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Funerary or Nonfunerary? New References in Identifying Ancient Maya Sacrificial and Postsacrificial Behaviors from Human Assemblages

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2.1. Introduction

Four decades ago, Alberto Ruz's comprehensive compendium on pan-Maya burial traditions *Costumbres funerarias de los antiguos mayas* ("Ancient Maya burial customs") drew attention to the complexity and diversity of the area's past funerary record (Ruz, 1968). His all-embracing collection of data, organized according to the then popular cultural-historical mind frame, still stands as a basic source of reference, anticipating what has become a systematical study of the Maya mortuary complex. Archaeological research, supplemented by written and iconographic information, has now granted a broader understanding of the scope of ancient Maya ancestral practices, together with their underlying eschatological codes and social conditions (see, for example, Ciudad et al., 2003; Cobos, 2004; McAnany, 1995; Welsh, 1988a).

Less understood are the many human clusters in the archaeological record that do not clearly denote ancestral practices. Regarding the multifaceted nature of the Maya mortuary complex, we could make a point by stating that most of the human assemblages recovered from precontact Maya contexts lack clear funerary status. The many human disposals that appear in caves and sink holes, multiples and mass deposits, figure among those, to be discussed extensively in subsequent chapters in this volume. Some of the above contexts have been assigned potential sacrificial status, yet without being able to reach a broad agreement in the scholarly community.

Here, I have opted, for practical reasons, to deal with human assemblages of presumably extrafunerary nature according to three broad categories: cache remains, isolated bone scatters, and primary disposals. The first category, cache remains, identifies the scattered, intermingled, and incomplete human assemblages in clearly offertory arrangements that have habitually been tagged as "caches." These identify human clusters explicitly or implicitly as ceremonial artifacts, a notion essentially distinct from the reverential statuses implied by funerary disposals.[1] Naturally, this dualistic nomenclature comes short of benefiting all assignments of human assemblages, as already acknowledged by William Coe who stated that separating

these two categories (i.e., caches and burials) "... may be misleading in attempts to explain ancient Maya ritual behavior" (Coe, 1965; see also Coe, 1959). The problems inherent in this either/or assignment have triggered concerns for oversimplification and have led some authors, like Marshall Becker, to propose alternative appreciations on these human assemblages. His view of human ritual deposits is not dichotomic, rather it is a broad continuum with some burials appearing as a cache and others as caches combined with a burial (Becker, 1992, 1993).[2]

The working definition for our second category of controversial human deposits, isolated bone scatters, is even more unspecific. Loosely labeled as "concentrations," "miscellaneous human remains," or "problematical deposits," this group is made up largely of random bone scatters in the fills and construction middens of Maya sites. The clusters mostly consist of small quantities of intermingled skeletal material unlikely to represent burials (see for example Becker, 1993; Coe, 1990; Iglesias, 2003; Kunen et al., 2002; see also Medina and Sánchez in this volume). The labeling as "problematical" admits, per se, the impossibility of assigning a clear pattern to isolated human components beyond suggesting a series of potential formation processes that could relate to ritual or domestic refuse discard, recycling of human bones and teeth for artifact production, or protracted funerary practices. In recent years, the mortuary pathways of this type of human concentrations have been examined more closely in ancient ceremonial dumps. Attempts to disentangle their ritual meanings have been approached from their depositional histories, symbolic spaces, or underlying agential behaviors (Kunen et al., 2002; Mock, 1994; Walker, 1995; Walker and Lucero, 2000).

The third category of debatable human assemblages concerns primary (disturbed or undisturbed), but mostly complete disposals that show ignoble handling or at least lack clear evidence of ancestral treatment. It includes container burials and mass graves, considered by many authors as sacrificial depositories (see, for example, Fowler, 1984; Ruz, 1968; Welsh, 1988a,b). However, the absence of direct indications of violent forms of death, which hampers any secure interpretation in the great majority of cases, has recently caused a dispute on their sacrificial origin. Doubts have been cast specifically on the authenticity of companion sacrifice in royal tombs from several Maya sites, including Tikal's Tomb 10 or Palenque's great mausoleum of Janaab' Pakal inside the Temple of the Inscriptions (see Weiss-Krejci, 2003). The debate challenges the often arbitrary inferences of companion sacrifice from multiple internments, like those proposed by Welsh (1988a,b) or Ruz (1968) for lack of sufficient evidence. The very concept of "funerary attendants" has been questioned in many examples of alleged companion burials (Weiss-Krejci, 2003; see also Cucina and Tiesler, Chap. 1 in this volume).

Attempts to gain a subtler understanding of nonancestral human assemblages have proliferated especially in the past decade. As we have seen, the new recreations stress notions of continuity and correspondence between offerings in general and funerary interments, much different from the initial tenets of dualism. Both have been conceived jointly as markers of sacred spaces, material witnesses of an evolving built environment and of political evolvement, or simply as "earth offerings" (Becker, 1992, 1993; Lucero, 2003; McAnany, 1998; McAnany and

López, 1999, McAnany et al., 1999). At a time when the difficulties inherent in Maya mortuary reconstruction are ever more apparent, cognitive and especially agential approaches have acquired resonance in the academic community. They attempt to imbue ritual human deposits with ideological significance and to gain a subtler understanding of the diversified ritual behaviors that once originated from the material record (Gillespie, 2001, 2002; Joyce, 1999, 2003a,b; Kunen et al., 2002; Lucero, 2003; McAnany, 1998; McAnany et al., 1999; Walker, 1995). These novel frames of references are pursued by some contributions assembled in this volume.

In sum, current work on Maya nonancestral mortuary conduct has successfully addressed many old and new *caveats* and brought forth useful working frameworks for understanding ritual functions of human deposits within Maya constructed spaces and cosmology.

However, some of the readings of their depositional histories fail to address precisely the question of their potentially sacrificial vs. nonsacrificial origin. This is neglectful of the fundamental underlying dichotomy between ancestral practices as opposed to postsacrificial processing, and natural death as opposed to death originating from ritual violence. Therefore, the recognition and interpretation of postsacrificial deposits vs. proper burials or those stemming from other unrelated conducts, and the identification of ritual, violent vs. natural death still appears, at best, ambiguous in much of the recent work.

One root of these shortcomings is the neglect of the skeletal data, reduced by the notoriously degraded state of preservation of the subject matter, hampering severely direct examinations of culturally inflicted lesions. Likewise, the diversity and complexity of ancient Maya mortuary conduct and its manifold material expressions limit in practice the possibilities of finding any unique, distinctive patterns in the skeletal record. Methodologically, the strong reliance on documentary and contextual data, coupled with the neglect of direct biographic and taphonomical evidence, has resulted equally detrimental for a full appreciation of ancient mortuary pathways and a skewed or erroneous view of the types of conduct they may represent.

Studies or even references to culturally inflicted *peri-* or *postmortem* skeletal marks are still very few in Maya research (see for example Buikstra et al., 2004; Cucina and Tiesler, 2006; Massey, 1994; Massey and Steele, 1982, 1997; Mock, 1994; Tiesler, 2002; Tiesler and Cucina, 2003; Tiesler et al., 2002; Wurster, 2000). They have not been scrutinized systematically yet in Maya research as opposed to other cultural areas, namely the North American Southwest and Europe and, to a lesser degree the Mesoamerican Highlands. In these regions, pattern recognition has been successfully put to work in the interpretation of anthropogenic bone modifications (Botella et al., 2000; Pijoan and Lizárraga, 2004; Talavera et al., 2001; Tiesler, 2004; Turner and Turner, 1999; White, 1992). I argue that in practice this situation has led to a chasm between the iconographically based affirmative interpretations of sacrificial behavior (see for example Boone, 1984; Martin and Grube, 2000; Miller, 2003; Schele, 1984; Schele and Miller, 1986; Stuart, 2003; Taube, 1994, 1999), and the reluctance among some archaeologists to accept the vestiges of ritual killings or otherwise violent conduct as such. Specifically, earlier sacrificial

appraisals of incomplete or irregular primary arrangements, namely the ones described for Tikal (Coe, 1990) or Palenque (Ruz, 1992), have recently been discarded for lack of proof at a time when alternative explanations abound. These seem to favor a broad range of more reverential posthumous treatments (Becker, 1992; Chase and Chase, 1996, 1998; Fitzsimmons, 1998; Fitzsimmons and Fash, 2003; Gillespie, 2001, 2002; McAnany, 1995; McAnany et al., 1999; Saul and Saul, 2002; Weiss-Krejci, 2003; see also Chase and Chase, 2003; Tiesler, 2004; Tiesler and Cucina, 2003, for different views).

Here I wish to contribute a set of osteotaphonomic correlates of funerary vs. sacrificial practices, derived from religious-philosophical references adapted to the region. They are designed to assist in the recognition and interpretation of different posthumous body treatments and the potential funerary vs. nonfunerary conduct they may represent. Some of these are put to work in this chapter, others later in the volume.

2.2. Meanings and Expressions of Sacrificial vs. Funerary Behavior

I begin with the premise that most of the attributes of funerary and postsacrificial human placements stem from ritualized conduct, i.e., human behavior that enacts elements of a shared ideology. In the following paragraphs I outline some key codes of ritual behavior that underlie each of these. The concepts encompass by no means the actual range of ancient ritual behavior but those features that anchor the expected and divergent skeletal, artifactual, and contextual patterns to be discussed.

2.2.1. Maya Death and Burial

Like in other hierarchical societies (Carr, 1995; Pader, 1982), the broad scope of funerary traditions known for the Maya realm range from the varied, spontaneous, or semiformalized family practices to the symbol-laden, state expressions of dynastic ancestral veneration. Here, the dead were not buried in cemeteries but were most likely laid to rest within close range of their living descendants and, although to a lesser extent, in the ceremonial edifices and public spaces of site cores. A vigorous cult for individual paramounts evolved toward the Classic period, which clearly surpassed long-standing family traditions, on par with developing political hierarchy and centralized rulerships. In the mortuary record, this tendency finds its expression in the richly furnished elite mausoleums, often motivated by the commemoration of deceased lineage members in the form of public performances apt to highlight supreme political, religious, and military authority (Inomata and Triadan, 2003; Lucero, 2003; McAnany, 1995).

Regarding reverential corpse treatment, we know several forms of body preparation during the Classic period. They include, among the others, carefully placing the body inside the funerary space in a supine or flexed arrangement. Embalming and

wrapping procedures were practiced in some areas, along with the application of pigment. Other body treatments, such as predepositional defleshing and dismemberment, have not yet been clearly identified in the burial record of the Classic period. Not even does cremation stand as a widely spread funerary practice during that time, despite the mentions that refer to fires in and around tombs (Eberl, 2005; Fitzsimmons, 1998; Stuart, 1998). As in other Mesoamerican cultural settings, cremation appears to have become a regionally shared tradition only later (Iglesias, 2003; Landa, 1982 [sixteenth century]; Ruz, 1968).

A great variety of postdepositional manipulations of ancestors (i.e., the processing of disarticulated remains) is known for the Maya area. These include the painting of bones, the extraction (reduction) or introduction of skeletal parts, individual and collective reburial, and reuse of single bones as relics. These were destined to be venerated in temples and altars or to accompany later primary interments of family members (Chase and Chase, 1998, 2003; McAnany, 1998; McAnany et al., 1999; Ruz, 1968; Sharer and Traxler, 2003; Welsh, 1988a). More ignoble disturbances took the form of desecration and looting, or construction activities that unintentionally damaged the grave long after its location had been forgotten.

2.2.2. Human Sacrifice as an Institution

Different from the heterogeneous ancestral expressions known in the Maya area and different from animal sacrifice, we assume that human ritual sacrifice and, albeit to a lesser extent, postsacrificial body treatments identify an extreme of institutional and highly redundant ritual performances, controlled by the elite in power. The term "sacrifice" comes from the Latin *sacer facere*, which means "to make holy" (Bell, 1997; Hubert and Mauss, 1964). Most theological and anthropological works communicate that the central distinctive feature of sacrifice is the consecration that goes with it. A recurrent theme in sacrificial descriptions states that the victim, now associated with supernatural status, is immolated and offered to the gods. As such, human sacrifice is considered a supreme ritual form by societies which stage it for the termination of a man's life while the offering of its vital essences (sometimes consumed collectively or burnt) allows for the ultimate communication and exchange with the sacred (Beattie, 1980; Bell, 1997; Bourdillon, 1980; Rappaport, 2004).

Available historic and iconographic information on the ancient Mayas conveys the idea that their performance of human sacrifice did not make an exception to the above statements (Helfrich, 1973; Moser, 1973; Nájera, 1987). Here, human ritual killings were carried out by a squad of religious specialists, with close ties to the circles holding political, military, and religious power (Boone, 1984; Nájera, 1987; Schele and Miller, 1986). Colonial Yucatecan sources generally refer to the *Ah Kin* or high priest assisted by one or more *Nacomes*. It is also evident that strict frames of conduct regulated ritual killings. A set of rules and general concerns were closely followed by all participants before, during, and after the performance of human sacrifice to ensure the effectiveness of the rite (López, 1989, 1998; Nájera, 1987).

The sacrificial choreography was usually preceded by a number of preparations including fasting and autosacrifice, and initiated with the presentation of the victim. The ritual killing and endowment followed, and the vital essences of the body were collected and handed to the high priest who offered them to the gods while invoking the supernatural (Landa, 1982 [sixteenth century]).

2.2.3. Occasions for Human Sacrifice

Within this frame of behavior, variation is introduced depending on the rituals that accompanied the sacrifice, the occasions that prompted them, the regional setting, and the epoch. As in other traditional societies, there is a plethora of *leitmotivs* for ritual ceremonies in Mesoamerica, which also holds true for their sacrificial forms. Retrospectively, it is problematical in most cases to assign any specific message or purpose associated with ancient ritual executions, more so from the pictorial or archaeological record (but see Vail and Hernández for inferences on sacrificial forms from codices).

Therefore, I will attempt to distill some broad categories of ritual action that may be relevant for the understanding of the area's ancient cultural complexes (Bourdillon, 1980; Beattie, 1980; Bell, 1997; López, 1998; Rappaport, 2004). Most Maya religious motifs fit in with the notion of "communion sacrifice." Sacrifice benefits communion between humans and gods to renew the cosmos and thus secure common well-being. Many propitious, prophetic, and dedicatory ritual conducts, captive killings, and calendrical ceremonies dedicated to certain presiding deities fall into this category (see also Vail and Hernández in this volume). Such are the ceremonies dedicated to God A for example, who is represented with skeletal attributes and frequently appears together with Chac in scenes of sacrifice and mock self-decapitation (Miller and Taube, 1993; Robicsek and Hales, 1981, 1984; Taube, 1992, 1994). God A appears closely related to God Q who also exhibits the accoutrements of death and sacrifice. The latter is commonly depicted with a flayed or fleshless face, similar to the attributes of his emulated Postclassic counterpart *Xipe Totec*, the flayed god of the Aztecs (González, 1985; Matos, 1986; see also Hurtado et al. in this volume). Blindfolded by a facial band, he is equipped with a burning torch, sacrificial knifes, and other stone implements suggestive of ritual execution. Like the adopted Xipe cult during the Postclassic period, God Q appears related to a series of postsacrificial rituals, including flaying, defleshing, and ritual consumption.

A different form of sacrifice is delineated by the notions of prestigious killings. They are destined to individual paramounts and important events in Maya royal life (enthronement, deaths etc.), more than collective well-being. They underline the superiority and power of the receiver, and appear primarily related to individual benefit and needs at the same time that other themes designating religious sacrifice are absent (Bourdillon, 1980). In the Maya realm, this notion is expressed for example by aristocratic companion sacrifice (Cucina and Tiesler 2006; McAnany, 1995 see Medina and Sánchez in this volume).

Sorcerers' killings, as part of witchcraft or black magic, and expiation (i.e. judicial) executions identify additional categories related to the theme of human sacrifice (Beatty, 1980; Bourdillon, 1980; Bell, 1997). While the former is performed in secret and does not respond to community values or interests, the latter (executions of deviant individuals) designates corrective, retaliatory responses. Killings of harmful or potentially harmful members of the community serve as corrective measures to re-establish harmony and, at the same time, secure the continuity of the collective well-being. Evil forces exerted by certain individuals are eliminated by ending their lives, by removing them from the society, and sometimes by physically destroying their bodies by mutilation or fire, themes that will be explored by Lucero and Gibbs in the volume.

A similar notion is expressed during the so-called "disjunction sacrifices," despite its impersonal quality (Beattie, 1980). Disjunction rituals are not motivated by contact and union with spiritual powers but instead seek to destroy or at least remove them from society, which in turn identifies termination rituals among the Maya and, in fact, the pan-Mesoamerican sphere (McGee, 1998; Mock, 1994; Sugiyama, 1998; Vogt, 1998).

2.2.4. Sacrifice and Violence

As in other cultural settings that stage human sacrifice, a *kratophonous* (destructive) or *cathartic* element is introduced during the metamorphosis of the victims, who lose their personal human qualities during their transformation into impersonators of the sacred (Hubert and Mauss, 1964; Walker, 1995). The culmination of the ceremony was sometimes anticipated by prolonged torture and humiliation, as Schele (1984) documents in her survey of the iconographic record. Genital mutilation and blood-letting of bound war captives appear especially recurrent as pictorial motives in ritual scenes. A recurring motif is also established by the visual destruction during immolation itself, achieved by arrow wounds, decapitation, and heart excision, or by throwing the victim down from temple facades or into cenotes. Now "broken," the body of the victim is left while producing a violent outpouring of blood – the essence of life and sustenance to the gods. This theme is apparent in the scenes from Piedras Negras and the Dresden Codex. Taube (1999:228–239) associates Postclassic period heart excision with the mutilated earth goddess at Chichén Itzá, who are represented as being cut in two by a pair of bladed serpents. Colonial descriptions are consonant with the pictorial evidence, when referring to victims rolling down the temple stairs immediately after death (Landa, 1982 [sixteenth century]).

2.3. Funerary or Nonfunerary: Skeletal and Contextual Correlates for Ancient Ritual Behavior

From the previous discussion, it follows, at least in principle, that most of the sacrificial practices of the Maya are expected to produce patterns in the material record that differ from reverential mortuary assemblages. For the purpose of

clarity, I will discuss Maya standard funerary or nonfunerary practices within broad categories of sequenced expected operational components along the *peri*- and *postmortem* time line. They are intended to differentiate each stage of sacrificial and funerary behavior documented in the region's ethnohistorical and iconographic record (Table 2.1). This classification is designed to provide analytical elements in the correlation of past activities and the skeletal marks it might have produced. Considered along with other indicators, the taphonomical signatures produced by *peri*- and *postmortem* manipulations (Table 2.2) should assist in the distinction between behavior related to ritual slaying or postsacrificial body manipulations, and other, unrelated, treatments.

2.3.1. Death and Perimortem Violence

As noted above, conventional Maya mortuary research tends to assign unnatural death to those contexts that lack a clear funerary status. The scholarly community considers irregular and ventral positioning as evidence, indicating an ignoble treatment of the deceased (whose body appears to have been carelessly deposited into a mortuary depository). In primary contexts and especially in tombs containing multiple burials and elaborate accoutrements, the presence of sacrificial victims has been assumed on the grounds of positioning (or, rather, lack of positioning), and contextual evidence when successive interments can be ruled out. The entangled primary interments of various individuals arranged around one centrally placed skeleton, age, and nutritional profiles and the negative evidence of associated funerary objects have been cited specifically as clues to unnatural death (Chase and Chase, 2003; Cucina and Tiesler, 2006; Fowler, 1984; Ruz, 1968; Welsh, 1988b).

Probably the most direct evidence of ritual slaying is provided by skeletal indications of *perimortem* violence although the term "*perimortem*" is problematic by definition, as it admits the investigator's inability to discriminate modifications that have occurred right before and after death (Sorg and Haglund, 2002:8). However, in most cases, *perimortem* trauma is distinguishable from practices of clearly posthumous nature by evidence of implied conduct and by the vehemence of the action that they indicate. Although the form and cause of death cannot be ascertained from their presence alone, *perimortem* violence, by definition, is apt to leave unhealed impact lesions in the form of fractures, stab marks, and sharp and blunt force trauma. The pattern left by these lesions differs from the surface alterations produced by body dismemberment, removal of soft tissue, or long-lasting exposition, whose nature is clearly posthumous.

As regards our own research in the northern Petén area, we have documented a series of cases allusive of blunt and sharp force trauma at Calakmul and Becán, in the Mexican state of Campeche, and Dzibanché in Quintana Roo. Additional evidence was collected from the burial compounds associated with the sarcophagi of Janaab' Pakal and of the so-called "Red Queen" (Structure XIII sub), from Palenque, Chiapas. The samples from these sites were studied systematically in terms of their depositional processes, biovital attributes, minimal number of individuals per context, and body parts represented. The evaluation of disposition and

TABLE 2.1. Sequenced sacrificial and funerary conduct and sets of indicators

Time sequence	Biographic profile	Form of death	Predepositional body treatment	Primary deposition	Postdepositional manipulation	Secondary deposition
Expected funerary attributes	- All age groups - Both sexes	- Natural - Accidental	- Embalming - Cinnnabar application - Dismemberment? - Adornments - Cremation (Predominantly Postclassic)	- Single - Body placement and offerings - Association to living spaces, internment	- Removal/extraction of body parts - Desecration - Bone relics	- Single or multiple successive - Bone arrangement and offerings caching - Association to living spaces, container
Osteologic/ tafonomical correlates	- *Sex/age distribution*	- *No information*	- *Constriction effects* - *Pigmentation* - *Associated artifacts* - *Heat exposure (>600 °C)*	- *Body arrangement* - *Funerary container and associated artifacts* - *Location*	- *Disturbance* - *Missing body segments* - *Worked bones and teeth*	- *Bone arrangement* - *Funerary container* - *Location*
Expected attributes in post-sacrificial deposits	- Predominantly 2nd and 3rd infancy adolescents and young adults - Mostly male	- Violent - Non-natural	- Butchering - Dismemberment - Skinning - Defleshing - Consumption - Burning	- Single or multiple (complete/incomplete) - No body arrangement or subst. offerings - Association to public-ceremonial spaces - Simple interment or placing above ground	- Reduction - Extraction - Desecration - Re-use of bone segments	- Single or collective incomplete disposal - No bone arrangement or offerings - Discarded in public domain, ritual spaces, refuse middens
Osteologic/ tafonomical correlates	- *Sex/age distribution*	- *Signs of perimortem violence (cut or stab marks on skull, ribs, sternum and vertebrae)*	- *Cut marks, slicing, percussion, fractures* - *Heat exposure (<600 °C)*	- *Irregular arrangement* - *No funerary container* - *No/few associated artifacts* - *Location*	- *Disturbance* - *Missing body segments* - *Worked bones and teeth*	- *No bone arrangement, isolated bone*

TABLE 2.2. Sequenced sacrificial procedures and potential skeletal marks

Postmortem interval	Depositional sequence	Conduct	Possible skeletal indications
Perimortem	Predepositional	Death by arrow wounds	Unhealed stab wounds, mostly in the trunk area
Perimortem	Predepositional	Stoning	Unhealed blunt force trauma mostly on skull
Perimortem	Predepositional	Throat slashing	Unhealed sharp force trauma in bodies of cervical vertebras
Peri-postmortem	Predepositional	Heart extraction	Unhealed sharp force trauma on the ribs, sternal bone, lower thoracic vertebras
Peri-postmortem	Predepositional	Decapitation	Unhealed, sharp force trauma in cervical vertebras, possibly mandible
Peri-postmortem	Predepositional	Butchery	Impact stabs and cuts mostly distributed on trunk, green bone fractures, crushing
Peri-postmortem	Pre-postdepositional	Burning	Charring, mostly low direct heat exposure (<600 ˚C)
Peri-postmortem	Predepositional	Disembowelment	Slicings on vertebras, rib cage, and pelvic girdle
Peri-postmortem	Predepositional	Flaying	Slicings on skull and scapula/clavicle
Postmortem	Predepositional	Defleshing	Slicing and scratch marks on bone shafts, along muscle attachment areas
Postmortem	Predepositional	Disarticulation	Impact cuts, blunt force, breakage tends to be distributed around joints
Postmortem	Predepositional	Anthropophagy	Percussion breakage and abrasion, slicing cut marks on shafts and surrounding joints, spiral fractures, different forms of heat exposure, missing vertebras, cut marks, pot polish
Postmortem	*Postmortem*, Post depositional	Bone recycling	Sawing, drilling, breakage, abrasion, polishing, chiselling, engraving, painting (preforms, finished forms, or discard)

state of articulation followed the criteria of the French *anthropologie de terrain* (Duday, 1997; see also Tiesler, 2004). The curated remains were scrutinized with magnifiers and tangential illumination for natural taphonomic and anthropogenic marks. The latter were recorded according to presence, location, and concentration, following the criteria described by Pijoan (1997), Turner and Turner (1999), and White (1992), and general forensic research. Taphonomic "signatures" were employed to testify the different forms of body treatments of a posthumous origin and those cases of probable violence surrounding time of death (see Table 2.2). A similar approach was taken in the recognition and interpretation of the Postclassic skeletal assemblages from Champotón, in the state of Campeche, Mayapán, and Chichén Itzá's Sacred Cenote that will be discussed later in this volume by Anda, Hurtado et al., and by Serafin and Peraza.

Regarding the forms of *perimortem* trauma, we documented unhealed sharp force lesions reminiscent of throat slashing in an isolated skull deposit from Calakmul, Campeche (see Tiesler, 2002 for a lengthy description). The skull and its first three cervical vertebras were located inside the fill of Structure II. The third vertebra had received a sharp, horizontal blow from the front (Fig. 2.1). Additional slicing marks on the first cervical vertebra and green bone fractures on the mastoid process suggest that soft tissue was subsequently removed, probably as part of a posthumous amputation of the head. A second example was reported for the juvenile companion (XIIIsub-1) of Palenque's "Red Queen." The completely slashed third cervical vertebra suggests in this case that the head was severed completely from the back (Cucina and Tiesler, 2006).

Additional cases of throat slashing are documented in the literature. Such a case is the Terminal Classic skull pit of Colhá, Belize (Massey and Steele, 1997).

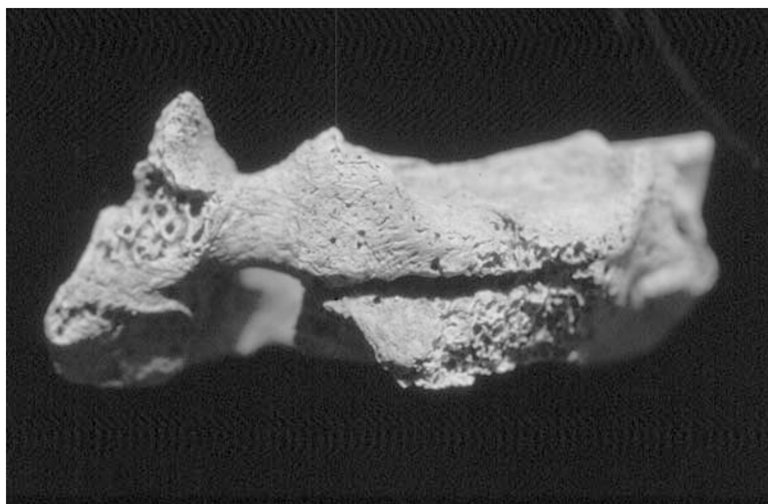

FIGURE 2.1. Slashed third cervical vertebra, Deposit IIa1, Calakmul (photo by V. Tiesler)

The authors describe horizontal cut marks on the upper cervical vertebras, one of which (axis) received a blow from the front. Another case is described for the Motmot Tomb at Copán. Buikstra et al. (2004) document several skulls and neck vertebras among the offerings of the burial, one of which exhibited cut marks on the ventral and lateral sides of the fifth cervical vertebra (Skull deposit 37–10). Two skull deposits that preserve their first cervical vertebras from Postclassic period Topoxté, Guatemala (Wurster, 2000), also share the above pattern, with both showing cut marks on the third vertebral body. Also Postclassic are 44 decapitated or possibly decapitated skulls from Iximché in the Highlands of Guatemala (Whittington, 2003b:244–249). Whittington describes physical evidence in the form of missing portions of bone and sharp force trauma that left ragged edges and straight slicing marks on the base of the skull, on the back of the mandibular angle, and on the cervical vertebras.

The recurring pattern of anthropogenic marks on the neck region, documented here, attests to throat slashing in some examples and beheading in others, even if it remains unclear in most of the cases whether it represents the cause of death or a posthumous amputation of the still fleshed head. Current understanding has related the latter practice to sacrifice, trophy taking, along with the selective retention of certain segments of the corpse as part of ancestral practices (McAnany, 1998; Welsh, 1988b). Weighing the contextual evidence provided for all the above examples of anthropogenic marks on neck vertebras, sacrificial scenarios seem much more plausible here than ancestral ones. At the same time we may ask ourselves about the origins and ritual connotations of descriptions of ancient Maya skull deposits or headless remains which lack any certain reference to potential anthropogenic marks (see for example Ruz, 1968; Welsh, 1988a,b), an aspect that will be taken up again in Sect. 2.3.2.

Unhealed sharp force trauma is also evident in other parts of the body, mainly the axial skeleton. In the case of the Red Queen's female companion, the blows affect the ribs and the lower part of her spine. This pattern has been described extensively elsewhere as the probable result of sacrificial heart extraction and butchering (Cucina and Tiesler, 2006; Tiesler and Cucina, 2003). Later in this chapter, the inferred behavior will be put into context with a similar pattern documented for Becán's deposit (see also Medina and Sánchez in this volume).

Unhealed blunt force lesions and fractures were documented for Deposit 3008 (K/A-1) in the epicenter of Dzibanché, Quintana Roo (Tiesler, 1997a). The well-preserved skeleton of an adolescent female, who had been deposited face down into a chamber that was then sealed, displays green bone fractures on the skull and several ribs. Massive *perimortem* dental fractures occur on both sides of the mandibular and maxillar dentition (Fig. 2.2).

2.3.2. Posthumous Body Processing

Most of the anthropogenic surface marks found in the prehispanic record are of clearly posthumous nature. Traces left by body disarticulation, removal of soft tissue, and long-lasting heat exposure most likely stem from postsacrificial

FIGURE 2.2. Dental fractures, right mandible of Burial K/A-1, Dzibanché (photo by V. Tiesler)

practices or, although less documented, from those manipulations that once formed part of funerary and commemorative acts, as has been argued for the ancient Classic aristocracy (Becker, 1992, 1993; Chase and Chase, 1998; Fitzsimmons, 1998; Fitzsimmons and Fash, 2003; McAnany, 1998; McAnany and López, 1999; McAnany et al., 1999). Unlike *perimortem* violence, *postmortem* body processing is related only indirectly to the form of death, yet it provides an extraordinarily rich source toward the understanding of how both types of death articulate with the processing of corpses.

Relevant insights for interpreting Classic elite body manipulation are granted by iconography and epigraphy. Eberl (2005) provides an important starting point in epigraphic-related funerary research on the chronology of primary and protracted corpse treatments. It is based on more than 200 Classic Maya inscriptions referring to the death and veneration of important dignitaries, identifying primary interment and numerous types of secondary manipulation. The initial interment is identified by the so-called *muhk-aj* events, festivities held during the first 10 days of mourning, probably culminating a series of elaborate preparations. A second group of references falls between 100 and 400 days after death. This is the time mainly destined for accommodating the final resting place and its formal consecration through ceremonies involving smoke. No mention refers to any direct manipulation of the body in the course of this time interval, which most likely would be undergoing decomposition. Years after death, the commemorative events become less frequent. They take the form of *el naah* smoke ceremonies and secondary treatments of the now skeletonized body, including the recollection of bones and bundle redepositions. The author mentions the use

of red pigment (*nahb-aj*) for these late treatments, associated to the painting of funerary chambers and the skeleton. Similar patterns of postinterment activities have been described by Fitzsimmons (1998).

The mortuary pathways that are relevant for postsacrificial activities and their material expressions are prone to differ from ancestral contexts. According to colonial witnesses, a victim's body could have been granted a plain burial either without or with prior treatment. Nonancestral body manipulation and mutilation is amply documented both in images and colonial writings (Landa, 1982 [sixteenth century]; see Edmonson, 1984; Helfrich, 1973; Moser, 1973; Nájera, 1987; and Vail and Hernandez in this volume for extensive references). Both native and European colonial sources identify different forms of flaying and dismemberment, defleshing, and the ritual consumption of the remains. Apart from certain denominators associated with Postclassic *Xipe Totec* ceremonies or captive sacrifice, no predictable behavioral patterns have been specified that could account for the actual diversity of postsacrificial treatments that have left their traces in the skeletal record, constituting challenges for future research in the Maya region. Regarding defleshing, one reference is worth mentioning to illustrate ancient behavioral patterns. Juan de Morales Villa Vicencio (1937; see also Helfrich, 1973) comments in his account on the Spanish "entrada" (entrance) in pristine Lacandon land in 1586, that a group of Spaniards came upon a place where a sacrifice had been conducted. He details that the party was to find the abandoned body of a sacrificed boy, whose left forearm had been deprived of soft tissue between the wrist and the elbow. A Spanish soldier had received a similar treatment after having been killed.

Regarding the physical evidence of body processing, each procedure leaves a specific signature in the skeleton (Table 2.2). Whereas flaying is likely to produce marks mainly on the skull and to a lesser degree on shoulder blades and clavicles, disarticulation commonly results in incisions, fractures, and blows around the joint areas. Defleshing implies the detachment of muscular masses and surrounding connective tissue from bone shafts. The skeletal traces reminiscent of flaying or defleshing are consistent with the Maya iconographic depictions and the colonial accounts. The majority of these indications come from mass graves, like the ones documented from Colha, Belize and Iximché, Guatemala, or the scattered irregular assemblages from Kohunlich, Calakmul, and Becán, as part of ritual debris or offerings (Massey and Steele, 1997; Tiesler and Cucina, 2003; Whittington, 2003a,b). Several contributions in this volume deal with the patterns and meanings of such marks in nonfunerary contexts.

Less warranted is the validation of defleshing in the record as part of past ancestral treatments, at least for the Classic period. More than indications of differential preservation or missing skeletal segments (which in any case would more likely manifest dismemberment and not defleshing), research has not supplied the direct skeletal evidence of dismembered or defleshed ancestors in primary or secondary contexts as of now (but also see Medina and Sánchez, and Serafin and Peraza in this volume). Some mentions of traces reminiscent of defleshing, like those documented for Calakmul's lavish tomb from Structure VII, have been dismissed as rodent marks (Folan et al., 1995; Tiesler, 1997b). Potentially

different is the situation in the group of isolated skulls, mandibles, and long bones, some of which bear scrapings and cut marks allusive of the processing of fleshed segments.

Although debated, indications of soft tissue removal in combination with fractures and burning have been inferred as a by-product of ritual ingestion following sacrifice (Helfrich, 1973; Nájera, 1987; Tourtellot, 1990:109). Colonial accounts on postsacrificial ingestions have been interpreted in this sense as motivated by the desire to acquire the spiritual power of the victim. Landa (1982 [sixteenth century]) and other chroniclers (Casas, 1958) mention that body parts of the slain victims sometimes were distributed among the participants for consumption. Similar to the Aztecs, heads, hands, and feet seem to have been preferred portions to be cooked prior to ritual consumption, as stated by Casas (1958:152). For other areas, mainly North America, a set of taphonomic criteria has been proposed for identifying cannibalism from the skeletal record. These include *perimortem* breakage, boiling or burning, anvil abrasions, cut marks, under representation of certain anatomical portions, and pot polish (Botella et al., 2000; Hurlbut, 2000; Turner and Turner, 1999; White, 1992). Additional parameters derive from the cultural perturbations of human assemblages from the area, some of which have been applied by Medina and Sánchez later in this volume in an attempt to provide possible explanations for the patterns of anthropogenic marks observed in Calakmul and Becán.

The ritual notions of exposing corpses, body parts, or skeletal remains to direct or indirect heat deserve separate scrutiny. Smoked bones show characteristic surface features, and colors differ from those exposed to open fire (300–700 °C) and calcination (>600 °C). Differences are also evident when comparing the traces of exposure on fleshed vs. dry bone; traces of boiling are generally less evident (Botella et al., 2000; Buikstra and Swegle, 1989; Herrmann, 1988). Whereas cremation was amply practiced during the Postclassic period (Iglesias, 2003; Landa, 1982 [sixteenth century]; Ruz, 1968), the evidence of the fire exposure of primary remains is rare in the funerary category before the second millennium AD. Despite the Classic period references to fire ceremonies in and around tombs (Eberl, 2005; Fitzsimmons, 1998; Stuart, 1998), no convincing case can be made so far for noble corpse incineration. Conversely, many cache assemblages of intermingled multiple and isolated human remains, like those recorded in Piedras Negras (Coe, 1959) and Tikal (Coe, 1990), do show the vestiges of having been exposed to fire. Our own research equally documents the charring of human remains in offertory contexts and undefined assemblages of the Classic period northern Petén (Tiesler and Cucina, 2003). Questions related to cultural connotations of different types of the firing of fleshed and dry skeletal remains will be proposed here by Medina and Sánchez in Chapter 5.

2.3.3. Primary and Secondary Disposal and Disposal Spaces

As we have seen from the above, disposal spaces, body arrangement, and anthropogenic bone marks provide key information for assigning potential postsacrificial status and inferring ritual behaviors, at least in primary interments and functionally

defined contexts that stem from the closing acts of offertory ceremonies. Disposal as part of sequenced construction offerings in palaces, temple areas and, to a lesser degree, in residential compounds, may provide indications on ritual meanings and differentiated depositional histories (Helfrich, 1973; Mock, 1994; Nájera, 1987). Construction fill, debris, or disposal on top of floor, especially in liminal spaces, such as building entrances or central axes, have also been associated with postsacrificial offertory practices. These findings, together with the moment of deposition in a construction or demolition sequence, may provide important clues to recognize such ritual behavior as dedication or termination events (Becker, 1992; Chase and Chase, 1998; Kunen et al., 2002; Lucero, 2003; Walker, 1995; Walker and Lucero, 2000, see also Harrison-Buck et al., and Vail and Hernández in this volume).

A second recurring pattern explored further in this volume, is provided by "caching" along with the physical separation of remains from settlements, which are sometimes transported great distances before being deposited in caves, caverns, or in cenotes (Scholes and Adams, 1938; see also Harrison-Buck et al. and Anda in this volume). This notion equally poses questions on the circumstances of ritual deposits and on how generalized the ancestral uses of caves and sink-holes really were.

Different from most religiously motivated sacrifices, we have linked the purpose for attendant sacrifices to specific ritual demands during elite mourning and commemoration. Ritual killings in the course of funerary preparations or commemorations are thus apt to be recognized in the archaeological record in the form of companion or retainer burials within or adjacent to the principal interment. Common signatures have been discussed at length elsewhere, along with alternative mortuary interpretations (Cucina and Tiesler, 2006; Ruz, 1968; Tiesler, 2004; Weiss-Krecji, 2003; Welsh, 1988a,b).

Further down the *postmortem* time line stand the secondary and tertiary assemblages that have been clearly disturbed, removed, and relocated. Here, the contextual assignment becomes a more problematic undertaking, especially in Maya archaeology with its host of protracted treatments. Body parts or bone segments may have been processed in different ways. The pieces may have ended up as isolated secondary bone clusters or included in other burial contexts, like in the case of the cached secondary remains that appear associated with many complete, primary deposits. Also isolated segments contained in cached spaces, articulated or not, worked or unworked, pose questions regarding their prior transformation processes. These range from the simple redisposal to the recycling of skeletal parts as raw material to make ritual or ornamental artifacts and domestic tools. Naturally, this situation poses difficulties for the recognition of prior burial status or any predepositional inferences, as will be argued later in the volume. For instance, no straightforward explanations exist to account for the isolated phalanges and finger deposits within burials and caches. Maybe with the exception of those modified skull pieces that are identified in the literature as "trophy skulls," no warranted interpretation has been assigned to the status of the human "raw material" that has been worked into domestic and ritual objects and which makes its entrance into the record as waste pieces, offerings, and debris.

Maya iconography and colonial documents provide evidence of trophy skulls taken from war captives in the form of shrunken heads, skull caps, and jaws as part of the dress worn by the victorious captor (Landa, 1982 [sixteenth century]). Other human artifacts have been identified as the presumable vestiges of relic veneration, similar to the stuccoed skulls described by Landa. The determination of some of these ritual artifacts as "trophies" or "relics" is ambivalent and in some cases debatable (see for example Hammond et al., 2002; Robicsek, 1991; Harrison-Buck et al. in this volume, for discrepant interpretations). A fortunate exception is the recent finding of a femur fragment that was recovered from the accoutrements of the recently discovered mausoleum prepared for Ek Balam's protagonical governor *Ukit Kan Le'k Tok'* (Lacadena, 2002). This left proximal femoral segment of a robust adult was carved into a perforator. Its long inscription states that it belonged in life to *Ukit Ahkan*, identified as the father of the famous royal, thus linking physically the acclaimed relationship between *Ukit Kan Le'k Tok'* and his ancestor.

In the case of termination rituals and of what could be interpreted as domestic or ceremonial debris, we infer from the above that they are apt to leave disparate deposits, in part burned, intermingled with animal remains, mutilated, fragmented, scattered, or otherwise destroyed (see Gómez et al., 2003; Kunen et al., 2002; Massey and Steele, 1982, 1997; Walker, 1995; Walker and Lucero, 2000). These should indicate potential nonfunerary status along with those taphonomic signatures on the skeletal surfaces that have a nonfunerary connotation, like signs of *perimortem* violence, charring, defleshing, or flaying, even if alternative funerary or circumstantial scenarios cannot be clearly discarded. More than any other context, dispersed deposits of this kind should therefore be discussed thoroughly considering the manifold processes of skeletal manipulation and reuse, from which they might stem. Only the critical weighing of all feasible alternatives makes for plausible inferences of different notions of ritual behavior they may express.

As I have argued above, solely the joint recreation of differentiated skeletal, cultural, and spatial patterns will ensure a truly fruitful cultural appreciation of human remains and their depositional trajectory. The reconstruction and interpretation of the Late Classic Deposit no. 1003, from Becán, Campeche, which I will refer to in the following paragraphs, illustrates the complexity of the series of processes that resulted in its context and the challenges involved in their cultural interpretation.

2.4. The Depositional Trajectory of Deposit 1003, Becán, Campeche

Recently, an INAH team of archaeologists led by Luz Evelia Campaña encountered the remains within Structure X in Becán's core (Campaña, 2002; Tiesler and Campaña, 2006). The semicomplete skeleton rested on a bed of silex nuclei at the bottom of a staircase accessing an inner room inside a sealed substructure. Some of the bones were collected from outside the anatomical space occupied by the body. Others were retrieved from within the debris on the staircase's first step,

while a last group of remains was encountered still further away in the eastern part of the room. Two supernumerary left hand metacarpal bones, belonging to a second individual of adult age, were also registered.

2.4.1. *The Mortuary Compound*

Despite the perturbation, several taphonomic indications suggest that decomposition had occurred in situ (see Fig 2.3). The bones of both feet maintained their

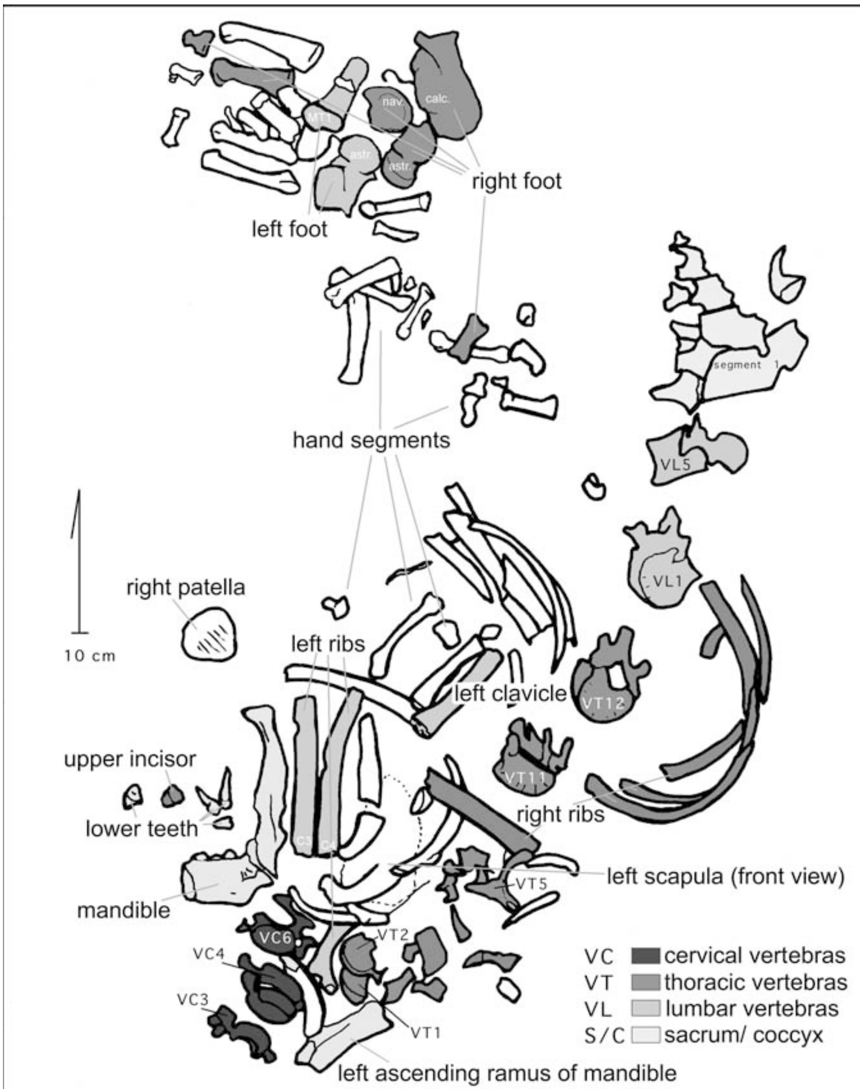

FIGURE 2.3. Arrangement of human remains, E1003, Becán (drawing by V. Tiesler)

anatomical correspondence. Other bony segments of the axial skeleton, although disturbed, showed a distribution that is characteristic of a decomposition in empty space and a fully flexed, seated position. Notwithstanding the good preservation of the bony material, segments of the trunk, and of hands and feet, the skull and most of the long bones are completely absent: Of the latter, femurs, tibias, fibulas, radii, the left patella, the right humerus, and the diaphysis of the left humerus are missing. The cranium is completely absent, except for both upper central incisors and an upper third molar. This situation finds its possible explanation in the conical morphology of their roots. The three teeth had likely fallen out of their sockets after decomposition but before the skull had been detached. All mandibular teeth were present and were found in close proximity to the cervical vertebras.

The disturbances in an anciently sealed context, along with the almost complete absence of the long bones and the skull, all segments that show the greatest resistance to natural decay, is only explainable if the skeletal assemblage was revisited and some parts removed. This event must have occurred in the time interval between body decomposition and the collapse of the roof of the substructure (Campaña, 2002; Tiesler and Campaña, 2006).

2.4.2. The Skeletal Remains

The skeletal analysis indicates a probable male of 15–18 years. The morphological study focused on the trunk for lack of the axial skeleton and skull. Inflammatory changes are evident on the lower ribs (7–12) as well as the lower thoracic vertebras (9–11). In the former, the lesions affect the inner faces of the ribs associated with the pleura. The lesions on the vertebras are distributed on the left side of the segments' bodies without involving the vertebral apophysis. In the ninth thoracic vertebra, the inflammatory lithic process had led to a 15 mm wide cavitation (Fig. 2.4). Its edges indicate an incipient reactive formation (sclerosis) without evidence of remodeling in the surrounding areas. The alterations are associated with a reduction of the height of the vertebral bodies, and probably caused pain and limited the movement of the individual's spine. Taken together, the physical evidence suggests the youngster suffered from an infection of the lower mediastinum, which should have involved the pleura and lungs. Infectious processes like this have been linked to brucellosis, equinococcus, tuberculosis, or mycotic infection (Aufderheide and Rodríguez, 1998; Ortner, 2003). Unfortunately, the incompleteness of the skeletal remains does not permit registering the pattern of bone involvement, which hampers a more secure diagnosis.

Lesions of a different origin affected the twelfth thoracic vertebra. Three unhealed, sharp force lesions, produced in fresh bone, appear on the left costovertebral junction of the vertebral body with no evidence of any bone reaction (Figs. 2.4 and 2.5). The three regular cut marks penetrate 1–3 mm deep into the bony tissue. The lesions appear to have been inflicted with an axe-like cutting implement that impacted the bone directly rather than slicing it. Tension fractures in fresh bone were detected on four ribs. Ribs 5 and 6 are affected on the right side, and ribs 6 and 7 on the left side.

FIGURE 2.4. Thoracic vertebras with signs of inflammatory disease (TV9), deformation (TV11), and cutmarks (TV12), E1003, Becán (photo by A. Cucina)

The type and topography of the lesions are similar to others documented in two (possibly three) primary attendant disposals of dignatary's tombs from Palenque and Calakmul, discussed extensively in other works (García and Granados, 2000; Tiesler and Cucina, 2004, 2006). While sacrifice is usually inferred by analogy, these burials provide a more solid case to infer violent death. Other nonsacrificial mortuary activities, like ancestral eviscerations have been contemplated as alternative explanations, but are not plausible given the contexts and the violence of the impacts, which would counterindicate any ancestral behavior.

The pattern, shared by the four specimens, consists of rectilinear, smooth, one-to-three mm deep cut marks along the left side of the lower thoracic vertebras. Their morphological features indicate that the marks had been inflicted from the front of the trunk with a cutting tool handled like an axe. From this topographical and functional perspective, and taking into account that they occurred in

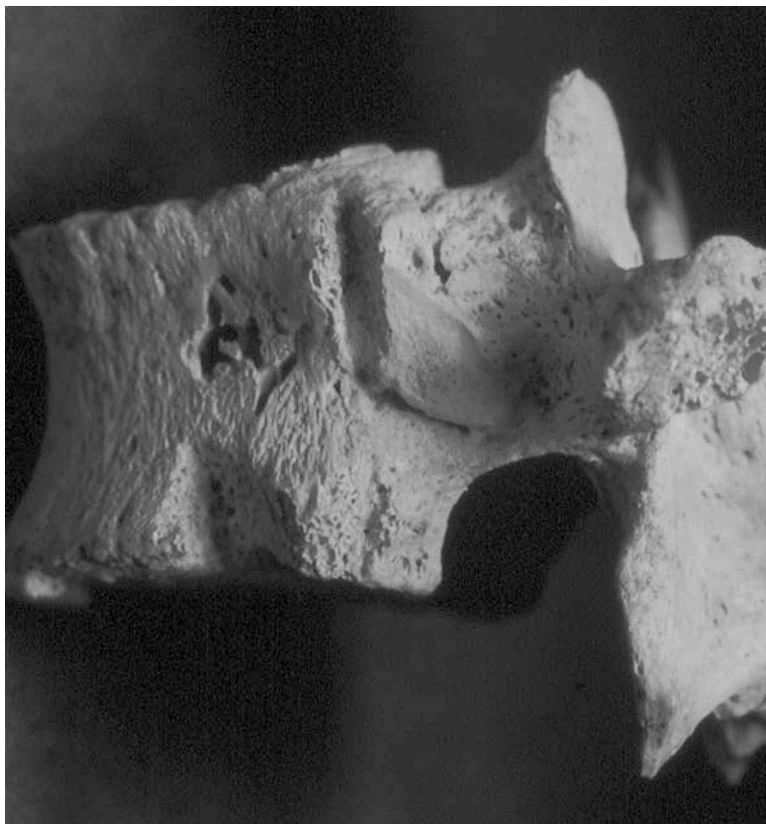

FIGURE 2.5. Twelfth thoracic vertebra with sharp force trauma, Deposit E-1003, Becán (photo by A. Cucina)

fleshed bodies, the marks were likely produced by the violent opening of the trunk from below the rib cage. We infer from this situation that the subsequent extraction of the heart, accompanied by blindly severing its anchoring tissues and blood vessels, was responsible for the traces of sharp force trauma encountered in the spine. Without refuting the practice of other procedures, we argue that this technique was the easiest and quickest way to access the heart once the victim had been placed in an over-extended, supine position (Tiesler and Cucina, 2006).

2.4.3. Contexts for Body Processing and Ritual Meaning

Together with the ritual behaviors that took place before the deposition of the body inside Structure X, it is worth examining the possible motivations behind the action. They can be suggested by the architectonic and spatial context in which the body was discovered. This was in an antechamber, a corridor leading

to a sealed power center, similar to other access spaces in which terminal offerings were encountered on the floor (Campaña, 2002; Lucero, 2003; Mock, 1994; Walker and Lucero, 2000). Additional clues are provided by the bed of silex on which the body had been laid. Apparently, the placement of abundant lithic materials like this confirms a pan-Mesoamerican tradition, as highlighted by the many offerings and funerary chambers throughout Mesoamerica in which large amounts of obsidian and silex have been found, a custom filled with symbolism (Lucero, 2003; Miller and Taube, 1993). Silex was used to start fires and was thought to rise to the surface by will of Tlaloc, the god of lightning and thunder. Ancient societies personified and worshipped the material itself, which played a role in human sacrifice and symbolized the debt humankind had toward the gods (Miller and Taube, 1993), a connotation that is coherent also in the context from Becán.

Regarding the activities that led to the deposit E-1003, the primary placement of the corpse must have occurred toward the end of the Late Classic (AD 750–850) and most likely formed part of a construction event (Campaña, 2002). Before the access to the inner chambers was to be sealed, the body was left on the bottom of the staircase on the main axis of the structure. This area provided the passageway accessing the inner spaces, a liminal space according to ancient ideology. This particular context, along with the indications of *perimortem* violence plus the abundant presence of silex suggests that the primary disposal of E-1003 was part of some type of termination ritual. Like other Mesoamerican cultures, the ancient Maya too celebrated the abandonment of a structure or the end of a calendar period with termination rituals, during which they “killed” some of its manifestations (Miller and Taube, 1993:163–164). This could be accomplished in different ways. Termination events are linked to the breakage of pottery, symbolic decapitation of figurines, the burning of offerings, and the mutilation of a stela or portraits of previous rulers. According to prehispanic and colonial sources, termination rituals could have been accompanied by the sacrifice of animals and humans, similar to our case. The *Chilam Balames* confirm the wide distribution of the practice by mentioning recurrent events of this type celebrated during the end of the *katunes* (Edmonson, 1984:91–93).

Some of the biographic data of the individual at Becán may also be relevant to explain the boy’s role in this act, although no single attribute by itself is able to warrant any conclusive arguments. First, the individuals’ age falls within the age group that is mostly represented in nonfunerary contexts in the Maya area while, at the same time, not much else is represented in natural mortality profiles. In opposition to natural demographic parameters, male individuals between the age of 5 and 20 years predominate in nonfunerary contexts, as indicated by the age distribution from Classic and Postclassic companion burials or as indicated by the age profile from the Sacred Cenote (Anda et al., 2004; Tiesler, 2004; see also Anda in this volume). The colonial record on human sacrifice stages predominantly juvenile male victims (Scholes and Adams, 1938; see also Anda et al., 2004; Nájera, 1987). From the above described lesions, we also assume that at the time of death, the individual had been suffering from a

chronic infectious process that had reached the pleura and probably the lungs, indicating that severe health problems troubled the last months of his life. We pose the question as to whether or not the deteriorated physical conditions might have been a factor that selected the boy for ritual death (see also Cucina and Tiesler, Chap. 11 in this volume).

Once access to the substructure was sealed, the corpse rested undisturbed for some time until gradual decomposition, disarticulation, and skeletal reduction was completed. The removal of skull and long bones must have occurred years later during a revisit. At the same time, we can rule out natural phenomena, like rodent activity, as alternative agents responsible for the reduction, since almost no vestiges of gnawing or scratch marks were observed. Maybe this second event was not directly related to the ritual act that prompted the boy's presence in the first place. However, the combined scattering and extraction of bone segments do not make a plausible case for looting but rather point, once again, to a ritually motivated activity. We suppose that it was during the revisitation to the access hall that the offerings were laid down close to the entrance. Although we can only speculate on the circumstances of this event, we infer that it happened during a time of social unrest, as the ritual was conducted during the last moments of Becán's sequence. The structure started to collapse shortly afterward (Campaña, 2002) and by AD 950, all the buildings in the area of Structure X lay in ruin like the majority of the site.

As I have attempted to illustrate with this case study from Becán, it is only through an approach of combined taphonomical, artifactual, and contextual lines of evidence that we can reconstruct the depositional histories and make inferences on their ritual implications. It should be noted that the E-1003 deposit is not the only context that shows vestiges of anthropogenic marks. In the course of the study of the predominantly isolated scatters of human bones that abound in Structure X, other marks of posthumous body manipulation were documented, including burning, flaying, defleshing, dismemberment, and recycling of human bone for tool manufacturing (Tiesler and Cucina, 2003). Their behavioral implications and ritual meanings are explored by Medina and Sánchez in this volume.

2.5. Closing Remarks

The main goal of this chapter has been to provide new data and innovative ideas on ritually motivated body treatments in the Maya realm. I structured their potential material expressions according to a basic framework of sequenced behavior, derived from a combined taphonomic, osteological, and archaeological perspective. Applied to the skeletal research in the Maya region, I argue that this approach holds much promise for inferring the circumstances surrounding death, for interpreting primary manipulation and further removal of human body parts in terms of its ritual functions.

Conducted jointly with archaeological and historical research, systematic taphonomic approaches that combine decompositional reconstruction while

scrutinizing anthropogenic marks, have much to offer for a better understanding of postsacrificial and funerary body manipulations or, for that matter, other unrelated activities of legal, catastrophic, or accidental nature. Despite its promises, the reconstruction of posthumous body manipulation suffers from the limitations of taphonomic research in the area, particularly in ambiguous or isolated bone assemblages. The lack of clear distinctions in many human bone clusters is prone to leave room for speculation and ambiguity. These aspects and the incomplete record imply the need for careful case-by-case evaluations of the various relevant data sets for a critical re-evaluation of the literature and the suitable osteotaphonomical register of mortuary compounds. In practice, guidelines and defined, standardized protocols should be followed for the taphonomic recording of skeletal segments. The participation of personnel trained specifically in physical anthropology and taphonomic research should be mandatory in those archaeological projects that are prone to deal with human skeletal vestiges. As regards *postmortem* skeletal manipulation, future work should focus on the detailed examination of different forms of posthumous body processing, such as dismemberment, flaying, thermal exposure, and reuse of body parts or bones and their contextual implications.

In synthesis, refinement is needed in the procedures employed in recording and interpreting human remains from tomb contexts, offerings, and problematic human assemblages. Their characteristics should be grouped according to the expected and observed ranges of sequenced ritual conduct, that go beyond many of the conventional classifications that still tend to reduce its expression to an aggregate of static material elements. In this work, taphonomy has been employed jointly with other lines of evidence to reconstruct and interpret different forms of ritual body manipulation and in particular sacrificial behavior in the hope of providing a starting point and frame for the subsequent chapters in this volume. Recurrent themes in some of the chapters that form this volume are likewise depositional trajectories and their contextual expressions, along with the inference on form of death and patterns suggestive of *perimortem* and *postmortem* violence vs. ancestral, reverential conduct. Besides their sacrificial association, the question of how different treatments relate to the practices documented for the Maya area, are explored by each of the contributions.

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References

Anda, G. de, Tiesler, V., and Zabala P., 2004, Cenotes, espacios sagrados y la práctica del sacrificio humano en Yucatán. In *Memorias del XIII Encuentro Internacional de Investigadores de la Cultura Maya*, pp. 376–386. Universidad Autónoma de Campeche, Campeche, Mexico.

Aufderheide, A.C., and Rodríguez C., 1998, *The Cambridge Encyclopedia of Human Paleopathology*. Cambridge University, Cambridge.

Beattie, J.H.M., 1980, On Understanding Sacrifice. In *Sacrifice,* edited by M.F.C. Bourdillon and M. Fortes, pp. 29–44. Academic Press, London.

Becker, M.J., 1992, Burials as Caches; Caches as Burials: A New Interpretation of the Meaning of Ritual Deposits Among the Classic Period Lowland Maya. In *New Theories on the Ancient Maya*, edited by E.C. Danien and R.J. Sharer, pp. 185–196. The University Museum Monograph 77, University of Pennsylvania, Philadelphia.

Becker, M.J., 1993, Earth Offering Among the Classic Period Lowland Maya: Burials and Caches as Ritual Deposits. In *Perspectivas antropológicas en el mundo maya*, edited by M.J. Iglesias and F. Ligorred, pp. 45–74. Sociedad Española de Estudios Mayas, Madrid.

Bell, C., 1997, *Ritual: Perspectives and Dimensions*. Oxford University, New York.

Boone, E.H., (editor) 1984, *Ritual Human Sacrifice in Mesoamerica*. Dumbarton Oaks, Washington, DC.

Botella, M.C., Alemán, I., and Jiménez S.A., 2000, *Los huesos humanos. Manipulación y alteraciones*. Bellaterra, Barcelona.

Bourdillon, M.F.C., 1980, Introduction. In *Sacrifice,* edited by M.F.C. Bourdillon and M. Fortes, pp. 1–27. Academic Press, London.

Buikstra, J.E., and Swegle M., 1989, Bone Modification Due to Burning: Experimental Evidence. In *Bone Modification*, edited by R. Bonnichsen and M.H. Sorg, pp. 247–258. Center for the Study of the First Americans, University of Maine at Orono, ME.

Buikstra, J.E., Price, T.D., Wright, L.E., and Burton J.A., 2004, Tombs from the Copán Acropolis: A Life History Approach. In *Understanding Early Classic Copán*, edited by E.E. Bell, M.A. Canuto, and R. Sharer, pp. 191–212. Museum of Archaeology and Anthropology, University of Pennsylvania, Philadelphia.

Campaña, L.E., 2002, *Proyecto Arqueológico Becán. Informe Anual de la Temporada de Campo 2000–2001*. Report on file, Archivo Técnico del Consejo de Arqueología, Instituto Nacional de Antropología e Historia, Mexico City.

Carr, C., 1995, Mortuary Practices: Their Social, Philosophical-Religious, Circumstantial, and Physical Determinants. *Journal of Anthropological Method and Theory* 2(2): 105–200.

Casas, F.B. de las, 1958 [~1540], *Apologética historia de las Indias*. Biblioteca de Autores Españoles, Madrid.

Chase, D., and Chase A., 1996, Maya Multiples: Individuals, Entries and Tombs in Structure A34 of Caracol, Belize. *Latin American Antiquity* 7:61–79.

Chase, D., and Chase A., 1998, The Archaeological Context of Caches, Burials, and other Ritual Activities for the Classic Period Maya (as Reflected at Caracol, Belize). In *Function and Meaning in Classic Maya Architecture,* edited by S. Houston, pp. 299–332. Dumbarton Oaks, Washington, DC.

Chase, D., and Chase A., 2003, Secular, sagrado y “revisitado”: la profanación, alteración y reconsagración de los antiguos entierros mayas. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and

M.J. Iglesias, pp. 255–277. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Ciudad, A., Ruz, M.H., and Iglesias M.J. (editors), 2003, *Antropología de la eternidad: La muerte en la cultura maya*. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Cobos, R., (editor) 2004, *Culto funerario en la sociedad maya. Memoria de la Cuarta Mesa Redonda de Palenque*. Instituto Nacional de Antropología e Historia, Mexico City.

Coe, W., 1959, *Piedras Negras Archaeology: Artifacts, Caches, and Burials*. The University Museum Monographs, University of Pennsylvania, Philadelphia.

Coe, W., 1965, Caches and Offertory Practices in the Maya Lowlands. In *Handbook of Middle American Indians, Vol. 2: The Archaeology of Southern Mesoamerica*, edited by R. Wauchope and G.R. Willey, pp. 462–469. University of Texas, Austin.

Coe, W., 1990, *Excavations in the Great Plaza, North Terrace and North Acropolis of Tikal Tikal Reports* No. 14, Vols. I–VI. Museum Monograph 61, University Museum, University of Pennsylvania, Philadelphia.

Cucina, A., and Tiesler V., 2006, The Companions of Janaab' Pakal and the "Red Queen" from Palenque, Chiapas: Meanings of Human Companion Sacrifice in Classic Maya Society. In *Janaab' Pakal of Palenque. Reconstructing the Life and Death of a Maya Ruler*, edited by V. Tiesler and A. Cucina, pp. 102–125. University of Arizona, Tucson.

Duday, H., 1997, Antropología biológica 'de campo', tafonomía y arqueología de la muerte. In *El cuerpo humano y su tratamiento mortuorio,* edited by E. Malvido, G. Pereira, and V. Tiesler, pp. 91–126. Colección Científica, Instituto Nacional de Antropología e Historia, Mexico City.

Eberl, M., 2005, *Muerte, entierro y ascención. Ritos funerarios entre los antiguos mayas*. Universidad Autónoma de Yucatán, Mérida.

Edmonson, M.S., 1984, Human Sacrifice in the Books of Chilam Balam of Tizimín and Chumayel. In *Ritual Human Sacrifice in Mesoamerica. A Conference at Dumbarton Oaks,* edited by E.H. Boone, pp. 91–100. Dumbarton Oaks Research Library and Collection, Washington, DC.

Fitzsimmons, J.L., 1998, Classic Maya Mortuary Anniversaries at Piedras Negras. *Ancient Mesoamerica* 9(2):271–278.

Fitzsimmons, J.L., and Fash W.L., 2003, Susaj B'aak: muerte y ceremonia mortuoria en la Plaza Mayor de Copán. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 299–315. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Folan, W.J., Marcus, J., Pincemin, S., Domínguez, M.R., Carrasco, R., Fletcher, L., and López A., 1995, Calakmul: New Data from an Ancient Maya Capital in Campeche, Mexico. *Latin American Antiquity* 6(4):310–334.

Fowler, W.R., 1984, Late Preclassic Mortuary Patterns and Evidence for Human Sacrifice at Chalchuapa, El Salvador. *American Antiquity* 49:603–618.

García, R., and Granados J., 2000, Tumbas reales de Calakmul. *Arqueología Mexicana* 7(42):28–33.

Gillespie, S., 2001, Personhood, Agency, and Mortuary Ritual: A Case Study from the Ancient Maya. *Journal of Anthropological Archaeology* 20:73–112.

Gillespie, S., 2002, Body and Soul among the Maya: Keeping the Spirits in Place. In *The Space and Place of Death*. Archaeological Papers of the American Anthropological Association Number 11, edited by H. Silverman and D. Small, pp. 67–78. American Anthropological Association, Arlington, VA.

Gómez, M.J., Morales, A., and Folan W., 2003, Ritual y mutilación póstuma del cuerpo humano durante el posclásico: nuevas evidencias de Champotón, Campeche. *Mexicon* 25:146–147.

González, Y., 1985, *El sacrificio humano entre los mexicas*. Instituto Nacional de Antropología e Historia, Fondo de Cultura Económica, México City.

Hammond, N., Saul, J.M., and Saul F., 2002. Ancestral Faces: A Preclassic Maya Skull-mask from Cuello, Belize. *Antiquity* 76:951–952.

Helfrich, H., 1973, *Menschenopfer und Toetungsrituale im Kult der Maya*. Mann Verlag, Berlin.

Herrmann, B., 1988, Behandlung von Leichenbrand. Rekonstruktion, Konservierung und Reproduktion In Anthropologie, Wesen un Methoden der Anthropologie (Vol. 1), edited by R. Knußmann, pp. 576–585. Gustav Fischer, Stuttgart.

Hubert, H., and Mauss M., 1964, *Sacrifice: Its Nature and Function*. University of Chicago, Chicago.

Hurlbut, S.A., 2000, The Taphonomy of Cannibalism: A Review of Anthropogenic Bone Modification in the America Southwest. *International Journal of Osteoarchaeology* 10:4–26.

Iglesias, M.J., 2003, Problematical Deposits and the Problem of Interaction: The Material Culture of Tikal during the Early Classic Period. In *The Maya and Teotihuacan. Reinterpreting Early Classic Interaction*, edited by G.E. Braswell, pp. 167–198. University of Texas Press, Austin.

Inomata, T., and Triadan D., 2003, El espectáculo de la muerte en las Tierras Bajas mayas. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 195–207. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Joyce, R., 1999, Social Dimensions of Pre-Classic Burials. In *Social Patterns in Pre-Classic Mesoamerica,* edited by D. Grove and R.A. Joyce, pp. 15–47. Dumbarton Oaks Research Library and Collection, Washington, DC.

Joyce, R., 2003a, Making Something of Herself: Embodiment in Life and Death at Playa de los Muertos, Honduras. *Cambridge Archaeological Journal* 13(2):248–261.

Joyce, R., 2003b, Las raíces de la tradición funeraria maya en prácticas mesoamericanas del período Formativo. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 7–34. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Kunen, J.L., Galindo, M.J., and Chase E., 2002, Pits and Bones: Identifying Maya Ritual Behavior in the Archaeological Record. *Ancient Mesoamerica* 13(2):197–211.

Lacadena, A., 2002, *The Glyphic Corpus from Ek' Balam, Yucatán, México*. Reports Submitted to FAMSI.

Landa, Fray. D. de, 1982 [sixteenth century], *Relación de las cosas de Yucatán*. Porrúa, Mexico City.

López, A., 1989, *Cuerpo humano e ideología. Las concepciones de los antiguos nahuas*. Universidad Nacional Autónoma de México, Mexico City.

López, A., 1998, Los ritos. Un juego de definiciones. *Arqueología Mexicana* 34:4–17.

Lucero, L.J., 2003, The Politics of Ritual. The Emergence of Classic Maya Rulers. *Current Anthropology* 44:523–558.

Martin, S., and Grube N., 2000, *Chronicle of the Maya Kings and Queens*. Thames and Hudson, London.

Massey, V.K., 1994, Osteological Analysis of the Skull Pit Children. In *Continuing Archaeology at Colha, Belize,* edited by T.R. Hester, H. Shafer, and J. Eaton, pp. 209–220.

Studies in Archaeology 16, Texas Archaeological Research Laboratory, University of Texas, Austin.

Massey, V.K., and Steele G., 1982, Preliminary Notes on the Dentition and Taphonomy of the Colhá Human Skeletal Material. In *Archaeology at Colhá, Belize: The 1981 Interim Report*, edited by T.R. Hester, pp. 198–202. University of Texas, San Antonio.

Massey, V.K., and Steele G., 1997, A Maya Skull Pit from the Terminal Classic Period, Colhá, Belize. In *Bones of the Maya: Studies of Ancient Skeletons*, edited by S.L. Whittington and D.M. Reed, pp. 62–77. Smithsonian Institution, Washington, DC.

Matos, E., 1986*, Muerte al filo de obsidiana,* Lecturas mexicanas, Secretaría de Educación Pública, Mexico City.

McAnany, P.A., 1995, *Living with the Ancestors. Kinship and Kingship in Ancient Maya Society*. University of Texas, Austin.

McAnany, P.A., 1998, Ancestors and the Classic Maya Built Environment. In *Function and Meaning in Classic Maya Architecture,* edited by S. Houston, pp. 271–298. Dumbarton Oaks, Washington, DC.

McAnany, P.A., and López S., 1999, Re-creating the Formative Maya Village of K'axob: Chronology, Ceramic Complexes, and Ancestors in Architectural Context. *Ancient Mesoamerica* 10:147–168.

McAnany, P.A., Storey, R., and Lockard A.K., 1999, Mortuary Ritual and Family Politics at Formative and Early Classic K'axob, Belize. *Ancient Mesoamerica* 10:129–146.

McGee, J., 1998, The Lacandon Incense Burner Renewal Ceremony: Termination and Dedication Ritual among the Contemporary Maya. In *The Sowing and the Dawning. Termination, Dedication, and Transformation in the Archaeological and Ethographic Record of Mesoamerica*, edited by S.B. Mock, pp. 41–46. University of New Mexico Press, Albuquerque.

Miller, V.E., 2003, Representaciones de sacrificio en Chichén Itzá. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 383–404. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Miller, M.E., and Taube K., 1993, *The Gods and the Symbols of Ancient Mexico and the Maya*. Thames and Hudson, London.

Mock, S.B., 1994, Destruction and Denouement during the Late–Terminal Classic: The Colhá Skull Pit. In *Continuing Archaeology at Colha, Belice*, edited by T. Hester, H. Shafer, and J. Eaton, pp. 221–231. Studies in Archaeology 16, Texas Archaeological Research Laboratory, University of Texas Press, Austin.

Morales, V.J.d., 1937, *Fee de la llegada al pañol y autos de lo que en la jornada zusedio*. Boletín del Archivo general del Gobierno 2(2).

Moser, C.L., 1973, *Human Decapitation in Ancient Mesoamerica*. Dumbarton Oaks, Washington, DC.

Nájera, M.I., 1987, *El don de la sangre en el equilibrio cósmico*. Centro de Estudios Mayas, Universidad Nacional Autónoma de México, Mexico City.

Ortner, D.J., 2003, Infectious Diseases: Treponematosis and other Bacterial Infectious Diseases. In *Identification of Pathological Conditions in Human Skeletal Remains,* 2nd edition, pp. 273–323. Academic Press, Amsterdam.

Pader, E.J., 1982, *Symbolism, Social Relations and the Interpretation of Mortuary Remains*. B.A.R. International Series 130, Oxford.

Pijoan, C., 1997, *Evidencias de sacrificio humano y canibalismo en restos óseos: El caso del entierro número 14 de Tlatelolco,* D.F. Doctoral dissertation, Universidad Autónoma de México, Mexico City.

Pijoan, C., and Lizárraga X., 2004, *Perspectiva tafonómica. Evidencias de alteraciones en restos óseos del México prehispánico*. Colección Científica No. 462, Serie Antropología Física, Instituto Nacional de Antropología e Historia, Mexico City.

Rappaport, R.A., 2004, *Ritual and Religion in the Making of Humanity*. Cambridge University Press, Cambridge.

Robicsek, F., 1991, Three Decorated Skulls Found in the Maya Area. *Mexicon* 13:65–69.

Robicsek, F., and Hales D.M., 1981, *The Maya Book of the Dead. The Ceramic Codex*. University of Virginia Art Museum, Charlotte, North Carolina.

Robicsek, F., and Hales D.M., 1984, Maya Heart Sacrifice: Cultural Perspective and Surgical Technique. In *Ritual Human Sacrifice in Mesoamerica,* edited by E.H. Boone, pp. 49–90. Dumbarton Oaks, Washington, DC.

Ruz, A., 1968, *Costumbres funerarias de los antiguos mayas*. Instituto de Investigaciones Filológicas, Centro de Estudios Mayas, Universidad Nacional Autónoma de México, Mexico City.

Ruz, A., 1992, *El Templo de las Inscripciones, Palenque*. Fondo de Cultura Económica, Mexico City.

Saul, M., and Saul F.P., 2002, Forensics, Archaeology, and Taphonomy: The Symbiotic Relationship. In *Advances in Forensic Taphonomy. Method, Theory and Archaeological Perspectives*, edited by W.D. Haglund and M.H. Sorg, pp. 71–97. CRC Press, Boca Raton, FL.

Schele, L., 1984, Human Sacrifice among the Classic Maya. In *Ritual Human Sacrifice in Mesoamerica,* edited by E.H. Boone, pp. 7–48. Dumbarton Oaks, Washington, DC.

Schele, L., and Miller M.E., 1986, *The Blood of Kings*. G. Baziller, New York.

Scholes, F.V., and Adams E., 1938, *Don Diego Quijada Alcalde Mayor de Yucatán Vol. I (1561–1565)*. Editorial Porrúa, Mexico City.

Sharer, R., and Traxler L., 2003, Las tumbas reales más tempranas de Copán: muerte y renacimiento en un reino maya clásico. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 161–174. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Sorg, M.H., and Haglund, W.D., 2002, Advancing Forensic Taphonomy: Purpose, Theory, and Practice. In *Advances in Forensic Taphonomy. Method, Theory and Archaeological Perspectives*, edited by W.D. Haglund and M.H. Sorg, pp. 3–29. CRC Press, Boca Raton.

Stuart, D., 1998, "The Fire Enters His House": Architecture and Ritual in Classic Maya Texts. In *Function and Meaning in Classic Maya Architecture,* edited by S. Houston, pp. 373–425. Dumbarton Oaks, Washington DC.

Stuart, D., 2003, La ideología del sacrificio entre los mayas. *Arqueología Mexicana* 63:24–29.

Sugiyama, S., 1998, Termination Programs and Prehispanic Looting at the Feathered Serpent Pyramid in Teotihuacan. In *The Sowing and the Dawning. Termination, Dedication, and Transformation in the Archaeological and Ethographic Record of Mesoamerica*, edited by S.B. Mock, pp. 147–164. University of New Mexico Press, Albuquerque.

Talavera, J., Rojas, J.M., and García E., 2001, *Modificaciones culturales en los restos óseos de Cantona, Puebla. Un análisis bioarqueológico*. Colección Científica, Instituto Nacional de Antropología e Historia, Mexico City.

Taube, K., 1992, *The Major Gods of Ancient Yucatán*, Dumbarton Oaks Research Library and Collection, Washington, DC.

Taube, K., 1994, The Birth Vase: Natal Imagery in Ancient Maya Myth and Ritual. In *The Maya Vase Book, Vol. 4,* edited by J. Kerr, pp. 650–685. Kerr Associates, New York.

Taube, K., 1999, The Iconography of Toltec Period Chichén Itzá. In *Hidden Among the Hills. Maya Archaeology of the Northwest Yucatán Peninsula*, edited by H.J. Prem, pp. 212–246. Acta Mesoamericana, Anton Saurwein, Markt Schwaben, Germany.

Tiesler, V., 1997a, *Reporte de los resultados, obtenidos en el análisis osteológico de Dzibanché, Quintana Roo del Proyecto Sur de Quintana Roo, Quintana Roo, Instituto Nacional de Antropología e Historia*. Report on file, Instituto Nacional de Antropología e Historia, Mexico City.

Tiesler, V., 1997b, *Reporte de los restos humanos, recuperados como parte de las excavaciones en Calakmul, Campeche, del Proyecto Arqueológico de Calakmul, Universidad Autónoma de Campeche*. Report on file, Autonomous University of Campeche, Campeche.

Tiesler, V., 2002, Un caso de decapitación prehispánica de Calakmul, Campeche. *Antropología Física Latinoamericana* 3:129–142.

Tiesler, V., 2004, Maya Mortuary Treatments of the Elite: An Osteotaphonomic Perspective. In *Continuity and Change. Maya Religious Practices in Temporal Perspective*, edited by D. Graña Behrens, N. Grube, C.M. Prager, F. Sachse, S. Teufel, and E. Wagner, pp. 143–156. Anton Saurwein, Markt Schwaben.

Tiesler, V., and Campaña L.E., 2006, Sacrificio y tratamiento ritual del cuerpo humano en la antigua sociedad maya: El caso del Depósito E-1003 de Becán, Campeche. *Arqueología* 33(33):32–46.

Tiesler, V., and Cucina A., 2003, Sacrificio, tratamiento y ofrenda del cuerpo humano entre los mayas del Clásico: una mirada bioarqueológica. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 337–354. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Tiesler, V., and Cucina A., 2006, Procedures in Human Heart Extraction and Ritual Meaning. A Taphonomic Assessment of Anthropogenic Marks in Classic Maya Skeletons. In *Latin American Antiquity* 17(4):493–510.

Tiesler, V., Cucina, A., and Romano A., 2002, Vida y muerte del personaje hallado en el Templo XIII-sub, Palenque: I. Culto funerario y sacrificio humano. *Mexicon* 24:75–78.

Tourtellot, G. III, 1990, Burials: A Cultural Analysis. In *Excavations at Seibal, Department of Peten, Guatemala*, pp. 81–142. Memoirs of the Peabody Museum of Archaeology and Ethnology 17:2. Harvard University, Cambridge.

Turner, C.G., and Turner J.A., 1999, *Man, Corn. Cannibalism and Violence in the Prehistoric American Southwest*. The University of Utah Press, Salt Lake City.

Vogt, E.Z., 1998, Zinacanteco Dedication and Termination Rituals. In *The Sowing and the Dawning. Termination, Dedication, and Transformation in the Archaeological and Ethographic Record of Mesoamerica*, edited by S.B. Mock, pp. 21–30. University of New Mexico Press, Albuquerque.

Walker, W.H., 1995, Ceremonial Trash? In *Expanding Archaeology*, edited by J.M. Skibo, W.H. Walker, and A.E. Nielsen, pp. 67–79. University of Utah Press, Salt Lake City.

Walker, W.H., and Lucero, L.J., 2000, The Depositional History of Ritual and Power. In *Agency in Archaeology*, edited by M.A. Dobres and J.E. Robb, pp. 130–147. Routledge, London.

Weiss-Krejci, E., 2003, Victims of Human Sacrifice in Multiple Tombs of the Ancient Maya: A Critical Review. In *Antropología de la eternidad: La muerte en la cultura maya,* edited by A. Ciudad, M.H. Ruz, and M.J. Iglesias, pp. 355–381. Sociedad Española de Estudios Mayas y Centro de Estudios Mayas, Madrid.

Welsh, B., 1988a, *An Analysis of Classic Lowland Maya Burials*. British Archaeological Reports International Series No. 409, London.

Welsh, B., 1988b, A Case for the Practice of Human Sacrifice Among the Classic Lowland Maya. In *Recent Studies in Pre-Columbian Archaeology*, edited by N.J. Saunders and O. Montmollin, pp.143–152. British Archaeology Reports International Series 481, Oxford.

White, T., 1992, *Prehistoric Cannibalism at Mancos 5MTUMR-2346*. Princeton University, Princeton.

Whittington, S.L., 2003a, Description of Human Remains and Burial Structures. In *Archaeology and Ethnohistory of Iximché*, edited by R.C. Nancy, S.L. Whittington, and B.E. Borg, pp. 205–240. University of Florida, Gainesville.

Whittington, S.L., 2003b, Analysis of Human Skeletal Material Excavated by Guillemin. In *Archaeology and Ethnohistory of Iximché,* edited by R.C. Nancy, S.L. Whittington, and B.E. Borg, pp. 241–304. University of Florida, Gainesville.

Wurster, W., 2000, *El sitio de Topoxté. Investigaciones en una isla del lago Yaxhá, Petén*. KAVA, Philipp von Zabern, Mainz.

Endnotes

1. We define funerary customs here as those behaviors that express reverential treatments of the living toward the deceased members of society.
2. His views are derived mainly from the examination of complete and incomplete human deposits within the construction sequences at Tikal.