumulation of calcium carbonate deposits, and that many potential forms of ritual killing would leave no signs of trauma on the bone. While their argument that "absence of evidence is not evidence of absence" is reasonable, the narrow scope of their discussion about the potential contribution of skeletal data to such research is illustrative of the limited role physical anthropologists traditionally have had in Maya cave archaeology. Studies of Maya mortuary ritual from noncave contexts have increasingly incorporated a wide variety of bioarchaeological methods that have been largely absent from traditional cave studies (see Tiesler 2007).

In the following section, we propose a behavioral reconstruction of bone deposits that combines multiple lines of bioarchaeological evidence derived from archaeological context, taphonomy, biogeochemical assays, and skeletal data. When viewed individually, each source of data could support multiple interpretations.

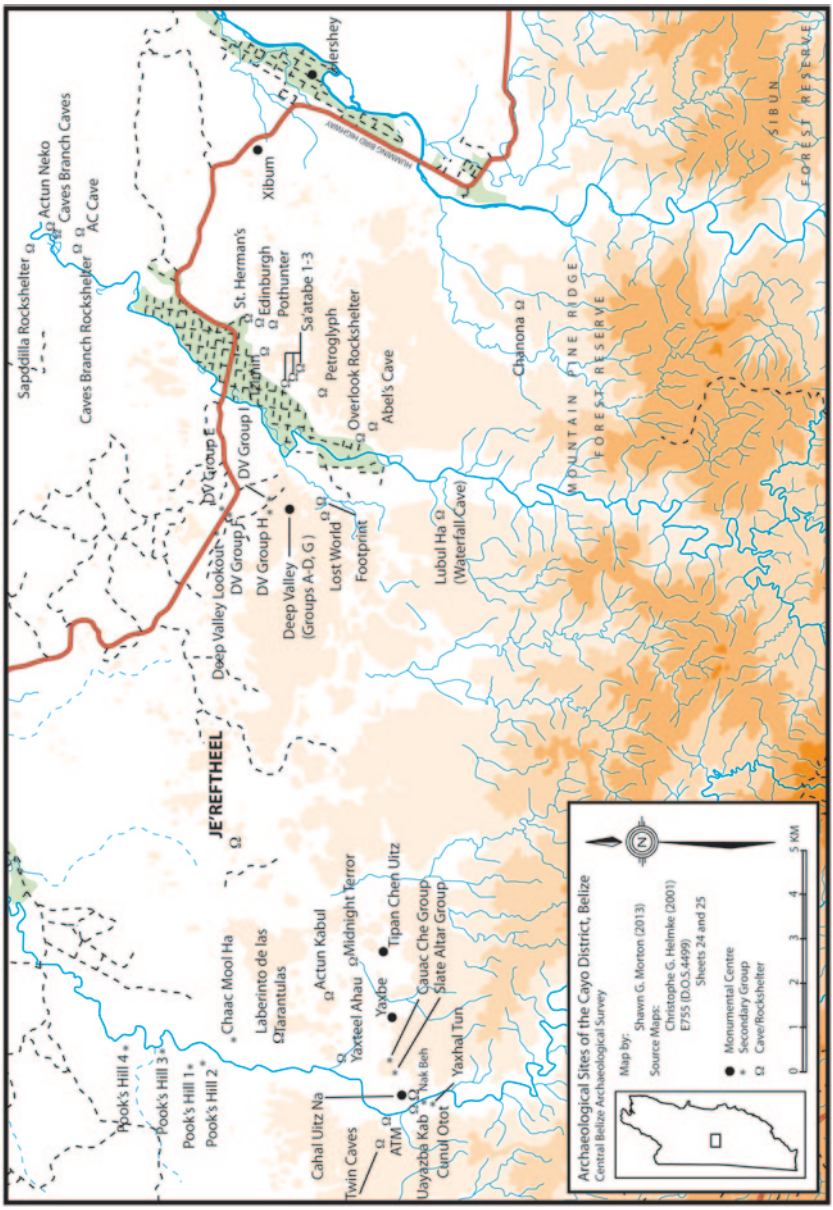

Fig. 4.1 Map of central Belize showing the location of Je'reftheel and surrounding cave and settlement sites

However, together each helps to contextualize the others, forming a coherent picture that is consistent with funerary, rather than sacrificial, ritual.

4.4 Je'reftheel: Description of the Site and Its Regional Context

Je'reftheel is a relatively small cave (less than 30 m in length) located within a karst outcrop known as the Roaring Creek Works, which is bordered by the Caves Branch River and Roaring Creek valleys in central Belize (Fig. 4.1). The limestone bedrock of the outcrop is part of the southern Yucatan Peninsula, which was formed during the Upper Cretaceous period. The outcrop is located just a few kilometers from the late Carboniferous and Permian land forms of the Maya Mountains (Ower 1928), a difference that forms the basis for the use of strontium isotope ratios to identify the origin of individuals living in the region.

It was Mennonites from the nearby village of Springfield who first reported the cave's presence to the Belize Institute of Archaeology in 2003. The Mennonites had only recently moved to the area, and in clearing the land for their settlement and fields they completely dismantled and leveled many ancient house mounds that were in the direct vicinity of the site (Franz Harder pers. comm. 2003). As a result, we do not know much about the size or complexity of the ancient local community. However, recent investigations by the Western Belize Regional Cave Project (Awe et al. 1998) and the Central Belize Archaeological Survey (Andres et al. 2014) have documented the existence of extensive settlement and several large urban cores nearby, with predominant evidence of construction dating to the Late Classic period (AD 600–900).

Helmke (2009; Helmke and Wrobel 2012) mapped Je'reftheel between 2003 and 2004 as part of the Belize Valley Archaeological Reconnaissance project, identifying 12 distinct archaeological features within the dark zone, seven of which contained human remains (Fig. 4.2). Analysis of ceramics found within these features showed that most were deposited as whole vessels, and some were apparently ritually terminated. The consistency of their form suggests that all human activity in the cave was likely restricted in time to a specific facet of the Late Classic period (Helmke 2009, p. 465). This temporal range was recently confirmed with an AMS date taken from a charcoal sample from Feature 5 that produced a 2-sigma range of AD 680–890 (Beta-284077). Later investigations by the Caves Branch Archaeological Survey project during the 2009 and 2010 field seasons focused on recording the spatial distribution of bones within the cave and on subsequent osteological laboratory analyses.

Despite visits by some curious boys from the local community, there appears to have been only minimal recent disturbance of the remains and certainly the cave was found in a pristine and completely unlooted condition when it was first investigated in 2003, a situation which is highly unusual—if not unique—in this area. The seven features containing bones were generally found in terminal spaces in the

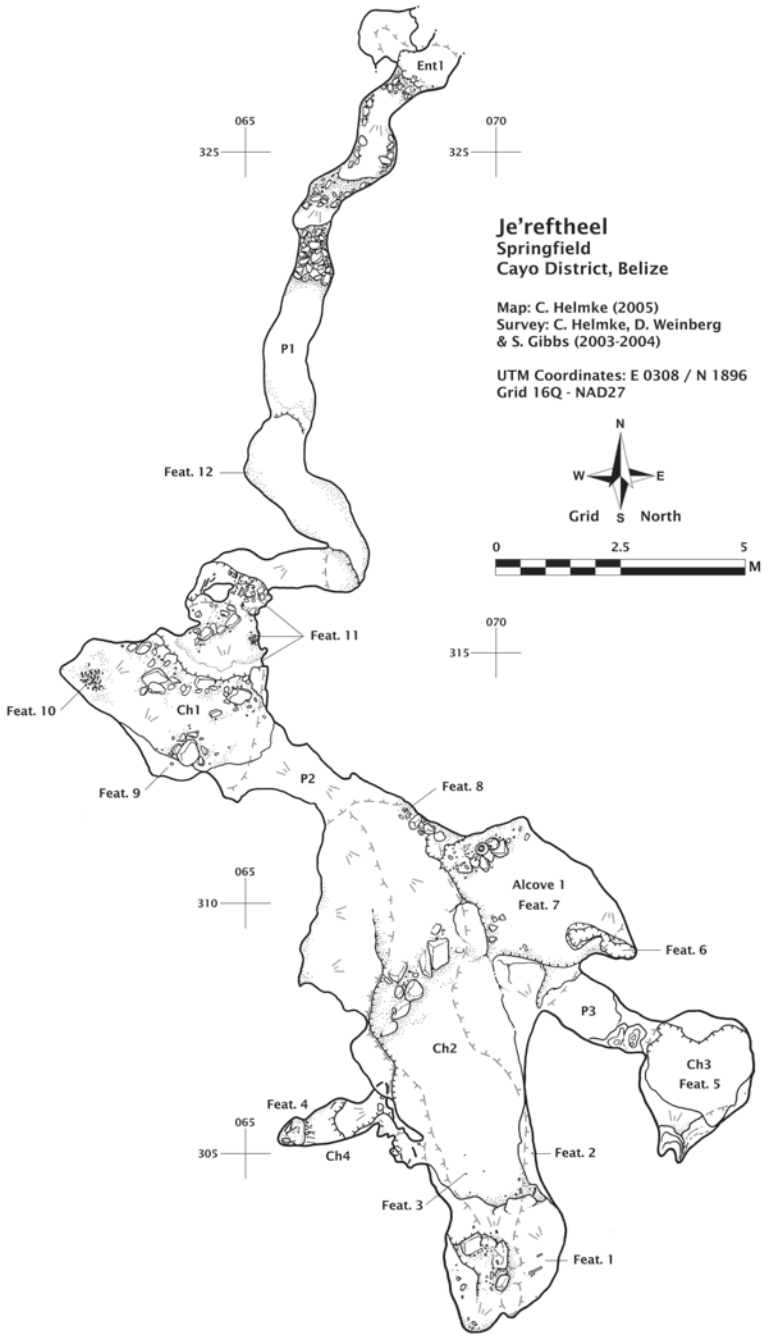

Fig. 4.2 Plan of Je'reftheel showing the location of cultural features. (Plan by Christophe Helmke)

Fig. 4.3 Composite panorama of Feature 5. (Photographs and digital stitching by Christophe Helmke)

cave, and the associated bone assemblages varied in size and composition. Analyses revealed a minimum number of 24 individuals in the cave.

Feature 1 comprised a scatter of disarticulated and broken human remains commingled with minor collapse on the breakdown slope at the southern end of Chamber 2. The bones all seem to belong to a single individual, likely male. Many of the breaks were clearly ancient, although they appear to have occurred long after the individual's death. We believe Feature 1 represents intentional movement and redeposition of skeletal remains in antiquity.

Features 3 and 4 lie adjacent to one another, and both appear to be clusters of the disarticulated, commingled, and incomplete remains of multiple individuals that may originally have been bundled. Feature 3 was situated in Chamber 2, and Feature 4 was located slightly lower on the same, sloped surface and within Chamber 4, a very small cavity connected to Chamber 2. Feature 4 also included a complete, finely knapped, chert lanceolate biface. At the time of our work in 2009, the break between Features 3 and 4 was not well defined. However, based on the photographs taken in 2004 and comparisons with Sherry Gibbs's 2003 in situ analysis (in Helmke 2009, p. 443, Fig. 7.6, Appendix G), the bones in these features have recently suffered significant deterioration and displacement due to the combined effects of gravity, water, bat guano, and human intervention. The 2004 photographs of Feature 4 show two crania, one that was complete with a distinctly flattened occiput, and the other nearly complete, but broken. The complete cranium was missing in 2009, so seems to have been removed from the cave, while the broken cranium appears to have significantly deteriorated.

Feature 11 comprises a cluster of human remains and the fragments of two *ollas* scattered along the northeastern wall of Chamber 1. Similar to Features 3 and 4, Feature 11 was next to and within the opening to a small passage off of a larger Chamber. Many of the human remains appear to have been recently knocked or

washed down the slope into this solution tunnel, and the recovery (and thus the analysis) of the remains from this feature is incomplete. All of the recovered bones appear to belong to a single young male individual.

The most complex deposits of human remains are those of Features 5, 6, and 7. Feature 5 comprises a deposit of well-preserved human remains and associated artifacts that nearly covered the entire surface of Chamber 3 (Fig. 4.3). Artifacts included various items of jewelry, a small ceramic *olla* (Vessel 1), and a stemmed chert biface. The remains appeared to be largely unaffected by recent disturbance, perhaps because of the very narrow entrance passage that limits access. Each element was photographed in situ, and its specific location and position was carefully recorded prior to removal. While some elements were lying directly on the ground surface, it was necessary to excavate others from the shallow, sticky clay matrix that forms much of the chamber's floor. Many of the bones in Feature 5 were still in articulation, indicating the presence of primary interments, although many individual elements were also seemingly scattered within the chamber, suggesting subsequent movement following decomposition. Overall, the bones are in excellent condition, although in some areas drip water cemented bones in place and guano droppings of roosting bats resulted in localized degradation. Lab analysis identified nine individuals based on duplicate cranial elements and teeth, while an inventory of postcranial elements indicates a total of eight relatively complete individuals and some isolated elements.

Feature 7 comprises the fragmentary human remains and ceramic sherds that were widely scattered and partly embedded into the silty floor of Alcove 1. In addition, two *ollas* were set side-by-side at the westernmost extent of this feature, one of which contained a small deposit of colluvium and a human phalanx. Compared to Feature 5, Feature 7 exhibited much poorer preservation, perhaps as a result of higher traffic and/or more water activity in this area. Initially, articulations were not evident among most of the bones on the surface. Following removal of the commingled bones, excavations revealed three distinct layers of clay. The deepest was the natural cave floor, on which a partial, burnt globular vessel had been deposited. Above this was a layer of darker clay (perhaps resulting from the in situ decomposition of bodies) that formed a flat surface on which had been placed bodies, as evidenced by several distinct sets of articulated bones. As in Feature 5, a final layer seems to have washed in slowly over time and covered many of the bones, in some cases preserving their original position.

Feature 6 is a solution funnel that lies at the southeastern edge of Alcove 1 and abuts Feature 7. The hole contained numerous fragmentary and complete human remains and small ceramic sherds, many of which are cemented in place by flowstone. The stone deposits that have formed since the Late Classic period seem to be extensive, so we are unable to get a sense of how much material is within the hole and covered. Furthermore, it is also unclear how many of these remains were intentionally deposited within the hole and how many were secondarily displaced from Feature 7.

4.5 Interpreting the Context of Je'reftheel's Mortuary Deposits

Ultimately, the goal of this study is to provide a behavioral reconstruction of the ancient Maya activities conducted within Je'reftheel. Following Tiesler (2007), we attempt to contextualize the skeletal deposits by providing data related to the identity of the individuals in life, reconstructing their treatment around the time of death, and distinguishing the nature of subsequent physical alterations (cultural or taphonomic) to the bones following death and decomposition. Within each section of this discussion, we provide an interpretation of the potential cultural meanings of the data.

4.5.1 Anthropogenic Marks

We begin with a discussion of anthropogenic marks on the skeleton, which, if present and shown to be perimortem in nature, can be used to infer sacrifice. During the analysis of the Je'reftheel bones, particular attention was paid to vertebrae and ribs, skulls, and the site of tendon attachments on long bones, because marks in these areas have been linked to specific known sacrificial rituals or perimortem processing practices among the Maya (Piehl and Awe 2010; Tiesler and Cucina 2006). A careful visual inspection of all bones identified relatively few modified surfaces, none of which were the direct result of ancient perimortem behavior. Several of these cases were clearly vascular impressions, which are unremarkable, but may be confused with cut marks because they appear as single or multiple striations and are especially common on the cranium and around joints. Interestingly, very few elements in the assemblage showed rodent gnawing, which is unexpected given the relatively shallow depth of the cave.

Bone fractures were also considered, because broken bones can result from perimortem trauma and from rituals in which bones are intentionally fragmented, often as a means of termination (Harrison-Buck et al 2007). There were no obvious examples of green bone fractures that would imply perimortem violence. All of the observable fractures (whose surfaces were not obliterated by poor preservation or obscured by mineral deposits) had obviously occurred when the bone was dry and thus long after the death of the individual. While many of the breaks were recent, many were also clearly ancient. When considering which elements were broken and where on the bones the fractures occurred, it is clear that the pattern within the assemblage is a random one, suggesting that it occurred following natural decomposition and dissociation of elements. While some of these bones may have been intentionally broken as part of secondary mortuary rituals, there is no consistent pattern that would imply that such behaviors were a regular part of the mortuary pathway of the deceased within Je'reftheel. Most of these breaks were very likely the consequence of unintentional destruction by ritual practitioners or other visitors

to the cave who inadvertently damaged elements by stepping on them or displacing them to make room for new bodies.

4.5.2 Body Placement and Position

The placement and position of bodies also have been important criteria for determining the cultural circumstances surrounding mortuary activities. As discussed above, evidence of irregular body position and specific types of restraint binding often are used to argue for sacrifice, along with particular patterns of postmortem movement and redeposition of skeletal elements that have been linked to specific funerary and nonfunerary cultural practices.

Articulated elements were noted only in the largest bone deposits, Features 5 and 7, suggesting that these areas served as locations for the placement of newly deceased individuals directly on the ground surface and that other areas contained secondary deposits. Following decomposition, the effects of gravity, water, and human manipulation (intentional or unintentional) moved the bones to various degrees, which has limited our ability to consistently determine specific aspects of body treatments. The positions of articulated elements were used to infer the original body positions of primary interments whenever possible.

At least two of the individuals appear to have been interred in a seated position in Feature 5, and were almost certainly wrapped. In the southern area of Chamber 3 (Feature 5), most bones belong to a single individual aged between 15 and 20 years on the basis of epiphyseal fusion. The arrangement of the pelvic and leg bones suggests they were still approximately in situ and was consistent with a seated position with crossed legs. The bones of the upper body were scattered in the area around the legs and pelvis rather than south of the pelvis, which is where they would have been if the body had been placed flat. Instead, as the body and the wrappings decomposed, the upper body seems to have slumped forward and collapsed. On the northeastern edge of the Chamber, a nearly articulated pelvis suggests placement of an individual facing west toward the Chamber's entrance. Bones in this area are more disturbed, but the upper body appears to have fallen to the left. Seated positions have also been suggested for individuals found in nearby Petroglyph Cave (Reents and MacLeod 1997, p. 97)

The remains of a juvenile were found along the sloped western edge of Chamber 3. In general, the bones are in approximate anatomical order, and their orientation suggests that he or she was originally laid out in a flexed position on the left side, with head to the south and facing west toward the chamber wall. The arms were still in articulation and were flexed. In the southeastern portion of the chamber, we discovered an articulated left hand and partial forearm of another individual, still wearing a bracelet of carved *Olivella* sp. shells (Fig. 4.4). The closed hand and extreme angle of the wrist strongly suggests binding or wrapping of some kind, and the position of the arm at the edge of the chamber away from other related or articulated elements suggests it was displaced, likely when still wrapped or partially

Fig. 4.4 An articulated wrist and hand, encircled by a bracelet of olivella shells, from Feature 5. (Photos by Gabriel D. Wrobel and Rebecca Shelton)

fleshed, thus preserving the articulation. In other areas, the presence of flexed knees may indicate that individuals were deposited seated or on their sides, and strongly suggests that most or all of the individuals were interred as primary burials.

Because of the excellent preservation of Feature 5, an inventory revealed evidence of secondary movement of bones in and out of the chamber. Nine individuals were identified based on cranial and dental remains. The inventory of postcranial bones identified eight mostly complete individuals that appear to conform to the age and sex estimates of the crania. These individuals were almost certainly placed there as primary burials. The ninth individual was identified by a partial, poorly preserved dentition, and these bones seem to have been moved to the chamber as a secondary deposit. Another such example of the movement of isolated bones to the chamber is a pair of matching radii, which do not belong to any of the primary individuals. Several upper incisors were found in Feature 5 that belonged to a cranium

Table 4.1 Description of individuals identified within Je'reftheel

Feature	MNI	Adults			Subadults		
		male	female	unknown	infant	3–10 yrs	11–18 yrs
1	1	1					
3/4	4	1	2	1			1
5	9	2	2	1	1	2	1
6	5	2	1		1	1	
7	4	1	1		1	1	
11	1	1					

that had been removed from the cave by local Mennonites, who reported that it was found in Chamber 4. While it is possible that they misreported its original location, Feature 5 did not contain a matching mandible, and the large robust cranium likely matches one of the two sets of male postcranial elements from Feature 5. Despite very good preservation of the primary burials, missing elements likely indicate removal of bones following decomposition, presumably for ritual purposes.

Feature 7 also shows both intact articulations and commingled remains, although much poorer preservation and more human disturbance limit our ability to accurately assess the number of individuals or identify secondary movement of the remains to or from this feature. It appears that later interments were at least in part responsible for disrupting articulations of earlier interments. Within Feature 7, an analysis of the articulated (and thus in situ) remains showed that individuals had been interred separately and sequentially over a period of time, with parts of earlier interments being swept aside, probably into a nearby solution funnel (Feature 6), to make room for later ones. The preserved articulations among the portions that remained and had not been swept aside indicate that many of the previous interments were fully decomposed when subsequent individuals were interred. Among the partially articulated individuals identified in Feature 7, two were flexed on the side, and another was placed supine. During excavation, wrapping of some kind prior to deposition was evident by the tightly flexed position of the arms of one of the flexed individuals, and the vertical positioning of the clavicles of the prone individual (see Duday 2009, p. 45).

Other features did not reveal articulations, and were described by Helmke (2009) as clusters. As mentioned previously, the extensive flowstone deposits in Feature 6 made recovery and analysis difficult, but no definite articulations were observed. Preservation in these contexts had deteriorated rapidly prior to the work by CBAS in 2009 and 2010. However, inventories of the preserved elements show that these contain incomplete sets of elements from single (Features 1 and 11) or multiple (Features 3 and 4) individuals, confirming that these had been redeposited secondarily, perhaps as bundles composed primarily of long bones and skulls.

4.5.3 Sex and Age Profiles

Sex and age ratios that differ from expected paleodemographic profiles may be used to infer specific mortuary uses for particular contexts (Tiesler 2005). Because ethnohistoric sources have suggested that children or infants were the preferred victims of sacrifice in caves and cenotes, archaeologists have often interpreted mortuary deposits from caves as being sacrificial on the basis of the presence of subadults (see Gibbs 2000; Scott and Brady 2005, pp. 275–276; Stone 1997). A typical burial profile might contain a high proportion of infants and some mid-aged adults, but also should contain relatively few adolescents and young adults, along with some older adults. Age estimates, displayed in Table 4.1, were based primarily on dental eruption and attrition, epiphyseal fusion, and overall size (Buikstra and Ubelaker 1994).

Feature 1 contains an adult male individual of unknown age. Features 3 and 4 contain a minimum of four individuals based on duplication of elements and variations in the robusticity of leg bones. At least one individual was an adult male. Other individuals in Features 3 and 4 are gracile: at least two are adult and thus likely females, while one is likely an adolescent. A nearly edentulous mandible suggests the presence of an older individual. Feature 5 contained eight primary individuals: two adult males, two adult females, a late adolescent (likely male), and three children aged approximately 10, 7–8, and 2 years old. The adults all appear to be relatively young based on a lack of dental attrition. Feature 5 also included at least one secondary burial of an adult—perhaps a young to middle-aged male based on dental attrition and robusticity of the mandible. Feature 6 contains a minimum number of five individuals, including two adult males, one adult female or late adolescent of unknown sex, one child (~5–10 years old), and an infant. The inventory of Feature 7 provides a minimum number of four individuals, but there were clearly more placed within this area where bones were poorly preserved. Feature 7 contained an 18-month old, a ~3–7-year-old child, a young adult who likely was male, and a young, middle-aged female. Feature 11 contained the incomplete remains of a young adult male—almost certainly a secondary burial.

Determining the number of individuals in Je'reftheel is difficult because of the secondary movement of bones and variable preservation. However, we were able to determine that Je'reftheel contained bones of both male and female individuals in relatively equal proportions, as well as a wide range of ages that includes infants and an old adult. Despite this variability, Je'reftheel has an overabundance of young adults and a lack of infants in comparison to a "typical" paleodemographic distribution. This generally falls within the wide range of age distributions documented in a survey of caves by Cucina and Tiesler (Chap. 9, this volume). They found that caves in general tend to have all age groups represented, and thus are not highly specialized, though like Je'reftheel, subadults are typically underrepresented and there is a scarcity of perinatals, suggesting nonrandom selection of individuals.

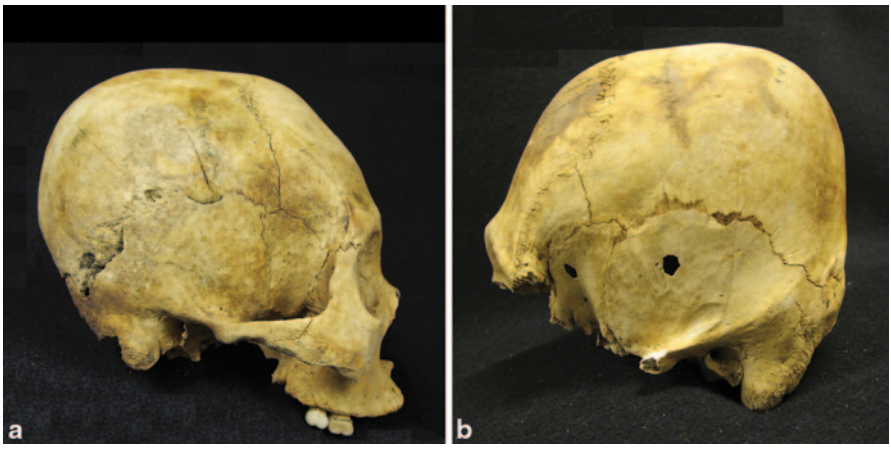

Fig. 4.5 Examples of cranial modifications from Je'reftheel. **a** Feature 5, Skull C, tabular oblique. **b** Feature 5, Skull D, tabular erect. (Photographs by Gabriel D. Wrobel)

4.5.4 Cultural Modifications

Among the Je'reftheel remains were 13 complete or partially reconstructible crania (including the missing cranium from Feature 4), and all but two display intentional shaping (Fig. 4.5). In addition, four frontal bones from commingled contexts were clearly artificially flattened. Of the seven crania that were complete or nearly complete, two of the modifications were tabular erect and the other five were tabular oblique, which is not an uncommon form in the region. However, Tiesler (2013) observed fewer instances of cranial modification in the nearby Belize Valley than elsewhere in the Maya Lowlands. While 88% of 1,515 crania in Mesoamerica she studied showed some measure of cranial modification, this is documented on less than 50% of the Belize Valley burial sample. In addition, an analysis of contemporaneous burials from nearby rockshelters showed very few modifications, and none clearly demonstrating modifications to both the frontal and occipital planes (Wrobel 2012).

Dental modifications appear to be present on all of the adults placed in Je'reftheel. These consisted only of filing, as no teeth had been drilled for inlays. Comparisons with other nearby mortuary sites in the Roaring Creek and Caves Branch River valleys reveal a distinct contrast between dark zone caves, which show high frequencies of dental modifications, and rockshelters, in which dental modifications are almost completely absent (Wrobel 2012). This dichotomy may reflect socioeconomic or ethnic distinctions among Late Classic groups in the area. In a recent study of Late Classic burials from the Belize River Valley, filing and inlays were relatively uncommon, found in only 15 of 64 individuals. More than half of these individuals had origins in the foothills of the Maya Mountains, which are in close proximity to Je'reftheel (Freiwald 2011, p. 335). Groups living in and around the Maya

Mountains may have practiced dental modification more frequently than those living elsewhere in Belize.

4.5.5 Biological Traits

An analysis of dental nonmetric traits also suggests close relatedness between individuals in the form of a relatively high frequency of congenitally absent third molars. In general, rates of congenital absence appear to be relatively low among Maya groups. Jacobi's (2000) study of Colonial Tipu reports third molar agenesis frequencies as 15.1% for the maxilla and 6.4% for the mandible. Among Prehispanic groups, Wrobel (2004) reported rates of 5.4 and 9.6% for Classic and Postclassic groups in Belize and Guatemala, while Scherer (2004, Table 6.5) found 3.5% and 5.7% among Classic period groups in Guatemala, Belize, and Mexico.

Within Feature 5, four of the seven individuals that could be scored displayed congenital absence of at least one molar. Feature 6 contained a nearly complete mandible showing agenesis of both third molars. A small fragment of maxilla, possibly belonging to the same individual, had preserved alveolar bone showing that a third molar with a single extremely small root had erupted. Feature 7 had only a fragment of a right mandible, which displayed an alveolar impression of a third molar. In Feature 11, the complete mandible demonstrated third molar agenesis on the left side, but had a fully erupted molar on the right. Although no maxilla was located, a pegged upper left third molar was identified. Thus, the high prevalence (60%) of a relatively rare trait may indicate that the individuals are closely related. However, a regional study of dental variation is needed to confirm whether or not agenesis is typical within the general local population.

4.5.6 Pathologies

Pathologies within Je'retheel were generally limited to mild porotic hyperostosis, an exceptionally low frequency of caries, and light dental attrition even in older individuals. Linear enamel hypoplasias were typically mild or absent, and evidence for general infections of the skeleton in the form of osteitis (or, periostitis) was similarly rare. While general health data such as these are difficult to interpret in relation to social status, these data appear consistent within the skeletal series, which may be tentatively forwarded as evidence that the individuals shared a similar life experience related to health. Cucina and Tiesler's (2007) analysis of health among individuals found in nonfunerary contexts at Classic sites in the northern Yucatan produced a broad range of health profiles.

4.5.7 Associated Material Culture

Items found in direct association with the skeletal remains within Je'reftheel included L-shaped earspools with jadeite appliqués, complete ceramic vessels, two complete, finely knapped, chert lanceolate bifaces, carved marine shell pendants, and olivella shell adornments that include a bracelet and tinklers for a belt. The earspools were found as a pair in close association with articulated shoulder elements and cervical vertebrae, and would have been positioned on either side of the skull of this individual. One of the bifaces was discovered beneath a small flat stone near the entrance to Chamber 3, while the other was reportedly taken from Feature 3 after which it was delivered to the Institute of Archaeology by members of Springfield Village. No use-wear was evident on either artifact, suggesting that they may have been manufactured specifically for interment. In the Belize Valley, Willey et al. (1965, p. 412) identified examples with the same general form as "tapered stem, long blade" bifaces (see specifically Fig. 261d, p. 413) and date them to the Late Classic period (Tiger Run and Spanish Lookout ceramic complexes). These grave furnishings are consistent with those reported in elite funerary contexts and pictoral representations, and have also been noted at other mortuary caves and rockshelters (see discussion by Helmke 2009, as well as Helmke and Wrobel 2012).

4.5.8 Isotopic Data

Strontium ($^{87}Sr/^{86}Sr$) and oxygen ($^{18}O/^{16}O$) isotope values in the tooth enamel of the nine individuals found in Feature 5 provide information about the geographic origin of each individual. Specifically, we sought to determine whether the individuals had local origins or foreign ones in an effort to draw analogies with similar data from both residential and sacrificial contexts at other sites. While there is no specific isotopic profile of a nonfunerary versus a funerary context, several studies guide our interpretation. Freiwald (2011) found that of 148 human tooth enamel samples from Belize River Valley sites, nearly all types of burial contexts contained nonlocal individuals, including residences (23.4 %, $n=47$), eastern shrines (21.8 %, $n=55$), and monumental architecture (5.9 %, $n=17$). A nonlocal origin was more common in other types of deposits such as ballcourts (37.5 %, $n=24$). In contrast, nearly half of the individuals interpreted as sacrificial victims in mass graves at Teotihuacan had diverse, nonlocal origins (Spence et al. 2004; White et al. 2002). Our results show that isotope values of individuals buried in Je'reftheel are similar to the residential burials rather than the nonfunerary contexts.

Strontium isotope values vary according to the composition and the age of the bedrock in different geologic formations, and the values become fixed in human tooth enamel during infancy and early childhood. A recent study of $^{87}Sr/^{86}Sr$ values in central Belize demonstrated measureable differences between several areas: (1) the floodplains along the Mopan, lower Macal, and Belize Rivers, (2) the Vaca Plateau, (3) the Maya Mountains and the Mountain Pine Ridge, and (4) the foothills

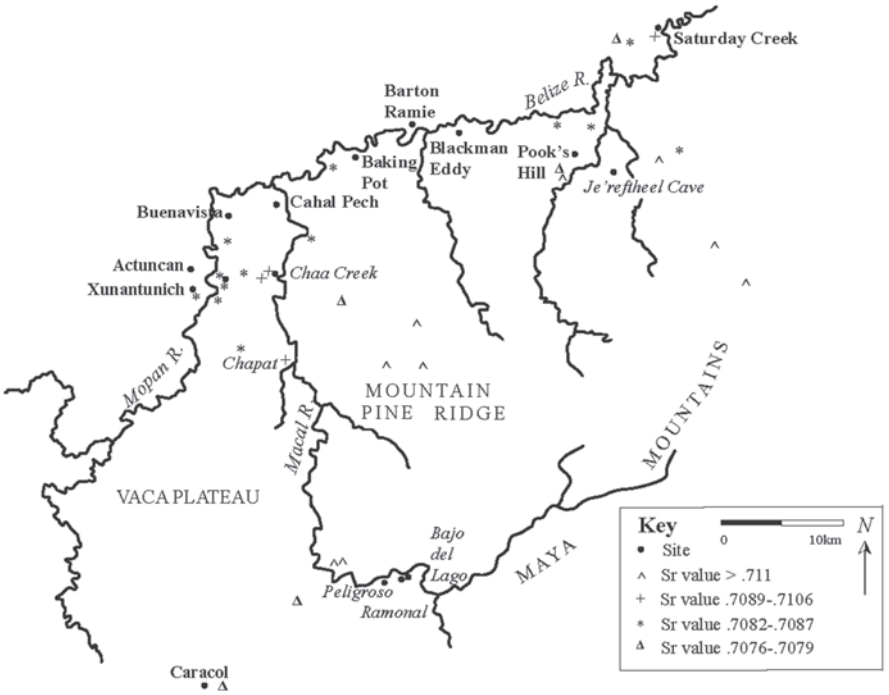

Fig. 4.6 Je'reftheel and strontium isotope values. Human populations in five locations (italicized) have high average strontium isotope values (>0.709) that are consistent with high faunal baseline values. Values in nonitalicized sites match the lower mean (~0.7085) of the Belize River floodplain baseline fauna. (Map by Carolyn Freiwald)

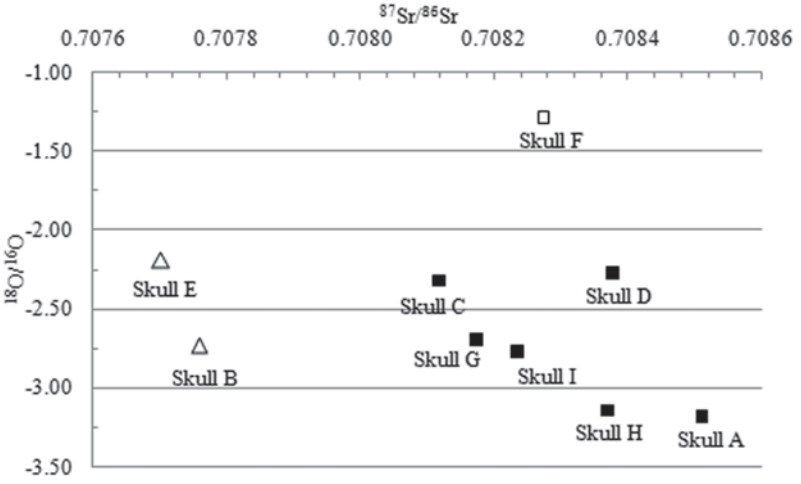

Fig. 4.7 Je'reftheel strontium and oxygen isotope values. *White triangles* represent strontium isotope values interpreted as nonlocal, and the *white square* represents the outlier oxygen isotope value. (Chart by Carolyn Freiwald)

Table 4.2 Strontium and oxygen isotope values for individuals from Feature 5

Individual	Lab #	$^{87}Sr/^{86}Sr$	$^{18}O/^{16}O$
Skull A	F7418	0.708511	−3.18
Skull B	F7419	0.707760	−2.73
Skull C	F7420	0.708118	−2.32
Skull D	F7421	0.708378	−2.27
Skull E	F7422	0.707702	−2.19
Skull F	F7423	0.708274	−1.29
Skull G	F7425	0.708174	−2.69
Skull H	F7424	0.708370	−3.14
Skull I	F7426	0.708234	−2.77

surrounding the mountains (Fig. 4.6). Values in each of these areas are distinct from those identified in the Maya lowland region that borders the Belize Valley to the west and the north (Hodell et al. 2004). Geographically, Je'reftheel is situated at the intersection of the Belize River floodplain and the foothills of the Maya Mountains. Values from Pook's Hill 5 km to the west are similar to those found along the Belize River, but lower and higher values also are found 5 km away near Roaring Creek (Freiwald 2011, p. 223). Variability in oxygen isotope values is less geographically discrete (Marfia et al. 2004; Lachniet and Patterson 2009), but $^{18}O/^{16}O$ isotopes may differ in regions with similar $^{87}Sr/^{86}Sr$ values (for a more detailed discussion of isotopes, see Freiwald 2011; Freiwald et al. Chap. 5, this volume).

The average $^{87}Sr/^{86}Sr$ value for tooth enamel sampled from seven of the nine Feature 5 individuals is 0.70829 ± 0.0001, ranging from 0.770702 to 0.708511 (Fig. 4.7 and Table 4.2). This is similar to baseline values of modern fauna collected along the Belize River floodplain (mean = 0.7085 ± 0.00026, ranging from 0.708208 to 0.709077 $^{87}Sr/^{86}Sr$ in Freiwald 2011, p. 86). The $^{87}Sr/^{86}Sr$ values of the tooth enamel from two individuals, a 10–12-year-old child (0.70776, Skull B) and a young adult male individual (0.707702, Skull E), are statistical outliers and we interpret them as individuals with nonlocal origins.

In addition, one 7–8-year-old child (Skull F) with a local Belize River $^{87}Sr/^{86}Sr$ isotope signature has an enriched oxygen isotope value (−1.29 ‰ $^{18}O/^{16}O$). This is a statistical outlier from the other samples, as well as other values in the valley based on mean values from 16 individuals with Belize River floodplain $^{87}Sr/^{86}Sr$ values (−2.99 ± 0.87‰ $^{18}O/^{16}O$ in Freiwald 2011, p. 268). Enriched values have been identified in surface and ground water samples in parts of the central Peten and in human tissues at sites such as Calakmul (Lachniet and Patterson 2009; Price et al. 2010). Thus, this child may have a nonlocal origin in a part of the central Peten with strontium isotope values similar to those identified along the Belize River.

The most conservative interpretation of the isotope values is that a local population used the cave to inter their dead. The proportion of individuals with nonlocal origins is consistent with residential burial contexts at 13 other sites in the region (Freiwald 2011). Most population movement in the Belize Valley occurred within the region, and values lower than 0.708 $^{87}Sr/^{86}Sr$ were not common. They were identified in only 5% of the sample, almost always as the lone outlier in a particular

burial location (Freiwald 2011; Freiwald et al., Chap. 5, this volume). The groups using the cave to house their dead may have had family origins in the area.

4.6 Discussion

Explaining the large number of human bodies that have been reported in caves in and around central Belize is complicated in large part by the general lack of socio-political context surrounding these ritual activities. Recent archaeological investigations indicate sudden and substantial Late Classic construction of a network of large monumental centers connected by sacbeob in this area (Andres et al., 2014). So far, this architecture, as well as portions of two carved stone monuments found at Tipan Chen Uitz, one of which bears an incomplete calendar round date, suggest a significant elite presence in the region began during the Late Classic period. This flurry of construction activity and vastly expanded settlement coincides with a significant increase in cave ritual in this area (Helmke 2009), as well as further afield in the Macal Valley (Moyes 2008).

However, all of this activity seems to abruptly cease at some point in the Terminal Classic period. So far a lack of evidence of Postclassic settlement in the Caves Branch, Lower Sibun, or Roaring Creek drainages, and almost no Postclassic ceramics in caves in this area, strongly suggest a relatively rapid abandonment. Such sudden transitions are fairly common at this time throughout the Maya region, and current research in the area by the Central Belize Archaeological Survey (CBAS) project is aimed at providing explanations for both the surge and the cessation of activity. While ceramic associations and AMS dates on the bones and carbon found in the caves provide Late to Terminal Classic dates for many of the mortuary contexts, including Je'reftheel, thus far they unfortunately have not provided enough resolution to differentiate which ritual events were associated with the rise and peak of this complexity, and which occurred during its decline. The AMS date range of AD 680–890 derived from Je'reftheel likely encompasses all of these events.

This study of the skeletal assemblage from Je'reftheel provides a set of data that directly relates to the identity of those individuals placed within the cave, and aids in interpreting and reconstructing the mortuary program associated with this discrete context. One goal of the study was to compare the bioarchaeological data from Je'reftheel with expectations based on two competing models of Maya mortuary cave use: funerary and sacrificial ritual. When viewed in isolation, some of these results could support either funerary or sacrificial ritual. For instance, artifacts found in association with skeletal remains in caves have been described as grave goods (Garza et al. 2002; Prufer and Dunham 2009), but also as offerings to accompany a sacrifice (Kieffer 2009; Scott and Brady 2005, p. 278), both of which are feasible explanations. Our broader evaluation using a combination of bioarchaeological evidence found clear parallels with mortuary contexts in residential and ceremonial architecture, strongly suggesting that the ritual behavior in Je'reftheel was primarily funerary in nature.

We have identified within Je'reftheel several distinct areas of bone deposition and the presence of both primary and secondary burials. Variability in these deposits suggests that complete bodies were placed in only two areas of the cave, which correspond to large physical spaces that appear to have been intentionally modified. The other mortuary features contained collections of unarticulated and incomplete skeletons that had been deposited secondarily, although we have been unable to determine whether or not these individuals had been initially deposited within the cave immediately following death, or moved there following decomposition elsewhere. Careful examination of all bone surfaces failed to find any examples of perimortem trauma in the form of cuts, chop marks, or fractures, which have been occasionally documented in other mortuary caves. Despite the effects of bioturbation, articulated joints and bones in approximate anatomical position found in Features 5 and 7 allowed the reconstruction of aspects of original body positions and associations with artifacts. In general, these spatial data helped demonstrate that the bodies had been carefully arranged in a variety of positions and were often personally adorned with jewelry. In both Features 5 and 7, it is clear that bones from decomposed bodies in primary burial contexts were moved to make room for new bodies. This specific mortuary behavior, while not previously noted in caves, is commonly reported in tomb contexts (Chase 1994; Chase and Chase 1996; Healy et al. 1998; Nash 2010; Novotny 2012; Weiss-Krejci 2004; see also discussion of shrine ossuaries by Serafin et al., Chap. 6, this volume). The discovery that Feature 5 consisted of complete bodies that had conspicuously missing elements, and also included isolated elements that did not belong to these individuals, presents another clear parallel with mortuary behaviors associated with tombs that are commonly interpreted as extended funerary rituals.

Analysis of the bones demonstrated the presence of both sexes, and ages that ranged from infant to old adult. It is clear that the cave was the final resting place for only a subset of a larger social group or population: Je'reftheel's burial population is small and contains relatively few older adults and infants, thus encavement here was restricted in some way and likely based on aspects of social identity. Some cave studies have inferred nonfunerary practices on the basis of restricted aggregate age profiles (Owen 2005; Tiesler 2005), but data from such discrete contexts must be viewed within the broader chain of mortuary spaces within a ritual landscape in which subadults are commonly underrepresented, including other nearby caves, settlement contexts, and tombs. Thus, while a seeming overabundance of subadults in one cave might indeed be the result of ceremonies involving sacrifice to placate rain deities and propitiate rain, it is equally plausible that this distribution results from the known Maya practice of employing a variety of mortuary spaces, which were often restricted by aspects of social identity (see Weiss-Krejci 2004 for an analogy with European tomb use).

Isotopic data shows that most of the individuals were likely of local origin, a pattern that generally conforms to our initial ongoing isotopic research from other caves and rockshelters in the area and implies mortuary use of these sites by groups that lived in close proximity to them (Table 4.2). The presence of some ($n=3$) nonlocal individuals within the group is consistent with the pattern found

in residential contexts by Freiwald (2011) in her regional survey data of the Belize Valley. In contrast, the presence of dental modifications on all adults and cranial modifications on most individuals within Je'reftheel also seems to fit a broader pattern observed among sites in the vicinity around Je'reftheel, in which groups placed within caves are distinguished from those in rockshelters, who generally do not display such modifications. These differences imply the presence of some sort of social distinction between groups inhabiting the area.

Several lines of biological evidence suggest that these individuals could be members of a family group, including the high frequency of a rare dental trait in the form of third molar agenesis, the presence of a wide range of ages and both sexes, the similarities in cranial and dental modifications, and the relatively consistent local isotope signatures. Furthermore, unlike family groups that have been identified in sacrificial contexts (Duncan 2009; Barrett and Scherer 2005), there is no clear evidence of perimortem or postmortem desecration within Je'reftheel.

The clues provided by each set of data help to demonstrate that the mortuary program within Je'reftheel closely parallels funerary behavior documented in several other contexts in which bodies were interred consecutively, including nearby rockshelters in the Caves Branch River and Roaring Creek Valleys and, more generally, tombs. All of these contexts often contain individuals of all ages and both sexes, as well as varying states of articulation and commingling often resulting from disturbances while new bodies were being deposited.

4.7 Conclusions

Several scholars have pointed to the close conceptual relationship between Classic Maya temple pyramids and mountains (Brady 1997, p. 603; Stuart and Houston 1994, p. 86; Vogt 1964; among others). Further exploration of this analogy naturally leads to potential parallels between the hollow spaces contained by each, both of which often contain human remains (Adams 1999; Carrasco et al. 1998; Coe 1956; Vogt and Stuart 2005). A propensity by Maya groups over time to construct artificial caves in the form of architecture further strengthens the proposed analogy between caves and tombs (Brady 2012). Interestingly, investigations of an extensive looters' trench in one of the elite residential courtyards at the civic ceremonial center of Deep Valley near Je'reftheel revealed that the eastern structure, which often serves as an ancestor shrine, was filled with dry-laid boulder core and did not contain any sort of funerary features. Thus far, other looters' trenches found in monumental architecture at sites in the vicinity also show no concrete evidence for formal tombs. While further investigation is needed to confirm these initial observations, the absence of tombs in places where they are commonly found would necessitate the use of alternative spaces for the interment of elites. This study has shown that the treatment of individuals placed within the small cave site of Je'reftheel is generally consistent with the use of tombs by the Maya. However, we point out that investigations of human remains found in other caves by the CBAS project and others

show an amazing diversity, suggesting that Je'reftheel illustrates only one aspect of ancient Maya mortuary cave use.

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