

# Chapter 6 Death Comes to the King

Stephen Houston  
Sarah Newman  
Edwin Román  
Thomas Garrison

Experts acknowledge that death is a process, not an event. In some cases, it begins with discomfort and disorientation, a somnolent state at times jagged with pain (Nuland 1993). Then comes clinical death. From a potentially reversible condition, it passes to a biological demise from which there is no return. Decay sets in. Under harsh circumstances, after rotting and reduction to bone, the corpse becomes nothing at all, at most a faint stain in the soil. Other than the problem of embalming or preparing the body in its tropical clime, however, such physical facts of death are less relevant to Burial 9 than the sustained actions or ritual pauses reflected in the tomb.

Burial 9 provides strong evidence of mortuary preparation and its sequelae. The motivation, a royal death, could not have been surprising for an older, arthritic male, even if the passing was sudden. His successors soon commissioned an open cavity to receive the body. Defined by plastered walls, this chamber lay within an elevated platform. In front, at waist height, stood a theomorphic altar. Still thick with waxy residue, its top served as a place for burning incense and making sacrifices. How long it took to complete these offerings is unknown. Perhaps burial required an auspicious day set by calendrical or celestial conditions. Some lag could also have been practical. Time was needed to assemble goods or to invite distant guests; other delays arose from the grim tasks of finding infants and small children to accompany the deceased or hacking at adult slaves or war captives for their fingers, toes, and teeth. These body parts found their way into caches placed before and after the interment. Meanwhile, the body was slathered with red paint, perhaps padded with textiles or some other perishable material. Presumably, along with the removal of abdominal organs, this retarded putrefaction or diminished odor, although there were likely to have been more esoteric reasons for this bundling and application of viscous specular hematite and sprinkling of powdered cinnabar. The tomb was

then filled and sealed. Masons covered the altar and crypt with a low, step-up platform. The final steps at this stage, doubtless planned from the start, were the far bolder constructions of the Temple of the Night Sun. Eventually the smaller, simpler Shrine rose above the tomb itself. As proposed in Chapter 5, the Temple and the Shrine were at once mortuary, calendrical, and accession-related.

Despite the effort that went into its construction and elaboration, however, the Temple soon proved unstable. Its over-heavy stucco, poorly attached to masonry, cracked and slid off. It seems probable that successors at El Diablo had insufficient access to a talented sculptor capable of repairing the damage. A raised floor level, bringing the Temple to the level of the main El Diablo plaza, posed new problems of drainage. This was only slightly deterred by thin berms and narrowed doorways to keep water out. The first phase of the Temple was also off-kilter, prompting efforts—awkward ones—to buttress its shifting bulk. Such improvisations were insufficient, and, after an episode of intense burning, builders encased the whole within the tidier phases of Strs. F8-1-2<sup>nd</sup> and F8-1-1<sup>st</sup>. Most likely, this episode of partial destruction was a ritual necessity, done by locals, consistent with the studied mutilation of the noses, mouths, and diadems of the Temple's cornice stuccoes, though it might have come from an attack on such a prominent building and dynastic shrine. At this later stage, Str. F8-1 was no longer an assemblage of distinct shrines and multiple entrances and exits, but a single chamber with what appears to have been simpler iconography. The ambitious programs of the Temple of the Night Sun seem not to have been replicable. Later architects may have been no longer willing to invest heavily in its ornament or, perhaps, that outlay went into frontal masks that remain only as ruined outsets to either side of the structure's front stairway. Scattered visitors came at a later date, but the construction and use of the pyramid must have been relatively brief—perhaps a

century, but probably less than that. The El Diablo sector itself seems to have been in the middle of a building spurt, accompanied by ritual interments of buildings, when all such activity suddenly ceased (Román Ramírez 2011). The reasons for this are obscure, yet they may have included a severe blow to the ruling family or a marked translation of royal activity to the lower landscape of El Zotz, where new tombs and mortuary pyramids were constructed during the final years of the Early Classic period.

That the occupant of the tomb was a ruler is highly probable. The architectural investments described in Chapter 2 and the mortuary furniture reported in Chapter 3 leave little doubt of his singular importance. What continues to frustrate is the absence of glyphic evidence for the ruler's identity. Tiny glyphs on the back of his hematite mirror tantalize, but reveal almost nothing other than a probable tag of possession. An early lord of El Zotz is mentioned in Stela 2 of Bejucal, position B6, ca. AD 381—the name is much like those of later kings, **CHAK-FISH-DOG** [otter?]-**AHK**—and the dates are congruent with the approximate age of the tomb (Figure 6.2).

The presence of a stylized “*ojo de reptil*” on one ceramic object (see Chapter 3) offers compelling evidence that the date of Burial 9 occurred close to or just after the so-called Teotihuacan “*entrada*” of January 15, AD 378 (Martin and Grube 2008[2000]:29-31). Karl Taube (personal communication, 2014) has also observed that the interments of children and infants in ceramic vessels strongly recall a practice known at Teotihuacan (e.g., Sempowski and Spence 1994:248-249). What can be said is this: the tomb dates to the final quarter of the fourth century AD, and it correlates roughly with momentous changes in the central Maya Lowlands. There is no earlier ruler attested with any firmness in the glyphic record. Most likely, but not certainly, the tomb held a dynastic founder. The Temple of the Night Sun was clearly of intense interest to the royal family for several generations, perhaps mentioned as far away as Tikal, on Tikal Stela 31

Figure 6.1. Mask 2 from Burial 9 ruler's chest. Photo: Tessa de Alarcon.

(glyph H5). There, in what appears to be a toponymic statement, a location linked to the Jaguar God of the Underworld is mentioned at approximately the same time as the active period of the Temple (Figure 6.3). That it refers to El Diablo, drenched with such imagery and likely visible from Tikal, seems a strong possibility. In any case, the overall pattern of El Zotz accorded with solar alignments that centered on the Temple (see Chapter 1), though the chronology of the Early Classic at El Zotz is too unclear to posit an exact, year-by-year staging of these developments.

The Diablo tomb can be understood by sequence, as above. But, in final analysis, it represents varied propositions about kingship and a normative summation of royal roles:

*The Great Sacrificer.* An attribute of rulers is their authority and ability to enforce the ultimate sanction, that of taking human life for reasons perceived to be legitimate. The bodies of infants, small and vulnerable, along with parts of adults, went into the tomb and deposits nearby. The right hand of the principal occupant likely held an obsidian object that sawed and mangled bone (see Appendices I and II).

*The Great Consumer.* The tomb presents ample evidence of large appetites, with bowls for tamales, birds, and an *olla* for an *atole*-like liquid steeped with lime powder. As with many such offerings and in depictions of them, the intent seems less to highlight feasting and the generous sharing of food and drink, than to center on unilateral consumption by the ruler. In this instance, the dining came after death, by magical means. The jade bead in his mouth, the highest quality stone in the crypt, may have been inserted with maize dough, by analogy with practices documented in the early Colonial period (see Chapters 2 and 3).

*The Assembler of Wealth.* The jade celts and chest or belt ornaments (Figure 6.1), the shaped, indented balls of specular hematite, the jade jewels with now-fragmentary pearls, *Spondylus* beads threaded into a many-stranded necklace, bundled cloth, and lavishly adorned bowls and lids underscore the sheer, nonpareil richness of kings, on an order vastly

disproportionate to most other people in their kingdoms. The bundles of cloth and balls of hematite were likely placed in the tomb in the same way that they would have been packaged for long-distance trade, reflecting the ruler's place at the pinnacle of the economic landscape.

*The Exemplary Dancer.* Mortuary furniture in the tomb is not only about abundance or visual effects, but also concerns sound and performance. The jade celts and *Conus* shells with tinklers of dog teeth—even the large *Spondylus* shells had small beads to strike their surface—correspond to the dress worn by royal dancers in images of the Classic period.

In short, the tomb contained someone who kills, consumes, accumulates, and performs, a checklist of behaviors thought suitable for those claiming kingship. Yet, from a broader perspective, the link is to a far grander statement: that the ruler participated in cosmic cycles. Various bowls in the tomb attest to celestial beings of the sun on cosmic journeys. Monkeys bellow as harbingers of the dawn, while Old Gods blend into turtles that float as islands in ancient seas. In the Temple of the Night Sun, the overall imagery reinforces a bond between rulers and resurgent, recycling suns, with perhaps even a hint of seasonality in the positioning of the deity masks. Its solar beings might have been related, in as-yet-undiscerned ways, to seasonal horizon points or to some segmentation of the diurnal cycle. The message is hopeful and potent. Like the sun, the most dominant feature of the daytime sky, rulers will return from their nighttime travel over jeweled heavens. They might crave, at least symbolically, the blood desired by the Sun God, as smeared around the mouths of at least three masks on the Temple cornice (see Chapter 5). At each dawn, each setting of the sun, the Temple would blaze with red color, repeating its performance and reinforcing its message every morning, each late afternoon.

Although far distant in time and place, there are telling parallels in the Postclassic Mixtec sources of Oaxaca, Mexico, and in cultural regions nearby,

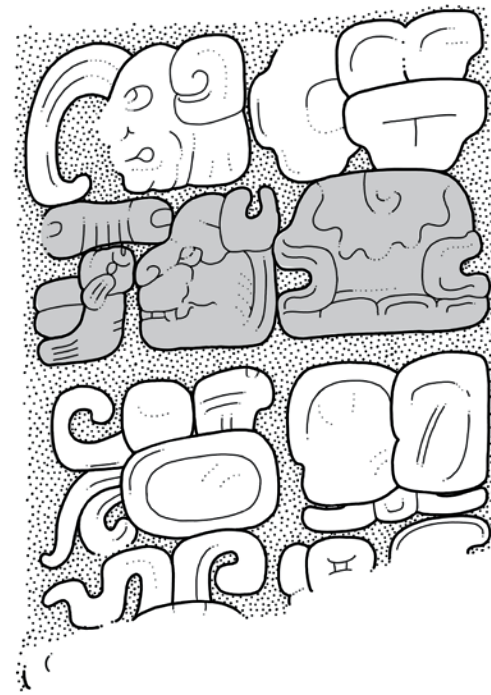


Figure 6.2. Bejucal Stela 2 passage (glyphs B6-B7), with name highlighted. Drawing: Stephen Houston.



Figure 6.3. Tikal Stela 31 (G5-G6). Drawing: Stephen Houston.

some Nahuatl-speaking, others extending into the highlands of Guatemala (Chinchilla Mazariegos 2013; Díaz Balsera 2008; Jansen 1997). In these areas, the birth of new dynasties fused with images of nascent suns, times of darkness now lit by lambent fire. Some such suns levitated from bloody temples. On page 23 of the Codex Vienna, for example, solar disks rise with bloody trails from a red-streaked smoking building (Figure 6.4; Anders et al. 1992:148; Boone 2000:90, 94; Furst 1978:216, 219-220). One disk even holds the day sign 1 Flower, the same name,



Figure 6.4. Solar disks from the Codex Vienna, p. 23; Österreichische Nationalbibliothek, Vienna. Photo: ADEVA, Graz.

perhaps not a fluke, used by “1 Ajaw [Flower],” one of the Hero Twins of the Classic Maya and the embodiment of lordship. The other disk in the Vienna contains the Mixtec Sun God. The Vienna further emphasizes the role of creator couples, a pattern recalling the pair featured on the roofcomb of the Temple of the Night Sun (Boone 2000:91-92, Fig. 47).

On page 21 of the Codex Nuttall, another Mixtec source, the appearance of new dynasties correlates,



Figure 6.5. Emergent solar disks from the Codex Nuttall, p. 21; British Museum. Photo: Trustees for the British Museum, ET Am1902, 0308.1, Add. Mss. 39671.

too, with the emergence of solar disks above streaming bands (Figure 6.5; Boone 2000:99; Hamman 2002:Fig. 4; Pohl 2005:114). Marked by stars, a celestial enclosure or place of emergence hovers directly above. Such themes play out equally in the Arroyo Group at Mitla, Oaxaca, whose Postclassic paintings commemorate the foundation of “leading kingdoms” (Pohl 2005:112). The announcement is that “solar cycling...interconnect[s]...with notions of place and production, self and community” (Hamman 2002:Note 5; see also Hanks 1990:353-355; Watanabe 1992:34-42). Earlier still, the birth of the sun was tethered to Teotihuacan, where primordial sacrifice led to the orb's ascent from the Pyramid of the Sun (Sahagún 1950-1982:Book 7:3-9). Although that myth surely dates to much later than the urban florescence of Teotihuacan, it still raises the question of whether the “*entrada*” of AD 378 reinforced solar concepts of kingship at El Diablo and elsewhere.

In such a light, by audacious claim, the tomb and attendant iconography in Str. F8-1 celebrate the origin of one dynasty in particular, though couched in the broadest possible frame. The Temple and tomb propose a sweeping merger of human and divine attributes. An emergent sun, setting time and possibly the seasons in motion, coincides with a new-fledged dynasty. It sweeps away a dark, pre-dawn past, as noted elsewhere in Mesoamerica (Hamman 2002:356-357), to initiate later reigns in the fullness of day. The story is not unique to El Zotz. When the Copan dynasty resurges after the death of its king in conflict, the Hieroglyphic Stairway of that site calls it a “dawn,” *pas*, the arrival of a new sun, possibly a new royal line (David Stuart, personal communication, 2006).

At El Diablo, high seat of the El Zotz sovereigns, the theme of continued calendrical celebrations and the accessions yet to come show that patterns had been set. The Temple could serve later rulers as a dynastic memorial and as the locus for future enthronements. The building itself, resting on the body of a deceased lord, seemed even to resemble a perishable scaffold for accession or the first Period Ending of a reign. Affixed with emblems of war, it showed the seated ruler looking towards twilight; seen from the front, where celebrants might gather, it received the halo of each new day. Death had come to the king, but kingship, like the sun, blazed on and on.

# References

- Abbott, Tucker  
1996 *Seashells of North America: A Guide to Field Identification*. St. Martin's Press, New York.
- Adams, Richard E. W.  
1971 *The Ceramics of Altar de Sacrificios*. Papers 63(1). Peabody Museum of Archaeology and Ethnology, Cambridge.  
1999 *Río Azul: An Ancient Maya City*. University of Oklahoma Press, Norman.
- Aldenderfer, Mark  
1991 Functional Evidence for Lapidary and Carpentry Craft Specialties in the Late Classic of the Central Peten Lakes Region. *Ancient Mesoamerica* 2(2):205-214.
- Aldenderfer, Mark, Larry Kimball, and April Sievert  
1989 Microwear Analysis in the Maya Lowlands: The Use of Functional Data in a Complex-Society Setting. *Journal of Field Archaeology* 16:47-60.
- Anders, Ferdinand, Maarten Jansen, and G. Aurora Pérez Jiménez  
1992 *Origen e historia de los reyes mixtecos. Libro explicativo del llamado Códice Vindobonensis*. Fondo de Cultura Económica, Mexico.
- Aoyama, Kazuo  
1989 Estudio experimental de las huellas de uso sobre material lítico de obsidiana y sílex. *Mesoamérica* 17:185-214.  
1995 Microwear Analysis in the Southeast Maya Lowlands: Two Case Studies at Copán, Honduras. *Latin American Antiquity* 6(2):129-144.  
1999 *Ancient Maya State, Urbanism, Exchange, and Craft Specialization: Chipped Stone Evidence from the Copán Valley and the La Entrada Region, Honduras*. Memoirs in Latin American Archaeology 12. University of Pittsburgh, Pittsburgh.  
2001 Ritos de plebeyos mayas en la Cueva Gordon no. 3 de Copán (Honduras) durante el Período Clásico: análisis de las microhuellas de uso sobre la lítica menor de obsidiana. *Mayab* 14:5-16.  
2004 El intercambio, producción y función de los artefactos de obsidiana del período formativo temprano en la costa del Pacífico de Guatemala: un estudio diacrónico y análisis de las microhuellas de uso sobre la lítica de obsidiana del complejo San Jerónimo, Escuintla, Guatemala. *U Tz'ib* 3(7):14-34.  
2005 Classic Maya Warfare and Weapons: Spear, Dart and Arrow Points of Aguateca and Copan. *Ancient Mesoamerica* 16(2):291-304.  
2007 Elite Artists and Craft Producers in Classic Maya Society: Lithic Evidence from Aguateca, Guatemala. *Latin American Antiquity* 18(1):3-26.  
2008 Preclassic and Classic Maya Obsidian Exchange, Artistic and Craft Production, and Weapons in the Aguateca Region and Seibal, Guatemala. *Mexicon* 30(4):78-86.
- 2009 *Elite Craft Producers, Artists, and Warriors at Aguateca: Lithic Analysis*. Monographs of the Aguateca Archaeological Project First Phase, 2. University of Utah Press, Salt Lake City.
- Aulie, H. Wilbur, and Evelyn W. de Aulie  
1998 *Diccionario ch'ol de Tumbalá, Chiapas, con variaciones dialectales de Tila y Sabanilla*. Instituto Lingüístico de Verano, Mexico.
- Baez, Miguel  
2009 Stèle en pierre taillée. In *Teotihuacan: Cité des Dieux*, edited by Felipe Gómez Solís, p. 439. Somogy Editions D'Art, Paris.
- Baker, Brenda J., Tosha L. Dupras, and Matthew W. Tocheri  
2005 *The Osteology of Infants and Children*. Texas A&M University Press, College Station.
- Ball, Joseph W.  
1977 *The Archaeological Ceramics of Becan, Campeche, Mexico*. Publication 43. Middle American Research Institute, Tulane University, New Orleans.
- Batta, Erasmo, Carlos Argáez, Josefina Mansilla, Carmen Pijoan, and Pedro Bosch  
2013 On Yellow and Red Pigmented Bones Found in Mayan Burials of Jaina. *Journal of Archaeological Science* 40(1):712-722.
- Baudez, Claude-François  
1994 *Maya Sculpture of Copán: The Iconography*. University of Oklahoma Press, Norman.
- Becquelin, Pierre, and Claude F. Baudez  
1982 *Tonina, une cité maya du Chiapas (Mexique)*, t. 2. Mission Archéologique et Ethnologique Française au Mexique, Etudes Mésoaméricaines 6(2). Centre d'Études Mexicaines et Centraméricaines, Mexico.
- Bell, Ellen Elizabeth  
2007 Early Classic Ritual Deposits within the Copan Acropolis: The Material Foundations of Political Power at a Classic Period Maya Center. Ph.D. dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.
- Bell, Ellen E., Robert J. Sharer, David W. Sedat, Marcello A. Canuto, and Lynn A. Grant  
2000 The Margarita Tomb at Copan, Honduras: A Research Update. *Expedition* 42(3):21-25.
- Bell, Ellen E., Robert J. Sharer, Loa P. Traxler, David W. Sedat, Christine W. Carrelli, and Lynn Grant  
2004 Tombs and Burials in the Early Classic Acropolis at Copan. In *Understanding Early Classic Copan*, edited by Ellen E. Bell, Marcello A. Canuto, and Robert J. Sharer, pp. 131-157. University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia.

- Berjonneau, Gerald, Emile Deletaille, and Jean-Louis Sonneray  
1985 *Rediscovered Masterpieces of Mesoamerica: Mexico-Guatemala-Honduras*. Editions Arts 135, Boulogne.
- Binski, Paul  
1996 *Medieval Death: Ritual and Representation*. Cornell University Press, Ithaca.
- Blainey, Marc G.  
1997 Surfaces and Beyond: The Political, Ideological, and Economic Significance of Ancient Maya Iron-Ore Mirrors. M.A. thesis, Department of Anthropology, Trent University, Peterborough.
- Bloch, Maurice, and Jonathan Parry  
1982 Introduction: Death and the Regeneration of Life. In *Death and the Regeneration of Life*, edited by Maurice Bloch and Jonathan Parry, pp. 1-44. Cambridge University Press, Cambridge.
- Blom, Frans, and Oliver La Farge  
1926 *Tribes and Temples: A Record of the Expedition to Middle America Conducted by the Tulane University of Louisiana in 1925*, v. 1. Tulane University, New Orleans.
- Boone, Elizabeth H.  
2000 *Stories in Red and Black: Pictorial Histories of the Aztecs and Mixtecs*. University of Texas Press, Austin.  
2007 The House of the Eagle. In *Cave, City, and Eagle's Nest: An Interpretive Journey through the Mapa de Cuauhtinchan No. 2*, edited by David Carrasco and Scott Sessions, pp. 27-48. University of New Mexico Press, Albuquerque.
- Bosecker, Klaus  
1997 Biobleaching: Metal Solubilization by Microorganisms. *FEMS Microbiology Reviews* 20(3-4):591-604.
- Boyle, Alan  
2013 Inside a Maya Pyramid, Mysterious Carvings Hint at Superpower Struggle. *NBC News*: [www.nbcnews.com/science/inside-maya-pyramid-mysterious-carvings-hint-superpower-struggle-6C10861128](http://www.nbcnews.com/science/inside-maya-pyramid-mysterious-carvings-hint-superpower-struggle-6C10861128).
- Brady, James E., and Dominique Rissolo  
2006 A Reappraisal of Ancient Maya Cave Mining. *Journal of Anthropological Research* 62(4):471-490.
- Braswell, Geoffrey E.  
2003 Dating Early Classic Interaction Between Kaminaljuyu and Central Mexico. In *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*, edited by Geoffrey E. Braswell, pp. 81-104. University of Texas Press, Austin.
- Breedlove, Dennis E., and Robert M. Laughlin  
2000 *The Flowering of Man: A Tzotzil Botany of Zinacantán*. Abridged ed. Smithsonian Institution Press, Washington, D.C.
- Buikstra, Jane E., and Douglas H. Ubelaker  
1994 *Standards for Data Collection from Human Skeletal Remains*. Research Series 44. Arkansas Archeological Survey, Fayetteville.
- Callaghan, Michael G.  
2009 Technologies of Power: Ritual Economy and Ceramic Production in the Terminal Preclassic Period Holmul Region, Guatemala. Ph.D. dissertation, Department of Anthropology, Vanderbilt University, Nashville.
- Campaña, Luz Evelia, and Sylvian Boucher  
2002 Nuevas imágenes de Becán, Campeche. *Arqueología Mexicana* 10(56):64-69.
- Carter, Benjamin P.  
2011 *Spondylus* in South American Prehistory. In *Spondylus in Prehistory: New Data and Approaches. Contributions to the Archaeology of Shell Technologies*, edited by Fotis Ifantidis and Marianna Nikolaidou, pp. 63-89. BAR International Series 2216. British Archaeological Reports, Oxford.
- Carter, Nicholas P., Rony E. Piedrasanta, Stephen D. Houston, and Zachary Hruby  
2012 Signs of Supplication: Two Mosaic Earflare Plaques from El Zotz, Guatemala. *Antiquity* 86(333), Project Gallery: <http://antiquity.ac.uk/projgall/carter333/>.
- Chase, Arlen F., and Diane Z. Chase  
1987 *Investigations at the Classic Maya City of Caracol Belize: 1985-1987*. Pre-Columbian Art Research Institute, San Francisco.  
2011 Heterogeneity in Residential Group Composition: Continued Investigation in and near Caracol's Epicenter: Caracol Archaeological Project Investigations for 2011. Report submitted to the Belize Institute of Archaeology, Belize.
- Chase, Arlen F., Diane Z. Chase, Elayne Zorn, and Wendy Teeter  
2008 Textiles and the Maya Archaeological Record. *Ancient Mesoamerica* 19(1):127-142.
- Chase, Diane Z., and Arlen F. Chase  
1998 The Archaeological Context of Caches, Burials, and Other Ritual Activities for the Classic Period (as Reflected at Caracol, Belize). In *Function and Meaning in Classic Maya Architecture*, edited by Stephen D. Houston, pp. 299-332. Dumbarton Oaks, Washington, D.C.  
2004 Archaeological Perspectives on Classic Maya Social Organization from Caracol, Belize. *Ancient Mesoamerica* 15(1):139-147.
- Cheetham, David T.  
2004 The Role of "Terminus Groups" in Lowland Maya Site Planning: An Example from Cahal Pech. In *The Ancient Maya of the Belize Valley: Half a Century of Archaeological Research*, edited by James F. Garber, pp. 125-148. University Press of Florida, Gainesville.
- Chinchilla Mazariegos, Oswaldo  
2013 Tecum, the Fallen Sun: Mesoamerican Cosmogony and the Spanish Conquest of Guatemala. *Ethnohistory* 60(4):693-719.
- Codex Magliabechiano  
2013 Electronic document, [www.famsi.org/research/graz/magliabechiano/index.html](http://www.famsi.org/research/graz/magliabechiano/index.html).
- Coe, Michael D.  
1977 Supernatural Patrons of Maya Scribes and Artists. In *Social Process in Maya Prehistory: Studies in Honour of Sir Eric Thompson*, edited by Norman Hammond, pp. 327-346. Academic Press, London.
- Coe, William R.  
1990 *Excavations in the Great Plaza, North Terrace, and North Acropolis of Tikal*. 5 vols. Tikal Report 14. University Museum, University of Pennsylvania, Philadelphia.
- Coggins, Clemency C.  
1988 Classic Maya Metaphors of Death and Life. *RES: Anthropology and Aesthetics* 16:64-84.
- Cucina, Andrea, and Vera Tiesler  
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 Vera Tiesler and Andrea Cucina, pp. 102-125. University of Arizona Press, Tucson.
- Cuevas García, Martha  
2007 *Los incensarios efigie de Palenque. Deidades y rituales mayas*. Universidad Nacional Autónoma de México; Instituto Nacional de Antropología e Historia, Mexico.
- Culbert, T. Patrick  
1993 *The Ceramics of Tikal: Vessels from the Burials, Caches, and Problematical Deposits*. Tikal Report 25, Part A. University Museum, University of Pennsylvania, Philadelphia.
- Czapiewska, Ewa, Thomas Garrison, Edwin Román, and Stephen Houston  
2014 La cerámica de los grupos de élite: análisis de los restos hallados en El Zotz, Petén, Guatemala. In *XXVII Simposio de Investigaciones Arqueológicas en Guatemala, 2013*, edited by Bárbara Arroyo, Luis Méndez Salinas, and Andrea Rojas, v. 1, pp. 283-296. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal, Guatemala.
- Danien, Elin C.  
2002 *Guide to the Mesoamerican Gallery at the University of Pennsylvania Museum of Archaeology and Anthropology*. University Museum, University of Pennsylvania, Philadelphia.
- Díaz Balsera, Viviana  
2008 Celebrating the Rise of a New Sun: The Tlaxcalans Conquer Jerusalem in 1539. *Estudios de Cultura Nahuatl* 39:311-330.
- Doyle, James A.  
2012 Regroup on "E-Groups": Monumentality and Early Centers in the Middle Preclassic Maya Lowlands. *Latin American Antiquity* 23(4):355-379.  
2013 The First Maya "Collapse": The End of the Preclassic Period at El Palmar, Peten, Guatemala. Ph.D. dissertation, Department of Anthropology, Brown University, Providence.
- Eberl, Markus  
2005 *Muerte, entierro y ascención. Ritos funerarios entre los antiguos mayas*. Universidad Autónoma de Yucatán, Mérida.
- Emery, Kitty, and Kazuo Aoyama  
2007 Bone, Shell, and Lithic Evidence for Crafting in Elite Maya Households at Aguateca, Guatemala. *Ancient Mesoamerica* 18(1):69-89.
- Escobedo, Héctor L.  
2004 Tales from the Crypt: The Burial Place of Ruler 4, Piedras Negras. In *Courtly Art of the Ancient Maya*, edited by Mary Miller and Simon Martin, pp. 277-280. Thames and Hudson, New York.
- Estrada Reynoso, José Luis  
2009 Extrémité supérieure de marqueur, fragment. In *Teotihuacan: Cité des Dieux*, edited by Felipe Gómez Solís, p. 246. Somogy Editions D'Art, Paris.
- Fash, William L., Jr.  
1989 The Sculptural Façade of Structure 9N-82: Content, Form, and Significance. In *The House of the Bacabs, Copan, Honduras*, edited by David Webster, pp. 41-72. Studies in Pre-Columbian Art and Archaeology 29. Dumbarton Oaks, Washington, D.C.
- Filloy Nadal, Laura, and Sofía Martínez del Campo Lanz  
2010 El rostro eterno de K'inich Janaab' Pakal: la máscara funeraria. In *Misterios de un rostro maya. La máscara funeraria de K'inich Janaab' Pakal de Palenque*, edited by Laura Filloy Nadal, pp. 108-129. Instituto Nacional de Antropología e Historia, Mexico.
- Fitzsimmons, James L.  
2009 *Death and the Classic Maya Kings*. University of Texas Press, Austin.
- Foias, Antonia E.  
1996 Changing Ceramic Production and Exchange Systems and the Classic Maya Collapse in the Petexbatun Region. Ph.D. dissertation, Department of Anthropology, Vanderbilt University, Nashville.
- Folan, William J., Joyce Marcus, Sophia Pincemin, María del Rosario Domínguez Carrasco, Laraine Fletcher, and Abel Morales López  
1995 Calakmul: New Data from an Ancient Maya Capital in Campeche, Mexico. *Latin American Antiquity* 6(4):310-334.
- Forsyth, Donald W.  
1989 *The Ceramics of El Mirador, Petén, Guatemala*. El Mirador Series, Part 4. Papers 63. New World Archaeological Foundation, Brigham Young University, Provo.
- Furst, Jill L.  
1978 *Codex Vindobonensis Mexicanus I: A Commentary*. Institute of Mesoamerican Studies Publication 4. State University of New York, Albany.

- Garrison, Thomas, and Fernando Beltrán  
2011 Investigaciones en Bejucal. In Proyecto Arqueológico “El Zotz,” informe no. 5, temporada 2010, edited by Jose Luis Garrido López, Stephen Houston, and Edwin Román, pp. 293-319. Report submitted to the Dirección General del Patrimonio Cultural y Natural de Guatemala.
- Garrison, Thomas, Jose Luis Garrido, Octavio Axpuc, Alexander Smith, Timothy Beach, Sheryl Luzzadder-Beach, and Fernando Beltrán  
2011 Programa de investigaciones regionales (mapeo y excavaciones). In Proyecto Arqueológico “El Zotz,” informe no. 5, temporada 2010, edited by Jose Luis Garrido López, Stephen Houston, and Edwin Román, pp. 321-386. Report submitted to the Dirección General del Patrimonio Cultural y Natural de Guatemala.
- Gifford, James C.  
1960 The Type-Variety Method of Ceramic Classification as an Indicator of Cultural Phenomena. *American Antiquity* 25(3):341-347.
- Goodall, Rosemary A., Jay Hall, Rene Viel, F. Ricardo Agurcia, Howell G. M. Edwards, and Peter M. Fredericks  
2006 Raman Microscopic Investigation of Paint Samples from the Rosalila Building, Copan, Honduras. *Journal of Raman Spectroscopy* 37(10):1072-1077.
- Graham, Ian  
1967 *Archaeological Explorations in El Peten, Guatemala*. Publication 33. Middle American Research Institute, Tulane University, New Orleans.
- Greene, Merle, Robert L. Rands, and John A. Graham  
1972 *Maya Sculpture from the Southern Lowlands, Highlands and Pacific Piedmont, Guatemala, Mexico, Honduras*. Lederer, Street and Zeus, Berkeley, CA.
- Gutiérrez Castillo, Yeny Myshell, Stephen Houston, Edwin Román, Thomas Garrison, Sarah Newman, and Catherine Magee  
2013 Entre conchas y océanos: analizando los artefactos malacológicos procedentes del Entierro 9 de El Zotz, Petén, Guatemala. In *XXVI Simposio de Investigaciones Arqueológicas en Guatemala, 2012*, edited by Bárbara Arroyo and Luis Méndez Salinas, v. 2, pp. 597-609. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal, Guatemala.
- Hall, Grant D.  
1985 Results of Tomb Investigations at Río Azul, Season of 1984. Report submitted to Richard E. W. Adams for *Río Azul Reports, No. 2*, July 1985.  
1989 Realm of Death: Royal Mortuary Customs and Polity Interaction in the Classic Maya Lowlands. Ph.D. dissertation, Department of Anthropology, Harvard University, Cambridge.
- Hamman, Byron  
2002 The Social Life of Pre-Sunrise Things: Indigenous Mesoamerican Archaeology. *Current Anthropology* 43(3):351-382.
- Hammond, Norman  
1984 Holmul and Nohmul: A Comparison and Assessment of Two Maya Lowland Protoclassic Sites. *Ceramica de Cultura Maya* 13:1-17.
- Hanks, William F.  
1990 *Referential Practice: Language and Lived Space among the Maya*. University of Chicago Press, Chicago.
- Hansford, Geoff S., and Tomás Vargas  
2001 Chemical and Electrochemical Basis of Bioleaching Processes. *Hydrometallurgy* 59(2):135-145.
- Harrison-Buck, Eleanor, Patricia A. McAnany, and Rebecca Storey  
2007 Empowered and Disempowered During the Late to Terminal Classic Transition: Maya Burial and Termination Rituals in the Sibun Valley, Belize. In *New Perspectives on Human Sacrifice and Ritual Body Treatments in Ancient Maya Society*, edited by Vera Tiesler and Andrea Cucina, pp. 74-101. Springer, New York.
- Hellmuth, Nicholas  
1987 *Monster und Menschen in der Maya-Kunst: Eine Ikonographie der alten Religionen Mexikos und Guatemalas*. Akademische Druk- u. Verlagsanstalt, Graz.
- Henderson, Lucia R.  
2013 Bodies Politic, Bodies in Stone: Imagery of the Human and the Divine in the Sculpture of Late Preclassic Kaminaljuyú, Guatemala. Ph.D. dissertation, Department of Art and Art History, University of Texas at Austin.
- Houk, Brett A., Hubert R. Robichaux, and Fred Valdez, Jr.  
2010 An Early Royal Maya Tomb from Chan Chich, Belize. *Ancient Mesoamerica* 21(2):229-248.
- Houston, Stephen D.  
1996 Symbolic Sweatbaths of the Maya: Architectural Meaning in the Cross Group at Palenque, Mexico. *Latin American Antiquity* 7(2):132-151.  
2008 In the Shadow of a Giant. *Mesoweb*: www.mesoweb.com/zotz/articles/Shadow-of-a-Giant.pdf.  
2012 Diadems in the Rough. *Maya Decipherment*: decipherment.wordpress.com/2012/10/06/diadems-in-the-rough/.
- Houston, Stephen D., and Andrew K. Scherer  
2010 La ofrenda máxima: el sacrificio humano en la parte central del área maya. In *El sacrificio humano en la tradición religiosa mesoamericana*, edited by Leonardo López Luján and Guilhem Olivier, pp. 169-193. Instituto Nacional de Antropología e Historia; Universidad Nacional Autónoma de México, Mexico.
- Houston, Stephen, and David Stuart  
1996 Of Gods, Glyphs, and Kings: Divinity and Rulership among the Classic Maya. *Antiquity* 70(268):289-312.
- Houston, Stephen, and Karl Taube  
2000 An Archaeology of the Senses: Perception and Cultural Expression in Ancient Mesoamerica. *Cambridge Archaeological Journal* 10(2):261-294.
- Houston, Stephen, Edwin Román, and Thomas Garrison  
2013 The Temple of the Night Sun: Configuring Kinship at El Diablo, Guatemala. Paper presented at The Maya Meetings, University of Texas at Austin.
- Houston, Stephen, David Stuart, and Karl Taube  
2006 *The Memory of Bones: Body, Being, and Experience among the Classic Maya*. University of Texas Press, Austin.
- Houston, Stephen, Claudia Brittenham, Cassandra Mesick, Alexandre Tokovinine, and Christina Warinner  
2009 *Veiled Brightness: A History of Ancient Maya Color*. University of Texas Press, Austin.
- Houston, Stephen, Héctor Escobedo, Andrew Scherer, Mark Child, and James Fitzsimmons  
2003 Classic Maya Death at Piedras Negras, Guatemala. In *Antropología de la eternidad: la muerte en la cultura maya*, edited by Andrés Ciudad Ruiz, Mario Humberto Ruz Sosa, and María Josefa Iglesias Ponce de León, pp. 113-143. Sociedad Española de Estudios Mayas, Madrid.
- Huntington, Richard, and Peter Metcalf  
1979 *Celebrations of Death: The Anthropology of Mortuary Ritual*. Cambridge University Press, Cambridge.
- Iglesias, María Josefa, Andrés Ciudad, Eduardo Arroyo, Jesús Adánez, and Sara Álvarez  
2001 Aplicaciones de la antropología molecular a la arqueología maya: el caso de Tikal. In *XIV Simposio de Investigaciones Arqueológicas en Guatemala, 2000*, edited by Juan Pedro Laporte, Ana Claudia de Suasnávar, and Bárbara Arroyo, v. 2, pp. 1069-1088. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal, Guatemala.
- Jansen, Maarten  
1997 La serpiente emplumada y el amanecer de la historia. In *Códices, caciques y comunidades*, edited by Maarten Jansen and Luis Reyes García, pp. 11-63. Cuadernos de Historia Latinoamericana 5. Asociación de Historiadores Latinoamericanistas Europeos, Ridderkerk.
- Jones, Christopher, and Linton Satterthwaite  
1982 *The Monuments and Inscriptions of Tikal: The Carved Monuments*. Tikal Report 33, Part A. University Museum, University of Pennsylvania, Philadelphia.
- Joyce, Rosemary A., and John S. Henderson  
2007 From Feasting to Cuisine: Implications of Archaeological Research in an Early Honduran Village. *American Anthropologist* 109(4):642-653.
- Keeley, Lawrence H.  
1980 *Experimental Determination of Stone Tool Uses: A Microwear Analysis*. University of Chicago Press, Chicago.
- Keen, Myra  
1971 *Sea Shells of Tropical West America: Marine Mollusks from Baja California to Peru*. 2<sup>nd</sup> ed. Stanford University Press, Stanford.
- Kidder, Alfred Vincent, Jesse David Jennings, Edwin M. Shook  
1946 *Excavations at Kaminaljuyu, Guatemala*. Publication 561. Carnegie Institute of Washington, Washington, D.C.
- Kovacevich, Brigitte  
2006 Reconstructing Classic Maya Economic Systems: Production and Exchange at Cancuen, Guatemala. Ph.D. dissertation, Department of Anthropology, Vanderbilt University, Nashville.  
2011 The Organization of Jade Production at Cancuen, Guatemala. In *The Technology of Maya Civilization: Political Economy and Beyond in Lithic Studies*, edited by Zachary X. Hruby, Geoffrey E. Braswell, and Oswaldo Chinchilla Mazariegos, pp. 149-161. Equinox Publishing, London.
- Kovacevich, Brigitte, and Zachary Hruby  
2005 Towards an Understanding of the Value of Jade in Two Lowland Classic Maya City Centers, Cancuen and Piedras Negras. Paper presented at the 70<sup>th</sup> Annual Meeting of the Society for American Archaeology, Salt Lake City.
- Krejci, Estella, and T. Patrick Culbert  
1995 Preclassic and Classic Burials and Caches in the Maya Lowlands. In *The Emergence of Lowland Maya Civilization: The Transition from Preclassic to Early Classic*, edited by Nikolai Grube, pp. 103-116. Acta Mesoamerica 8. Verlag Anton Saurwein, Möckmühl.
- Lacadena, Alfonso  
2004 The Glyphic Corpus from Ek’ Balam, Yucatán, México. Report submitted to the Foundation for the Advancement of Mesoamerican Studies, Inc. Available: www.famsi.org/reports/01057/01057LacadenaGarciaGallo01.pdf.
- Laporte, Juan Pedro  
1989 Alternativas del clásico temprano en la relación Tikal-Teotihuacán: Grupo 6C-XVI, Tikal, Petén, Guatemala. Ph.D. dissertation, Universidad Nacional Autónoma de México, Mexico.  
2005 Exploración y restauración en la Plataforma Este de Mundo Perdido, Tikal (Estructuras 5D-83 a 5D-89). In *XVIII Simposio de Investigaciones Arqueológicas en Guatemala, 2004*, edited by Juan Pedro Laporte, Bárbara Arroyo, and Héctor E. Mejía, v. 1, pp. 153-200. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal; Foundation for the Advancement of Mesoamerican Studies, Guatemala.
- Laporte, Juan Pedro, and Vilma Fialko  
1987 La cerámica del Clásico Temprano desde Mundo Perdido, Tikal: una reevaluación. In *Maya Ceramics: Papers from the 1985 Maya Ceramics Conference*, edited by Prudence M. Rice and Robert J. Sharer, pp. 123-181. BAR International Series 345. British Archaeological Reports, Oxford.  
1995 Un reencuentro con Mundo Perdido, Tikal. *Ancient Mesoamerica* 6(1):58-62.
- LeCount, Lisa J.  
2001 Like Water for Chocolate: Feasting and Political Ritual Among the Late Classic Maya at Xunantunich, Belize. *American Anthropologist* 103(4):935-953.

- Lewenstein, Suzanne M.  
1987 *Stone Tool Use at Cerros*. University of Texas Press, Austin.
- 1991 Woodworking Tools at Cerros. In *Maya Stone Tools: Selected Papers from the Second Maya Lithic Conference*, edited by Thomas R. Hester and Harry J. Shafer, pp. 239-249. Prehistory Press, Madison.
- López Castro, Hermenegildo F., and Ethelia Ruiz Medrano  
2010 *Tutu Nuu Oko. Libro del pueblo veinte. Relatos de la tradición oral mixteca de Pinotepa Nacional, Oaxaca*. Instituto Nacional de Lenguas Indígenas, Mexico.
- Loten, H. Stanley  
2003 The North Acropolis: Monumentality, Function, and Architectural Development. In *Tikal: Dynasties, Foreigners, and Affairs of State*, edited by Jeremy A. Sabloff, pp. 227-252. School of American Research Press, Santa Fe.
- Lothrop, Joy Mahler  
1992 Textiles. In *Artifacts from the Cenote of Sacrifice, Chichen Itza, Yucatan*, edited by Clemency Chase Coggins, pp. 33-90. Memoirs 10(3). Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge.
- Love, Bruce  
1989 Yucatec Sacred Breads through Time. In *Word and Image in Maya Culture: Explorations in Language, Writing, and Representation*, edited by William F. Hanks and Don S. Rice, pp. 336-350. University of Utah Press, Salt Lake City.
- Lucero, Lisa J.  
2003 The Politics of Ritual: The Emergence of Classic Maya Rulers. *Current Anthropology* 44(4):523-558.
- Marcus, Joyce, and Kent V. Flannery  
2000 Ancient Zapotec Ritual and Religion: An Application of the Direct Historical Approach. In *The Ancient Civilizations of Mesoamerica: A Reader*, edited by Michael E. Smith and Marilyn A. Masson, pp. 400-421. Blackwell, Malden, MA.
- Martin, Simon  
2003 In Line of the Founder: A View of Dynastic Politics at Tikal. In *Tikal: Dynasties, Foreigners, and Affairs of State*, edited by Jeremy A. Sabloff, pp. 3-45. School of American Research Press, Santa Fe.
- Martin, Simon, and Nikolai Grube  
2008 *Chronicle of the Maya Kings and Queens: Deciphering the Dynasties of the Ancient Maya*. 2<sup>nd</sup> ed. Thames and Hudson, London.
- Martin-Sanchez, Pedro M., Santiago Sanchez-Cortes, Eduardo Lopez-Tobar, Valme Jurado, Fabiola Bastian, Claude Alabouvette, and Cesareo Saiz-Jimenez  
2012 The Nature of Black Stains in Lascaux Cave, France, as Revealed by Surface-Enhanced Raman Spectroscopy. *Journal of Raman Spectroscopy* 43(3):464-467.
- Mathema, Vivek Bhakta, Balkrishna Chand Thakuri, and Mika Sillanpää  
2011 Bacterial Mer Operon-Mediated Detoxification of Mercurial Compounds: A Short Review. *Archives of Microbiology* 193(12):837-844.
- Mathews, Peter  
1975 The Lintels of Structure 12, Yaxchilan, Chiapas. Paper presented at the Annual Conference of the Northeastern Anthropological Association, Wesleyan University, Middletown.
- Matthews, Robert W., and Jorge M. González  
2004 Nesting Biology of *Zeta argillaceum* (Hymenoptera: Vespidae: Eumeninae) in Southern Florida, U.S. *Florida Entomologist* 87:37-40. Available: [www.bioone.org/doi/full/10.1653/0015-4040%282004%29087%5B0037%3ANBOZAH%5D2.0.CO%3B2](http://www.bioone.org/doi/full/10.1653/0015-4040%282004%29087%5B0037%3ANBOZAH%5D2.0.CO%3B2).
- Maudslay, Alfred P.  
1889-1902 *Archaeology*. 5 vols. Appendix to *Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America*. R. H. Porter and Dulau, London.
- Maynard, David F., and Frances F. Berdan  
2010 El adhesivo y el material de reparación de la máscara. In *Misterios de un rostro maya. La máscara funeraria de K'inich Janaab' Pakal de Palenque*, edited by Laura Filloy Nadal, pp. 154-161. Instituto Nacional de Antropología e Historia, Mexico.
- McAnany, Patricia A.  
1995 *Living with the Ancestors: Kinship and Kingship in Ancient Maya Society*. University of Texas Press, Austin.  
1998 Ancestors and the Classic Maya Built Environment. In *Function and Meaning in Classic Maya Architecture*, edited by Stephen D. Houston, pp. 271-298. Dumbarton Oaks, Washington, D.C.
- McNeil, Cameron L.  
2010 Death and Chocolate: The Significance of Cacao Offerings in Ancient Maya Tombs and Caches at Copan, Honduras. In *Pre-Columbian Foodways: Interdisciplinary Approaches to Food, Culture, and Markets in Ancient Mesoamerica*, edited by John E. Staller and Michael Carrasco, pp. 293-314. Springer, New York.
- Merwin, Raymond E., and George C. Vaillant  
1932 *The Ruins of Holmul, Guatemala*. Memoirs 3(2). Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge.
- Miho Museum  
2011 Tetrapod Vessel with Dog on Lid. *Miho Museum*: <http://miho.jp/booth/html/artcon/00004354e.htm>.
- Miller, Mary, and Claudia Brittenham  
2013 *The Spectacle of the Late Maya Court: Reflections on the Murals of Bonampak*. University of Texas Press, Austin.
- Moholy-Nagy, Hattula, with William R. Coe  
2008 *The Artifacts of Tikal: Ornamental and Ceremonial Artifacts and Unworked Material*. Tikal Report 27, Part A. Monograph 127. University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia.
- Nascimento, Andréa M. A., and Edmar Chartone-Souza  
2003 Operon Mer: Bacterial Resistance to Mercury and Potential for Bioremediation of Contaminated Environments. *Genetics and Molecular Research* 2(1):92-101.
- Nuland, Sherwin B.  
1994 *How We Die: Reflections on Life's Final Chapter*. Random House, New York.
- Orrego Corzo, Miguel  
2000 Informe sobre las investigaciones arqueológicas en el conjunto A-3, temporadas 1986-87, Río Azul, Municipio de Melchor de Mencos, Petén, Guatemala. In *Río Azul Reports, No. 5: The 1987 Season*, edited by Richard E. W. Adams, pp. 54-107. University of Texas at San Antonio, San Antonio.
- Ortner, Donald J.  
2002 *Identification of Pathological Conditions in Human Skeletal Remains*. 2<sup>nd</sup> ed. Academic Press, London.
- Orton, Clive, Paul Tyers, and Alan Vince  
1993 *Pottery in Archaeology*. Cambridge University Press, Cambridge.
- Parsons, Elsie Clew  
1933 Some Aztec and Pueblo Parallels. *American Anthropologist* 35(4):611-631.
- Pereira, Grégory, and Dominique Michelet  
2004 Gobernantes mayas en lechos de muerte: el caso de Balamkú, un patron funerario del Clásico Temprano. In *Culto funerario en la sociedad maya. Memoria de la Cuarta Mesa Redonda de Palenque*, edited by Rafael Cobos, pp. 333-368. Instituto Nacional de Antropología e Historia, Mexico.
- Pendergast, David M.  
1969 *Altun Ha, British Honduras (Belize): The Sun God's Tomb*. Art and Archaeology Occasional Papers 16. Royal Ontario Museum, Toronto.  
1982a *Excavations at Altun Ha, Belize, 1964-1970*, v. 2. Royal Ontario Museum, Toronto.  
1982b Ancient Maya Mercury. *Science* 217(4559):533-535.
- Pillsbury, Joanne  
1996 The Thorny Oyster and the Origins of Empire: Implications of Recently Uncovered *Spondylus* Imagery from Chan Chan, Peru. *Latin American Antiquity* 7(4):313-340.
- Pires-Ferreira, Jane Wheeler  
1978 Shell Exchange Networks in Formative Mesoamerica. In *Cultural Continuity in Mesoamerica*, edited by David L. Browman, pp. 79-100. Mouton Publishers, Chicago.
- Pincemin, Sophia, Joyce Marcus, Lynda Florey Folan, William J. Folan, María del Rosario Domínguez Carrasco, and Abel Morales López  
1998 Extending the Calakmul Dynasty Back in Time: A New Stela from a Maya Capital in Campeche, Mexico. *Latin American Antiquity* 9(4):310-327.
- Plesters, Joyce  
1956 Cross-sections and Chemical Analysis of Paint Samples. *Conservation* 2(3):110-157.
- Pohl, John M. D.  
2005 The Arroyo Group Lintel Painting at Mitla, Oaxaca. In *Painted Books and Indigenous Knowledge in Mesoamerica: Manuscript Studies in Honor of Mary Elizabeth Smith*, edited by Elizabeth H. Boone, pp. 109-127. Publication 69. Middle American Research Institute, Tulane University, New Orleans.
- Pohl, Mary D.  
1983 Maya Ritual Faunas: Vertebrate Remains from Burials, Caches, Caves, and Cenotes in the Maya Lowlands. In *Civilization in the Ancient Americas: Essays in Honor of Gordon R. Willey*, edited by Richard M. Leventhal and Alan L. Kolata, pp. 55-103. Peabody Museum of Archaeology and Ethnology, Harvard University; University of New Mexico Press, Albuquerque.
- Powis, Terry G., Fred Valdez, Jr., Thomas R. Hester, W. Jeffrey Hurst, and Stanley M. Tarka, Jr.  
2002 Spouted Vessels and Cacao Use among the Preclassic Maya. *Latin American Antiquity* 13(1):85-106.
- Pring, Duncan C.  
2000 *The Protoclassic in the Maya Lowlands*. BAR International Series 908. British Archaeological Reports, Oxford.
- Redfield, Robert, and Alfonso Villa Rojas  
1934 *Chan Kom: A Maya Village*. Publication 448. Carnegie Institution of Washington, Washington, D.C.
- Rich, Michelle E.  
2011 Ritual, Royalty, and Classic Period Politics: The Archaeology of the Mirador Group at El Perú-Waka', Petén, Guatemala. Ph.D. dissertation, Department of Anthropology, Southern Methodist University, Dallas.
- Ricketson, Oliver G., Jr., and Edith B. Ricketson  
1937 *Uaxactun, Guatemala: Group E, 1926-1931*. Publication 477. Carnegie Institution of Washington, Washington, D.C.
- Riese, Berthold  
1984 Hel Hieroglyphs. In *Phoneticism in Mayan Hieroglyphic Writing*, edited by John S. Justeson and Lyle Campbell, pp. 263-286. Institute for Mesoamerican Studies Publication 9. State University of New York at Albany.
- Robertson, John, Stephen Houston, Marc Zender, and David Stuart  
2007 *Universals and the Logic of the Material Implication: A Case Study from Maya Hieroglyphic Writing*. Research Reports on Ancient Maya Writing 62. Electronic document, <http://repositories.lib.utexas.edu/handle/2152/17706>.
- Robertson, Merle G.  
1991 *The Sculpture of Palenque, Volume IV: The Cross Group, the North Group, the Olvidado, and Other Pieces*. Princeton University Press, Princeton.

- Rochette, Erick T.  
2009 The Late Classic Organization of Jade Artifact Production in the Middle Motagua Valley, Zacapa, Guatemala. Ph.D. dissertation, Department of Anthropology, Pennsylvania State University, University Park.
- Román Ramírez, Edwin  
2011 Living the Sacred Landscape: The Process of Abandonment of the Early Classic Maya Group of El Diablo at El Zotz, Peten, Guatemala. M.A. thesis, Department of Latin American Studies, University of Texas at Austin.
- Román, Edwin, Heather Hurst, Karl Taube, David Stuart, and William Saturno  
2006 Nuevos hallazgos arquitectónicos y pictóricos en la Pirámide Las Pinturas, San Bartolo, Petén. In *XIX Simposio de Investigaciones Arqueológicas en Guatemala, 2005*, edited by Juan Pedro Laporte, Bárbara Arroyo, and Héctor E. Mejía, v. 2, pp. 571-578. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal; Fundación Arqueológica del Nuevo Mundo, Guatemala.
- 2009 Estructuras ceremoniales del periodo Preclásico: Ixim, un ejemplo de ello. In *XXII Simposio de Investigaciones Arqueológicas en Guatemala, 2008*, edited by Juan Pedro Laporte, Bárbara Arroyo, and Héctor E. Mejía, v. 2, pp. 1253-1265. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal, Guatemala.
- Román, Edwin, and Sarah Newman  
2011 Excavaciones en el Grupo El Diablo (Operación 5). In Proyecto Arqueológico “El Zotz,” informe no. 5, temporada 2010, edited by Jose Luis Garrido López, Stephen Houston, and Edwin Román, pp. 117-162. Report submitted to the Dirección General del Patrimonio Cultural y Natural de Guatemala.
- Romero Molina, Javier  
1986 *Catálogo de la colección de dientes mutilados prehispánicos, IV parte*. Colección Fuentes. Instituto Nacional de Antropología e Historia, Mexico.
- Ruz Lhuillier, Alberto  
1968 *Costumbres funerarias de los antiguos mayas*. Universidad Nacional Autónoma de México, Mexico.
- Sahagún, Bernardino de  
1950-1982 *Florentine Codex: General History of the Things of New Spain*. Translated from the Aztec into English, with Notes and Illustrations by Arthur J. O. Anderson and Charles E. Dibble. 12 vols. School of American Research Press; University of Utah, Santa Fe.
- Saturno, William, Karl A. Taube, and David Stuart  
2005 *The Murals of San Bartolo, El Petén, Guatemala, Part I: The North Wall*. Ancient America 7. Center for Ancient American Studies, Barnardville, NC.
- Saunders, Nicholas J.  
1988 Anthropological Reflections on Archaeological Mirrors. In *Recent Studies in Pre-Columbian Archaeology*, edited by Nicholas J. Saunders and Olivier de Montmollin, pp. 1-39. BAR International Series 421. British Archaeological Reports, Oxford.
- Sax, Margaret, Nigel D. Meeks, and Dominique Collon  
2000 The Introduction of the Lapidary Engraving Wheel in Mesopotamia. *Antiquity* 74(284):380-387.
- Schele, Linda  
1992 The Founders of Lineages at Copan and Other Maya Sites. *Ancient Mesoamerica* 3(1):135-144.
- Schele, Linda, and Mary Ellen Miller  
1986 *The Blood of Kings: Dynasty and Ritual in Maya Art*. Braziller; Kimbell Art Museum, Fort Worth.
- Scott, David A., M. Newman, M. Schilling, M. Derrick, and H. P. Khanjian  
1996 Blood as a Binding Medium in a Chumash Indian Pigment Cake. *Archaeometry* 38(1):103-112.
- Schmidt, Christopher W., and Steven A. Symes, eds.  
2008 *The Analysis of Burned Human Remains*. Academic Press, Oxford.
- Sempowski, Martha L., and Michael W. Spence  
1994 *Mortuary Practices and Skeletal Remains at Teotihuacan*. Urbanization at Teotihuacan, Mexico 3. University of Utah Press, Salt Lake City.
- Sharer, Robert J., David W. Sedat, Loa P. Traxler, Julia C. Miller, and Ellen E. Bell  
2005 Early Classic Royal Power in Copan: The Origins and Development of the Acropolis (ca. A.D. 250-600). In *Copán: The History of an Ancient Maya Kingdom*, edited by E. Wyllys Andrews, and William L. Fash, pp. 139-199. School of American Research Press, Santa Fe.
- Sievert, April K.  
1990 Postclassic Maya Ritual Behavior: Regional Microwear Analysis of Stone Tools from Ceremonial Contexts. In *The Interpretative Possibilities of Microwear Studies*, edited by Bo Gräslund, Helena Knutsson, Kjell Knutsson, and Jaqueline Taffinder, pp. 147-158. AUN 14. Societas Archaeologica Upsaliensis, Uppsala.
- 1992 *Maya Ceremonial Specialization: Lithic Tools from the Sacred Cenote at Chichén Itzá, Yucatán*. Prehistory Press, Madison.
- Smith, Alfred Ledyard  
1950 *Uaxactun, Guatemala: Excavations of 1931-1937*. Publication 588. Carnegie Institute of Washington, Washington, D.C.
- Smith, B. Holly  
1991 Standards of Human Tooth Formation and Dental Age Assessment. In *Advances in Dental Anthropology*, edited by Mark A. Kelley and Clark S. Larsen, pp. 143-168. Wiley, New York. Available: <http://deepblue.lib.umich.edu/handle/2027.42/90867>.
- Smith, Robert E.  
1955 *Ceramic Sequence at Uaxactun, Guatemala*. 2 vols. Publication 20. Middle American Research Institute, Tulane University, New Orleans.
- Smith, Robert E., and James C. Gifford  
1966 Maya Ceramic Varieties, Types, and Wares at Uaxactun: Supplement to “Ceramic Sequence at Uaxactun, Guatemala.” Preprint of *Middle American Research Records* 3:125-174. Publication 28. Middle American Research Institute, Tulane University, New Orleans.
- Stemp, William J.  
2001 *Chipped Stone Tool Use in the Maya Coastal Economies of Marco Gonzalez and San Pedro, Ambergris Caye, Belize*. BAR International Series 935. British Archaeological Reports, Oxford.
- 2004 Maya Coastal Subsistence and Craft-Production at San Pedro, Ambergris Caye, Belize: The Lithic Use-Wear Evidence. *Lithic Technology* 29(1):33-73.
- Stemp, William J., Christophe G. B. Helmke, and Jaime J. Awe  
2010 Evidence for Maya Household Subsistence and Domestic Activities: Use-Wear Analysis of the Chipped Chert Assemblage from Pook’s Hill, Belize. *Journal of Field Archaeology* 35(2):217-234.
- Stuart, David  
1988 Blood Symbolism in Maya Iconography. In *Maya Iconography*, edited by Elizabeth P. Benson and Gillett G. Griffin, pp. 175-221. Princeton University Press, Princeton.
- 2006 *Sourcebook for the 30th Maya Meetings, March 14-19, 2006*. Mesoamerican Center; Department of Art and Art History, University of Texas, Austin.
- 2007 Old Notes on the Possible ITZAM Sign. *Maya Decipherment: decipherment.wordpress.com/2007/09/29/old-notes-on-the-possible-itzam-sign*.
- 2010 Shining Stones: Observations on the Ritual Meaning of Early Maya Stelae. In *The Place of Stone Monuments: Context, Use, and Meaning in Mesoamerica’s Preclassic Transition*, edited by Julia Guernsey, John E. Clark, and Barbara Arroyo, pp. 283-340. Dumbarton Oaks, Washington, D.C.
- Stuart, David, and George Stuart  
2008 *Palenque: Eternal City of the Maya*. Thames and Hudson, New York.
- Suzuki, Isamu  
2001 Microbial Leaching of Metals from Sulfide Minerals. *Biotechnology Advances* 19(2):119-132.
- Syms, Steven A., Christopher W. Rainwater, Erin N. Chapman, Desina Rachael Gipson, and Andrea L. Piper  
2008 Patterned Thermal Destruction of Human Remains in a Forensic Setting. In *The Analysis of Burned Human Remains*, edited by Christopher W. Schmidt and Steven A. Symes, pp. 15-54. Academic Press, London.
- Taschek, Jennifer T., and Joseph W. Ball  
1999 Las Ruinas de Arenal: Preliminary Report on a Subregional Major Center in the Western Belize Valley (1991-1992 Excavations). *Ancient Mesoamerica* 10(2):215-235.
- Taube, Karl A.  
1988 A Study of Classic Maya Scaffold Sacrifice. In *Maya Iconography*, edited by Elizabeth P. Benson and Gillett G. Griffin, pp. 331-351. Princeton University Press, Princeton.
- 1989 The Maize Tamale in Classic Maya Diet, Epigraphy, and Art. *American Antiquity* 54(1):31-51.
- 1993a *Aztec and Maya Myths*. University of Texas Press, Austin.
- 1993b The Iconography of Mirrors at Teotihuacan. In *Art, Ideology, and the City of Teotihuacan*, edited by Janet C. Berlo, pp. 169-204. Dumbarton Oaks, Washington, D.C.
- 1998 The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple. In *Function and Meaning in Classic Maya Architecture*, edited by Stephen D. Houston, pp. 427-478. Dumbarton Oaks, Washington, D.C.
- 2000 *The Writing System of Ancient Teotihuacan*. Ancient America 1. Center for Ancient American Studies, Barnardville, NC.
- 2003a Ancient and Contemporary Maya Conceptions about Field and Forest. In *The Lowland Maya Area: Three Millennia at the Human-Wildland Interface*, edited by Arturo Gómez-Pompa, Michael F. Allen, Scott L. Fedick, and Juan J. Jiménez-Osornio, pp. 461-492. Food Products Press, New York.
- 2003b Maws of Heaven and Hell: The Symbolism of the Centipede and Serpent in Classic Maya Religion. In *Antropología de la eternidad: la muerte en la cultura maya*, edited by Andrés Ciudad Ruiz, Mario Humberto Ruz Sosa, and María Josefa Iglesias Ponce de León, pp. 405-442. Sociedad Española de Estudios Mayas, Madrid.
- 2004a Structure 10L-16 and Its Early Classic Antecedents: Fire and the Evocation and Resurrection of K’inich Yax K’uk’ Mo’. In *Understanding Early Classic Copan*, edited by Ellen E. Bell, Marcello A. Canuto, and Robert J. Sharer, pp. 265-295. University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia.
- 2004b Flower Mountain: Concepts of Life, Beauty and Paradise among the Classic Maya. *Res: Anthropology and Aesthetics* 45:69-98.
- 2005 The Symbolism of Jade in Classic Maya Religion. *Ancient Mesoamerica* 16(1):23-50.
- 2010 Where Earth and Sky Meet: The Sea in Ancient and Contemporary Maya Cosmology. In *Fiery Pool: The Maya and the Mythic Sea*, edited by Daniel Finamore and Stephen D. Houston, pp. 202-219. Peabody Essex Museum; Yale University Press, New Haven.
- 2011 Iconographie du monde maya ancien. In *Maya de l’aube au crépuscule: Collections nationales du Guatemala*, pp. 50-57. Musée du quai Branly, Paris.
- 2013 The Classic Maya Temple: Centrality, Cosmology and Sacred Geography in Ancient Mesoamerica. In *Heaven on Earth: Temples, Ritual and Cosmic Symbolism in the Ancient World*, edited by Deena Ragavan, pp. 89-125. Oriental Institute, University of Chicago.
- Taube, Karl, and Stephen Houston  
2010 Lidded Bowl with the Iguana-Jaguar Eviscerating Humans. In *Fiery Pool: The Maya and the Mythic Sea*, edited by Daniel Finamore and Stephen D. Houston, pp. 250-253. Peabody Essex Museum; Yale University Press, New Haven.
- Taube, Karl A., and Reiko Ishihara-Brito  
2012 From Stone to Jewel. In *Ancient Maya Art at Dumbarton Oaks*, edited by Joanne Pillsbury, Miriam Doutriaux, Reiko Ishihara-Brito, and Alexandre Tokovinine, pp. 134-153. Dumbarton Oaks, Washington, D.C.

- Taube, Karl, William Saturno, David Stuart, and Heather Hurst  
2010 *The Murals of San Bartolo, El Petén, Guatemala, Part 2: The West Wall*. *Ancient America* 10. Boundary End Archaeology Research Center, Barnardsville, NC.
- Than, Ker  
2013 Giant Maya Carvings Found in Guatemala. *National Geographic Daily News*: news.nationalgeographic.com/news/2013/08/pictures/130807-maya-frieze-discovered-holmul-guatemala-archaeology.
- Tiesler Blos, Vera  
1998 *La costumbre de la deformación cefálica entre los antiguos mayas. Aspectos morfológicos y culturales*. Instituto Nacional de Antropología e Historia, Mexico.
- Turner, Christy G., II, C. R. Nichol, and G. Richard Scott  
1991 Scoring Procedures for Key Morphological Traits of the Permanent Dentition: The Arizona State University Dental Anthropology System. In *Advances in Dental Anthropology*, edited by Mark A. Kelley and Clark S. Larsen, pp. 13-31. Wiley, New York.
- Ubelaker, Douglas H.  
1999 *Human Skeletal Remains: Excavation, Analysis, and Interpretation*. 3<sup>rd</sup> ed. Taraxacum, Washington, D.C.
- Valdés, Juan Antonio  
2005 El Grupo A: nacimiento y ocaso de la Plaza Este. In *El período Clásico Temprano en Uxactún, Guatemala*, edited by Juan Antonio Valdés, pp. 27-68. Instituto de Investigaciones Antropológicas y Arqueológicas, Universidad de San Carlos, Guatemala.
- Valdés, Juan Antonio, and Federico Fahsen  
1995 The Reigning Dynasty of Uxactun during the Early Classic: The Rulers and the Ruled. *Ancient Mesoamerica* 6(2):197-220.
- Valdés, Juan Antonio, Federico Fahsen, and Gaspar Muñoz Cosme  
1997 *Estela 40 de Tikal. Hallazgo y lectura*. Instituto de Antropología e Historia de Guatemala, Guatemala.
- Vasanthakumar, Archana, Alice DeAraujo, Joy Mazurek, Michael Schilling, and Ralph Mitchell  
2013 Microbiological Survey for Analysis of the Brown Spots on the Walls of the Tomb of King Tutankhamun. *International Biodeterioration & Biodegradation* 79:56-63.
- Vaughan, Patrick  
1985 *Use-Wear Analysis of Flaked Stone Tools*. University of Arizona Press, Tucson.
- Vázquez de Agredos Pascual, María Luisa  
2007 Los colores y las técnicas de la pintura mural maya. *Proceedings of the Anales del Museo de América* 15:55-66.
- Von Winning, Hasso  
1987 *La iconografía de Teotihuacán. Los dioses y los signos*. Universidad Nacional Autónoma de México, Mexico.
- Walsh, Jane MacLaren  
2008 The Dumbarton Oaks Tlazolteotl: Looking Beneath the Surface. *Journal de la Société des Américanistes* 94(1):7-43. Available: <http://jsa.revues.org/8623>.
- Wagner-Döbler, Irene  
2003 Pilot Plant for Bioremediation of Mercury-Containing Industrial Wastewater. *Applied Microbiology and Biotechnology* 62(2-3):124-133.
- Watanabe, John M.  
1992 *Maya Saints and Souls in a Changing World*. University of Texas Press, Austin.
- Welsh, W. Bruce M.  
1988 *An Analysis of Classic Lowland Maya Burials*. BAR International Series 409. British Archaeological Reports, Oxford.
- Wisdom, Charles  
1950 Materials on the Chorti Language. Microfilm Collection of Manuscripts on Middle American Cultural Anthropology 28. University of Chicago Library, Chicago. Available: [www.utexas.edu/courses/stross/chorti/](http://www.utexas.edu/courses/stross/chorti/).
- Wright, Lori E.  
2005 In Search of Yax Nuun Ayiin I: Revisiting the Tikal Project's Burial 10. *Ancient Mesoamerica* 16(1):89-100.
- Wright, Lori E., Juan Antonio Valdés, James H. Burton, T. Douglas Price, and Henry P. Schwarcz  
2010 The Children of Kaminaljuyu: Isotopic Insight into Diet and Long Distance Interaction in Mesoamerica. *Journal of Anthropological Archaeology* 29(2):155-178.
- Yadeun, Juan  
1993 *Toniná*. El Equilibrista, Mexico.