
THE ANTHROPOLOGY OF MESOAMERICAN CAVES

Paul F. Healy

Brady, James E., and Keith M. Prufer, eds. *In the Maw of the Earth Monster: Mesoamerican Ritual Cave Use*. Austin: University of Texas Press, 2005. viii + 438 pp.

Prufer, Keith M., and James E. Brady, eds. *Stone Houses and Earth Lords: Maya Religion in the Cave Context*. Boulder: University Press of Colorado, 2005. xv + 392 pp.

Caves used in antiquity had multiple functions and often long use histories. While many were employed for shelter, some became ritual sites. Revitalized interest in caves in Mesoamerica combines archaeology, ethnography, ethnohistory, epigraphy, and osteology. The current, general anthropological study of caves offers exceptional insights into early Mesoamerican customs, ceremonies, and beliefs, and indicates that caves played a significant role in religion. The evidence suggests that some caves were perceived as vital aspects of a sacred landscape and connections to the supernatural underworld. Continuity of indigenous ritual practices associated with caves remains to the present.

Keywords: Archaeology, caves, ethnography, ethnohistory, Mesoamerica, religion



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Human exploitation of caves, caverns, and rock shelters is a global phenomenon of great antiquity. In the Old World evidence exists for human (and even pre-human) use of these features during the Paleolithic period. In the Americas, while cave use is not as early, Paleoindian period hunter-gatherers sought out caves for temporary habitation at the close of the last Ice Age. The great antiquity of the cultural use of caverns has long attracted anthropological attention. Cave sites include some of the most famous archaeological sites in the world, including Choukoutien (China), Shanidar (Iraq), Klasies River (South Africa), Tabun and Skhul (Israel), Franchthi (Greece), Spirit (Thailand), Devil's Lair (Australia), Gatecliff and Meadowcroft (United States), Coxcatlan and Guila Naquitz (Mexico), and Pikimachay and Guitarrero (Peru). All of these locales demonstrate a habitation role, with convincing evidence for domestic activities (Fagan 2007).

At a variable point in human prehistory, societies around the globe began to perceive and employ caves in an alternative manner. While habitation continued in some, many caves began to be decorated with works of art, suggesting a non-residential function. In Europe, cave sites such as Lascaux (France), Altamira (Spain), and Chauvet (France) became repositories for stunning Paleolithic wall paintings, which have been interpreted as ritual in nature (Bahn and Vertut 1988). Caves and rock shelters of Australia also have produced an abundance of early rock art, suggesting associated ceremonialism. The diversity of function, antiquity of use, and often remarkable degree of artifact preservation, has lured archaeologists into caves as early as the 19th century.

The Mesoamerican culture area (essentially from Mexico to Honduras) has an array of caves and rock shelters, many of which were employed in antiquity by indigenous peoples. Two recent edited books on Mesoamerica examine new data from sites and cultures of this area. Using specialists drawn from all fields of anthropology, the editors seek an understanding of why caves were selected and used (well after the emergence of states with permanent architecture), and exactly how they were employed. The outcome is not only a fascinating look at cave use in one important part of the Americas, but also an indication of how cross-field anthropological study can produce an enriched knowledge of ritual activity and complex belief systems.

The editors, James E. Brady and Keith M. Prufer, are archaeologists known for their pioneering investigations of caves in the Maya subarea, and this is the strength of both books released in 2005. *In the Maw of the Earth Monster* (henceforth *Maw*) showcases recent

archaeological, ethnohistorical, and ethnographic research dealing with caves across Mesoamerica (Brady and Prufer 2005a). *Stone Houses and Earth Lords* (henceforth *Stone Houses*), deals entirely with cave explorations in the Maya Lowlands of Mesoamerica (Prufer and Brady 2005a). The goal of *Maw* is “to bring together a selection of the most recent field research on ritual caves and the latest interpretations of their meaning and significance for modern and Pre-Columbian Mesoamerican peoples” (Brady and Prufer 2005b:1). The focus of *Stone Houses* is narrower, “to illuminate the breadth and quality of cave studies currently being undertaken across the Maya Lowlands”, demonstrating that such studies are important and increasingly a part of mainstream Maya archaeology (Prufer and Brady 2005b:1–2).

The contributions of 40 researchers are represented in these two volumes. Of the two books, *Maw* pays greater attention to recent ethnographic studies of indigenous use of caves, while *Stone Houses* has primarily an archaeological content. The volumes contain a wealth of new information derived from recent fieldwork in caves which, by itself, constitutes a valuable contribution to the discipline. Investigations of dozens of different caves, located in Mexico, Guatemala, and especially Belize, are provided. Many of these sites have not been previously reported.

A number of themes run through the chapters of both volumes, including the importance of studying caves as foci of religious activities of the past and present in order to better understand the complex ritual behavior of indigenous groups of Mesoamerica. Some authors discuss caves with respect to their perceived or metaphorical (symbolic) role in early fertility and water rites, as pilgrimage sites, portals to a supernatural world, places of ritual transformation and legitimization, or as the remote, hidden home of deities. The physical and cosmological connection between caves and surface sites is explored, as is the physical alteration of caverns, and the removal, trade, and use of cave materials at surface settlements. Importantly, many caves in Mesoamerica served as the repositories for interments. *Stone Houses* has a significant section devoted to the interpretation of human skeletal remains from Maya caves, and the insights that osteology can provide.

The two books are amply illustrated, with maps, plans, photographs, original line drawings, and indexes. Each provides an exceptionally rich bibliography on cave use in Mesoamerica, and especially about the archaeology of caves. Combined, they provide abundant proof that the most fruitful analysis of ancient and modern use of caves in Mesoamerica, and elsewhere, relies on a cross-subfield

anthropological approach. The editors argue that despite a long history of investigation in Mesoamerica, research on cave sites here has been neglected for several decades. The publication of *Maw* and *Stone Houses* demonstrates that this trend has been reversed and cave studies are in the process of renewal.

UNDERSTANDING THE MEANING AND ROLE OF CAVES IN MESOAMERICA

How do we know what early indigenous inhabitants of Mesoamerica thought about caves? Can we comprehend their ancient use and meaning today? There are a variety of anthropological approaches which have been pursued by pioneers like J. Eric S. Thompson (1959), Doris Heyden (1975, 1976), E. Wyllys Andrews (1965), and David M. Pendergast (1969, 1970), and both traditional and novel methods have been employed by authors in these two new books. We begin with the foundation to all Mesoamerican studies.

Ethnohistory, Chronicles, and Symbolism

Importantly, cave use by the aboriginal population of early Mesoamerica is described by many 16th and 17th century Spanish chroniclers. Their frequent references to caves reveal unequivocally the importance and rich symbolism of these landscape elements to the indigenous population.

Discussing cave ceremonies in Mesoamerica, Heyden (2005) describes the contributions of selected chroniclers on this subject. For example, the first friar to the Caribbean region, Ramon Pané (1974[1571]), and the official historian of the Spanish explorations, Antonio de Herrera (1945[1601]), both reported that their native informants believed the sun and moon were “born” in a cave. The remarkable native-recorded Florentine Codex, overseen by Fray Bernardino de Sahagún (1950–1982[1569]) in Mexico, indicated that the Aztec god of fire, Xiuhtecuhtli, resided in water in the center of the earth, an expression widely understood to mean a water-filled cave. Indeed, a variety of ethnohistoric accounts indicate a belief that not only the gods but also the first humans came from caves (Heyden 2005:22). Among the Aztecs, this “womb of the earth” was known as Chicomoztoc (Seven Caves). Discussing Aztec beliefs, the friar Diego Duran (1995[1579]) reported the significance of these caves as “the place of the origin of humanity.” Duran stated that there was a widespread belief that all the major native tribes of highland Mexico originally came from the cave of Chicomoztoc.

The chroniclers also comment on some of the ritual activities associated with caverns. There is mention, for example, that the Chichimec nation performed penance for four days, fasting, and bloodletting at the cave of Chicomoztoc (Aguilar, Medina, Tucker, and Brady 2005). In the 17th century, a Dominican friar, Francisco de Burgoa (1934[1670]), refers to the importance of several cave shrines in the Mixteca Alta of Oaxaca (Mexico). These caves had been used as burial sites for ancient rulers of the region, including the royal family of Tilantongo (Rincón Mautner 2005:121). Spanish missionaries reported that the caves contained “idols” revered for their oracular-divinatory powers. These cave idols of Oaxaca were reputed to be able to foretell the future, or provide healing for illnesses (Spores 1984).

Using ethnohistoric accounts, Pre-Hispanic *codices* and *lienzos* (16th century picture books and paintings), combined with archaeological data, Carlos Rincón Mautner (2005) reconstructs the pre-historic use of caves in the Mixteca region. From multiple accounts, it is clear that cave cults flourished in the highlands of Oaxaca at the time of the conquest, but there are few Spanish descriptions of the rituals performed. Some Pre- and Post-Columbian codices provide simplified imagery of what may have been actual cave ceremonies (Rincón Mautner 2005: Figure 6.3). The author compares pictorial images from the codices with those from a large cave-tunnel, called the Colossal Natural Bridge, in the Coixtlahuaca Basin of Oaxaca. The cave-tunnel has some remarkably well preserved wall paintings which suggest religious activity. The style of the figures, symbols, and day-bearer signs can be related to the art of the Nuiñe of Oaxaca (Rincón Mautner 2005). The paintings of anthropomorphic and animal figures, along with Pre-Hispanic calendar glyphs, indicate likely cave-tunnel use during the Classic and Postclassic periods. When these images are contrasted with those from Contact period codices, some of the iconography on the cave walls can be linked directly to the Rain God, Cocijo, and others to the famed Mesoamerican deity, Quetzalcoatl, as the Wind God. There are also depictions of offerings, deer, and human sacrifice. Rincón Mautner (2005:134) speculates that the cave-tunnel may have been an important “place used for rituals associated with the shaman’s or ruler’s transformation during vision-seeking experiences”, linking religion, ritual, and politics.

It is from these early European accounts that the first anthropological notions emerged about how Mesoamerican peoples viewed aspects of the landscape around them as “sacred” (Aguilar et al. 2005:69). Geographic features such as caves, mountains, and springs

(and water in general) were named, and recognized as playing a role in the religious conception of this sacred landscape, or what might be termed a “cognized environment” (Rappaport 1979:5). Some natural features, like caves, were identified with mythological events from antiquity (e.g., the earth’s creation, the origin of humanity, residence of the gods, etc.). Others, especially water, were perceived to derive from the interior of the earth, or mountains, with caves being the portals to this life-giving commodity. Many caves, of course, are wet, and water can often be found dripping from the ceiling of caves, or pooling in deeper galleries. Archaeologists have discovered ancient Maya ceramic *ollas* (water jars) positioned carefully beneath such dripping stalactites to collect this cave water, presumably for use in their rituals (J. Awe, personal communication, 2005; Thompson 1959:124ff).

Among the Aztecs, before execution, some sacrificial victims were purposefully bathed in sacred water from a cave spring (Sahagun 1950–1982[1569]). Water from subterranean cavities, and its control, was also very important to the Yucatec Maya. Caves and *cenotes* (natural wells, or water holes, found in the Yucatan karst zone) are frequently mentioned in the Maya *Books of Chilam Balam* (Brown 2005:382–387, 396). Indeed, several passages indicate caves and water holes “were ritually associated with lineages at Mayapán”, the famed Late Postclassic period center, and to Maya practices of ancestor worship.

In examining 16th and 17th century maps created by the indigenous population seeking to legitimize their land claims following the Spanish conquest, features such as caves, mountains, and water sources regularly appear as crucial landmarks alongside population centers. Studying the site of Acatzingo Viejo, in Puebla (Mexico), investigators show that the idea of the cave of Chicomoztoc as an origin point was applied by others in Mesoamerica to preserve their sense of identity, using caves near their homeland, and referring to these as their own Chicomoztoc (Aguilar et al. 2005). Angel J. Garcia-Zambrano (1994:218) argues that Mesoamerican peoples sought out locations with landscape markers of sacredness when searching for new places to settle. Caves are one such category and those at Acatzingo Viejo came to represent the “very basis of ethnic identity” for this population (Aguilar et al. 2005:85).

While many other Contact period sources could be cited, it is apparent that archaeological reconstructions today are based on a foundation of ethnohistoric accounts and documents with essential information about caves, native mythology, beliefs, and symbolism. Their study remains a key component of cave research in Mesoamerica today.

Archaeology, Landscape, Artifacts, and Ritual

Over a century of archaeological study has revealed that many caves and rock shelters throughout Mesoamerica were used by Paleoindian and Archaic period hunter-gatherers as temporary, or seasonal, habitation sites (Flannery 1986; Velázquez V. 1980). However, by the Preclassic period, maize agriculture was widespread, and farming villages had evolved across much of the culture area. It is at this time that some of the first signs appeared of caves used in ceremonial contexts. For example, about 1000–600 B.C.E., paintings occur in caves in Guerrero (Mexico). The wall paintings are elaborate in nature and display at this early date an already rich iconography that suggests caves were employed as ritual localities associated with fertility, agriculture, and political rule (Joralemon 1971; Reilly 1995).

About the same time as the Guerrero caves were in use on the Pacific coast of Mexico, several monumental, carved, stone “altars” from Olmec sites on the Gulf Coast depict elite individuals of this precocious society in a cave-like front cavity. These altar “niche figures,” surrounded by maize imagery, have been interpreted as representations of Olmec site rulers seated in the mouth of a cave. David C. Grove (1973:134) theorizes that the “emergence from the cave” was central to Olmec kingship, the ruler’s mythical Underworld origins, and claims to divine status.

These Preclassic examples demarcate the transition from more egalitarian societies in Mesoamerica to ones of marked social inequality. Cave-like images also appear later, during the Classic period, on Maya polychrome vase paintings and carved stelae (Stone 2005a:Figure 7.1). Like the Olmec images from centuries earlier, Maya representations of caves also contain symbols of verdant vegetation, especially of what appear to be maize plants. Other examples could be cited, but what is evident is that ceremonial cave use and symbol-rich images of caves occur very early in Mesoamerican prehistory.

While the research of ethnohistorians has identified a ritual role for caves in Mesoamerica, archaeological investigators have begun to ask explicit questions, employ more intensive field methods, and use more sophisticated theoretical models regarding caves. While it is not possible to cover all the themes discussed in these two volumes, examples of some of the new directions in archaeological research will be instructive.

What, for example, was the relationship between caves and nearby surface centers? How were these different types of sites viewed by the people of antiquity? Was a particular cave used only by the

inhabitants of one (closest) center, or by people from many nearby (or distant) sites? The recent practice of integrating cave investigations into the major studies of Maya (surface) centers has allowed archaeologists to begin to gauge the connections between these two classes of site (Awe 1998; Brady 1997; Brady et al. 1997; Healy, Song, and Conlon 1996; Prufer 2002; Rissolo 2005).

Several chapters of both *Maw* and *Stone Houses* argue that caves served as key elements of the ancient, artificial, constructed environment, with caverns being closely aligned with (or even physically connected to) nearby monumental centers (Brady 1997). Some archaeologists make the case that Maya caves were perceived as potent features of the physical landscape that were purposefully linked with the architecture of ceremonial centers to affirm the power and status of the elite of that center.

Judging from ethnohistoric studies, caves in Mesoamerica have long been viewed as linked with creation, fertility, deities, and sacred ancestors. Accepting this, it is not surprising to see the lengths to which the ancient Maya went to establish a linkage to, or presence at, caves. Indeed, if natural caves were not available nearby, the Maya occasionally created cave-like features at surface centers to remedy this. At the center of Muklebal Tzul (Belize), with no natural caves nearby, an artificial tunnel leading from a ceremonial plaza at the site to a spring-fed, subterranean well has been identified (Prufer and Kindon 2005:26). The cave-like tunnel had many of the features of a natural cavern. This allowed the residents here to “center their community over a feature with both mythical and sacred qualities” (Prufer and Kindon 2005:40). Such artificial (“pseudo”) caves, often with water sources, are also reported from the Maya highlands, Oaxaca, and Central Mexico, suggesting that their creation may have been part of a pan-Mesoamerican belief “that the built environment is a reflection of the natural world.” It is possible that the replication of such elements of sacred landscape in civic-ceremonial architecture bolstered the status of site rulers and religious specialists overseeing such features (Prufer and Kindon 2005:26–40).

The natural presence of water, a life-giving substance, in so many caves in Mesoamerica surely reinforced the notion that these subterranean sites were special. Given the growing acceptance of the linkage of water, caves, cenotes, and mountains in Mesoamerican religious thought, investigators argue for the existence of a “conflated symbolism of the water-filled mountain and its cave opening in site planning in Mesoamerica” (Prufer and Kindon 2005:30). Increasingly, evidence reveals that many water sources were carefully incorporated into Pre-Columbian site architecture, with water from

some caves clearly considered “sacred and distinct from water found on the ground” (Prufer and Kindon 2005:30).

At the site of Dos Pilas (Guatemala), the ancient Maya went so far as to purposefully orient some of their major acropoli around water-bearing caves and springs (Brady 1997). At Mayapán, a natural cave is located below the main pyramid and connected to a large, central cenote at the site (Brown 2005:391). This placement, temple over cave, can be interpreted as linked to Mesoamerican creation myths, and likely had mythic significance with Xibalbá, the Maya Underworld, symbols of origin and completion, birth and death. Water, then, was one powerful element which seems to have been regularly tied to caves and their access. Citing research from the Yalahau region (Mexico), Dominique Rissolo (2005) reminds readers that caves were important not simply as sources of potable water, even in the arid, water-scarce Yucatán. It was the sacred nature of the caves that made their interior resources extra special. The examples cited above, and others, collectively suggest that there was a proclivity for the Maya, if not all Mesoamerican groups, to replicate elements of the sacred landscape of mythology in their formal site planning and building.

The orienting of architecture around caves in a specific manner may support the argument for an “architectural grammar” with specific rules for Maya site planning (Ashmore 1991). Timothy W. Pugh (2005:47) examines ways that the Late Postclassic period Maya incorporated caverns (as well as cenotes) into their “built environment” using data from Mayapán. Not all Postclassic Maya temple assemblages contain associated caves (Pugh 2005:63). However, where they do occur such caverns seem to be located consistently in the same part (northwest quadrant) of temple assemblages. The west, he notes, is the direction connected “with death and the underworld, both of which are (also) associated with caves.” Pugh (2005:63) contends that when natural caves were not present, the Maya would create artificial penetrations into the earth to serve as replacement features. While an intriguing idea, more examples of such orientations are needed.

Employing new data from Actun Nak Beh (Belize), archaeologists have demonstrated that this cavern is actually connected to the ceremonial center of Cahal Uitz Na by a 240 m long built causeway (Halperin 2005). The site has a mixture of “constructed” and “conceptualized” landscapes (Knapp and Ashmore 1999:10–11). The civic center and cave, combined, have features formed by humans (built architecture) and natural features (cave) pregnant with religious symbolism. Christina T. Halperin (2005:82) argues that the leaders of

Cahal Uitz Na appropriated, and then controlled, this sacred “resource” (cave), gaining power in the process by physically joining the secular site and the sacred cave through construction of the *sacbe* (an elevated Maya road). Control over the use of the cave legitimated their political rule by “writing it into the landscape.”

In the absence of physical evidence connecting sites to caverns, are there other ways to demonstrate the ancient exploitation of caves by civic centers? The answer comes increasingly from artifact evidence, especially *speleothems* (broken pieces of cave formations) recovered at surface sites. Brady and his colleagues have studied the role of these curious geofacts (Brady, Cobb, Garza, Espinosa, and Burnett 2005; Brady, Scott, Neff, and Glascock 1997). They sought information to judge how common the practice of breaking off stalagmites and stalactites was among the ancient Maya. Investigators inventoried Balam Na Cave (Guatemala) and found evidence for extensive speleothem breakage (thousands of instances, with nearly 60% of all stalactites). Using a novel analytical technique, this activity was determined to have occurred in antiquity (not from modern vandalism) based on signs of stalactite regrowth. The transport of these calcium carbonate forms from caves to surface sites has also recently been examined at sites in the Sibun Valley (Belize). Investigators stress a possible “reciprocal nature” to such cave/center interaction. Most of the speleothems at surface sites in the Sibun region were incorporated into site architecture or burials (Peterson, McAnany, and Cobb 2005:230).

From ethnohistoric accounts it is known that Pre-Columbian Mesoamerican peoples developed a complex spatial classification system of their world, with organizational principles based, for example, on cardinal directions, quadripartition, and both horizontal and vertical divisions of their universe (Coggins 1980). Can archaeologists detect the spatial “mind set” of these early societies based on the detailed analysis of undisturbed cave sites? Several investigators in *Maw* make a stab at this, and focus on what might be termed the “cognitive mapping” or “cognitive archaeology” of caves.

As more research is done, it has become increasingly apparent that the distribution of artifacts inside caves is neither haphazard nor casual. Geographical Information Systems (GIS) analysis of artifact patterns in the cave site of Actun Tunichil Muknal (Belize), for example, has been used to increase knowledge about rituals, and concepts of ancient Maya “spatial cognition” (Moyes 2005a). Can artifacts and their distribution be “read,” as part of a spatial-functional analysis, to understand how caves (and the universe in general) were perceived by the ancient Maya?

In this regard, the highly ritualized context in caves could be an advantage because it provides modern investigators with a clear interpretive paradigm to be used (Moyes 2005a:269). Furthermore, it is known from ethnographic research that ritual activities are nearly always repetitive in nature, helping to produce more recognizable spatial patterns of use and discard in the artifact record. Using a GIS analysis, Holley Moyes identified, tabulated, and graphically plotted over 1400 artifacts from this cave. A “k-means cluster analysis” was then employed to identify distinct artifact groups. This produced identifiable patterns of artifact distribution in the cave which was then compared to ethnographically generated spatial models. The comparative study indicates that the patterns of artifacts in the cave were not random but point to a “quincuncial template that references the creation of the cosmos” corresponding to an ethnographic model of “foundation rites” (Garcia-Zambrano 1994).

The importance of “cognized spatial models” used to organize the external world and how these leave useful traces in the archaeological record of well-preserved, enclosed spaces (such as caves) is also discussed by Andrea Stone (2005b). She describes how ritual practitioners in the past likely established order on the places they used, and decided exactly where offerings would be positioned in caverns. She concludes that archaeological evidence from Lowland Maya caves shows that the placement of ritual offerings often occur in very elevated, or very low, and usually remote locations. These secluded, often darkened spaces were selected “to achieve metaphysical balance and thereby assure a positive outcome for the ceremony” (Stone 2005b:249).

The placement of artifacts in caves in high and low positions is a striking feature of caves. These same locations are problematic, and sometimes dangerous, for archaeologists to access. The high-low contrast in artifact distribution, in some cases requiring construction and use of bush ladders or vines to access these points in antiquity (and today) may have been part of a deliberate ritual circuit conducted in the caves, not unlike the modern Roman Catholic “Stations of the Cross” ritual processions (Stone 2005b:256).

These types of cognitive models are intriguing, and not unreasonable to project onto the past. However, they are also difficult to verify archaeologically. If enough evidence of artifacts in caves is marshaled, and more detailed distributions recorded, then patterns of “spatio-ritual behavior” may eventually be recognized. At present, cave archaeologists are still at the preliminary, data-collecting stage of analysis. Additional case studies like these are needed.

Who used the caves of ancient Mesoamerica? Could anyone enter a cave and perform private rites, or were caves only used for public

ceremonies? Was each cave associated with only one affiliated center? Investigation of the cave interior at Actun Nak Beh (Belize) revealed that it was used at certain times for public ceremonies. Use of the cave by site leaders and their followers probably helped to form “community solidarity and identity” (Halperin 2005). Employing collective ritual experiences to foster community identity and social values has been well documented in ethnographic studies of the Tzotzil Maya (Mexico) (Vogt 1976:99) and other non-Mesoamerican cultures (Turner 1969:97, 1973:207–8). In addition, there was evidence recovered at Aktun Nak Beh to hint at linkages with nearby polities, a phenomenon increasingly recognized from Maya cave sites.

For example, the wall paintings and epigraphic texts of Naj Tunich (Guatemala) reveal that this large cavern was visited by elite dignitaries and religious specialists from different centers (Stone 1995:183). In this sense, visits (pilgrimages?) to sacred caves, and then to their most closely affiliated surface centers, may have been skillfully manipulated by some ancient Maya elite to secure political alliances and build regional coherence through the combination of religious rites with political interaction.

Do we know if caves functioned as pilgrimage sites in Mesoamerica? Cultural anthropologist Victor Turner (1973) and others have noted that researchers have neglected “pilgrimage” as an important topic of study, despite the fact that pilgrimage centers engage actors in both the religious and secular world, making them fascinating subjects. Shankari Patel (2005), using cave data supplemented by ethnohistoric accounts, explores this question. She documents a rich history of Pre-Columbian pilgrimages to Cozumel Island (Mexico). Ethnohistorians such as Francisco Lopez de Gomara (Simpson 1964), who chronicled Cortes’s 1519 expedition, noted that there were numerous temples across the Yucatán at which the Maya made sacrifices. Gomara indicated that the Cozumel shrines attracted religious followers from the mainland who came to worship, and Landa stated that the pilgrims to Cozumel were dedicated to Ix Chel, the Maya goddess of fertility, childbirth, divination, and medicine (Tozzer 1941:109).

While Pre-Columbian Cozumel has been characterized as an important Maya trade center, Patel suggests the island markets and centers here were related more to their religious, pilgrimage function (Sabloff and Rathje 1975). There is evidence for trade but Patel sees this as an outgrowth of religious traffic. Landscape, again, is a key element of Mesoamerican pilgrimage circuits. A number of these visitation sites appear to have been caves and cenotes which received pilgrim offerings. There are caves on Cozumel with altars or

architecture built into them; others have large pools of water. Patel (2005) shows that the caves exhibited evidence of ancient ritual use, and suggests they were an integral part of the ancient Ix Chel pilgrimage circuit. The caves were accessible from the specially built *sacbe* network, which facilitated a ceremonial circuit by the pilgrims on Cozumel. Essentially, the ancient inhabitants of Cozumel, not unlike modern counterparts, benefited economically from these sites and the associated activities of their visitors.

Just how significant, then, were caves to the economy in Mesoamerica? What can cave archaeology indicate about the impact of religious practices on the economy? Knowledge about ancient Mesoamerican economics is variable. Due to decades of concentrated research, investigators know a good deal about agriculture as the foundation of the Pre-Columbian economy. There has been improvement in the understanding of Mesoamerican craft production, and of inter-regional exchange of certain, traceable goods (e.g., jade, obsidian, etc.). However, there have been few attempts to analyze the allocation of economic resources, examining what types of activities absorbed societal wealth, and virtually nothing, until now, on the role of caves in ancient economies.

Brady (2005) examines the impact of religion on the economy of the ancient Maya, arguing that ritual items used in cave ceremonies were of considerable importance in both the political and economic realm. He points out that it can be difficult in archaeology to isolate ritual components of multi-use surface sites. However, with more information suggesting that most caves were functioning as religious spaces, it can be argued that “artifacts within (a) cave can be taken as...a ceremonial assemblage.” Brady (2005:116) contends that “single function, purely ceremonial features such as caves...provide the surest and easiest context for analyzing a host of problems associated with religion and ritual.”

In a data-rich chapter, artifact types derived from a study of 22 caves in the Petexbatun region (Guatemala) are compared with those from the major center of Dos Pilas to gain insights about how much “wealth” the Maya were expending as part of cave rituals. To conduct the analysis, artifacts produced by craft specialists and/or involving exotic raw materials were used. In the end, it can be argued that the economic allocations made to cave ritual, at least as exemplified by the caves of Dos Pilas, were of great importance (Brady 2005:126). Not only was there an abundance of exotic and often well-crafted artifacts recovered from the cave deposits, but some of the finest examples from many of these artifact classes were recovered in cave deposits, not from the surface site.

How similar, or different, were the activities being conducted in these Mesoamerican caves? Are all caves alike in the ceremonies performed? Were all parts of the caverns used in just the same fashion? It turns out that there is variation in each cave in terms of patterns of use, with discernible distinctions between, for example, the “twilight-zone public-ritual activities” and activities and rituals performed in more “restricted, dark-zone areas” (Prufer 2005:186). Examining variability in artifacts and cave types to gain insights to activities that may have been performed by different ritual specialists, evidence from 47 caves in the Maya Mountains of southern Belize was marshaled.

It was determined that in the better lit, more accessible areas of the cave Chab’il’ Uk’al, for example, there were signs of public ceremonial activities. The evidence included remains of an altar stone, the shattered remnants of dozens of large incense burners, crania of sacrificed mammals (tapir and peccary), and over 125 *candeleros* (likely small incense burners). In contrast, at other caves and rock-shelters in this same region, investigators instead found numerous burials. It appears that some caves, in contrast to Chab’il’ Uk’al with its public function, served primarily as (more private?) mortuary sites for certain surface centers (Prufer 2005).

Who visited and performed rituals in caves? Are there any clues to who the primary actors were in these ancient rites? In many ways, caves may be the best context in which to explore the roles of individuals, such as ritual specialists, because caves retain “[w]ell-preserved, in situ deposits representing the indisputable remains of ceremonial behaviors” (Prufer 2005:14). The clear differences between artifact types found in the dark zones vs. semi-light zones in the caves near Ek Xux (Belize) suggests, for example, that it may be possible to discern the activities of at least two types of ritual practitioners. This notion of public vs. private (light vs. dark zones) has also been suggested by Brady (1989:402, 2005), and Stone (1995:239) has drawn distinctions between wet and dry zones of caves, related to Maya art and ritual activity.

Some of the darkest (private) zones of caves in the Maya subarea contain remains of highly specialized objects (e.g., crystals, wood benches) which, based on ethnographic and ethnohistoric accounts, were possessions typical of shamans involved in ritual activity. These differ from the more ornate, and often exotic, goods (e.g., effigy censers, imported shell, jade) typically found in semi-light (public) zones of caves. While the data are not yet conclusive, Prufer (2005:214) makes an argument that it may be possible, with additional comparative research, to identify who the ritual specialists were based on the distribution and types of artifacts.

Scribes, a secondary tier of Maya nobility, also are potential candidates to have visited caves. They may have used cave pilgrimages as a “mechanism. . .to affirm their ongoing relationship with the supernatural” (Stone 2005a:136, 144). Perhaps they visited these sacred places, as pilgrims, to acknowledge “the divine source of their craft, affirming their legitimacy and supporting their (elevated) social positions by doing so.” The cave texts at Naj Tunich, for example, include self-references to scribal visits, where they appear to have been trying to connect with the divine source of their offices. Landa (in Tozzer 1941:153) mentions that holy water, which likely came from a cave or cenote, was used in the purification rites for ancient Maya codices. Were scribes chosen to enter caves to collect “virgin” water for such ceremonies (Stone 2005a:139; Thompson 1959)? In sum, there were occasions, in certain caves, where there was elite (ruler or scribe) and also non-elite (commoner) usage. As discussed below, the latter were sometimes buried in caves as sacrificial victims. On occasion, ancient caves likely provided a focus for worship by the population at large, and a place to commune with their deities and deceased ancestors. Ethnographic analogs exist even today for this.

What kinds of ritual behavior can be identified in the archaeological record? What do we know about the ceremonies? Jaime J. Awe, Cameron Griffith, and Sherry Gibbs (2005) describe three caves in western Belize that contain vertically standing megalithic monuments. These modified stone slabs, which bear no carved inscriptions, resemble taller, more elaborate *stelae* (vertical stone monuments) found at surface sites across Mesoamerica. The cave monuments (0.8–1.2 m) were made from stone (slate and limestone) brought into the caves. They were erected in the deep chambers, propped up with broken stalagmites and stalactites, and accompanied by cultural materials (such as obsidian bloodletters) likely associated with ceremonial activity. The caves (Actun Tunichil Muknal, Tarantula Cave, and Actun Chechem Ha) had abundant broken ceramics, including censers representing the God of the Underworld, scattered around the monuments, in “stela chambers” located hundreds of meters from the cave entrances.

Crude, stela-like megalithic slabs have been reported in caves on the Yucatán Peninsula, at Tancah and Balankanche (both Mexico), and at Naj Tunich (Guatemala). At the latter, a crude altar was paired with the “stela.” Brady et al. (1997), and others, have also recorded subterranean caverns in which large stalagmites have been purposely erected in a similar manner to that described in the Belize caves. In all cases, it is common to find pottery, especially censers, obsidian, carved shell, and quantities of ash, in association with these

“monuments.” Awe and colleagues (2005) argue that these represent a Lowland Maya cave “stela/altar/burnt offerings” ritual assemblage associated with darkened, restricted access, chambers of caves, and dating to the Late Classic to Early Postclassic period (AD 800–1000). They contend that the Maya performed bloodletting rituals in front of these erected cave monuments (see also Graham, McNatt, and Gutchen 1980; MacLeod and Puleston 1978). Interestingly, at the center of Yaxchilan (Mexico), a very large speleothem had been removed from a cave, carved with a representation of several male figures bloodletting, and then used as a stela at the center (Tate 1992:132).

Aside from autosacrifice, what other types of rituals may have been conducted inside Maya caves? Based on a wealth of newly identified, well-preserved paleobotanical remains from caves in Belize, Christopher T. Morehart (2005:174) argues that domesticated crops, especially maize (*Zea mays*), were being ritually offered in caves to appease Earth Gods associated with agricultural fertility and reputedly resident in caverns. As such, the remains of domesticates such as corn, beans, squash, and chili peppers, along with the remains of fruit, may well have been elements of cave fertility and agricultural rites. Caves can provide exceptional opportunities for finding well-preserved organics. Morehart’s success in identification of paleobotanical remains demonstrates yet another very promising aspect of cave research. This form of ritual activity (crop offerings) is also mirrored by modern Maya rites (Vogt 1969:457, 1976:17).

In ancient Mesoamerica, there was an established linkage between sweatbaths and caves (Heyden 1981, 2005; Vogt and Stuart 2005). Both spaces are dark, enclosed, “womb-like,” associated with fertility, and childbirth. Using archaeological, ethnographic, and ethnohistoric examples, Moyes (2005b) shows that both elements were connected with purification, fertility, and regeneration. She argues that a construction deep inside Chechem Ha Cave (Belize) was for a ritual Maya sweatbath. It is plausible that the “sweatbath-in-a-cave” rituals were related to the Earth Gods, and associated with creation and renewal, possibly as early as the Preclassic period in the case of the Lowland Maya. Recall, too, the pilgrimages to the Cozumel shrines of Ix Chel, a deity of fertility, pregnancy, and childbirth.

While an abundance of new archaeological evidence from caves comes from the Maya Lowlands, some chapters in *Maw* refer to archaeological investigations of caves in other parts of Mesoamerica. One of the best is a report by Janet Fitzsimmons (2005) on the remote, and remarkably undisturbed, Blade Cave (aka Cueva de los

Perdernalles) in the Mazatec region of Oaxaca. Difficult access likely protected this cavern from vandalism. A thorough description of the cave occupation, which dates from AD 1–1250, with its excellent preservation, and its archaeologically rich contents, is provided. The latter included whole ceramic vessels which, at one time, held perishable organic offerings, as well as jade, turquoise, *olive* shells, coral, stone jewelry, elaborate mosaics, and prismatic obsidian blades.

Fitzsimmons (2005:108) notes that the native population of the region still performs ceremonial blood sacrifices. Ritual practice of blood sacrifice is also well documented by ethnographers of the region (Parsons 1936; and others). Evidence is marshaled for the sacrifice of animals at Blade Cave, with remains of dogs and other small animals noted, and the presence of bifacially chipped blades, similar to those hafted to wooden handles and observed in use by ethnographers here as recently as the 1950s. Prismatic obsidian blades were used in Pre-Columbian times for human self-sacrifice as well, with blood collected on slate pallets. Both obsidian blades and carved slate slabs were recovered, suggesting that “autosacrificial bloodletting (was) part of the Blood Cave rituals,” reminiscent of Awe’s report from Belize (Fitzsimmons 2005:109). In addition to abundant archaeological remains, the Blade Cave also contained a “Guardian Figure” crudely pecked from a cave stalagmite, which most likely was associated with local Earth or Rain Gods. Rain shrines in caves are well documented by the 17th century chronicler Burgoa (1934) for Oaxaca (Spoes 1984:152–3).

From these examples, and others raised by authors of these volumes, it is possible to see the range of questions being asked by archaeologists today. Their answers, based on a striking amount of new data, are leading to valuable insights about the role of caves in Mesoamerican antiquity, and a richer understanding of the Pre-Columbian lifeways of which they were a part.

Biological Anthropology, Mortuary Customs, and Sacrifice

Some of the most interesting recent advances in understanding ancient Mesoamerican use of caves relate to physical anthropology and bioarchaeology. While it was Thompson (1959) who provided the best early discussion of cave use by the early Maya, and explicitly identified caves as places for “burials, ossuaries, and cremations,” even he did not seem to have a clear view of what burials in caves meant to the ancient Maya. Less than 20 years ago, W. Bruce M. Welsh’s (1988) comprehensive study of Classic Lowland Maya burial practices paid only limited attention to cave interments arguing that

there were simply too few adequate descriptions to deal with the topic satisfactorily (but see Brady and Stone 1986).

Who was interred in the caves of Mesoamerica, with what methods, and why? What can the osteological remains tell us about the deceased? What types of ceremonies were conducted in association with cave interments? We still cannot adequately answer all these questions, but progress has been made.

In *Stone Houses*, Ann M. Scott and James E. Brady (2005) provide an excellent overview of human remains found in caves from the Maya subarea, examining the data in regional and temporal contexts, and establishing categories of functionally different behaviors. Data are documented from dozens of Maya caves in a useful review. They also discuss how the study of osteological material from Maya caves can provide definitive evidence of human sacrifice, especially child sacrifice.

Human sacrifice, according to Spanish chroniclers, was a widespread religious practice in contact period (and Pre-Columbian) Mesoamerica. While Scott and Brady (2005) focus on Lowland Maya data, evidence for the sacrifice of children in caves, with burial subsequently occurring there, also comes from Oaxaca, Central Mexico, and elsewhere. Frequently, such practices appear to have been connected with the worship the Rain God. If one accepts the premise that large, Lowland Maya cenotes are similar, functionally, to caves, acting as portals to the Underworld, then the evidence for associated human sacrifice is even more compelling (Coggins and Shane 1984; Hooten 1940).

Some of the problems and complexities of interpretation of burials and mortuary practices in caves are ably described by David M. Glassman and Juan Luis Bonor Villarejo (2005). Their excavations of the Caves Branch Rock Shelter (CBRS) in central Belize revealed the remains of over 150 individuals buried in a dense, ossuary-like setting. The authors note huge quantities of *jute* (*Pachytilus* sp.), and other worked shells, mixed with soils as the matrix deposits of the cave (Halperin, Garza, Prufer, and Brady 2003; Healy, Emery, and Wright 1990). Few fancy, elite burial items were recovered from CBRS. Based on the artifacts found with the interments, it is suggested that this cavern was used primarily as a burial locale, with a “domestic type” of ritualism by commoner Maya from the surrounding area. In other words, sacred caves were not always the privilege of only the ancient Maya elite.

Preservation of human skeletal remains at tropical lowland surface sites is typically poor. By contrast, caves can protect such fragile remains and provide invaluable, well-preserved osteological data.

The quantity of the burials at CBRs, and the large number of individuals of all ages and both sexes, provide an excellent demographic profile, and useful new data on health status and the incidence of disease. CBRs are also significant because so much information published on ancient Maya burials relates solely to the elite class. At CBRs there was a long history of use for the interment of the common Maya (Glassman and Bonor V. 2005).

The role of rock shelters as special burial zones with excellent preservation is also documented by Julie M. Saul, Keith M. Prufer, and Frank P. Saul (2005) for sites of the Maya Mountains of Belize. The protective, dry soil conditions and (again) dense concentrations of *jute* shell resulted in “unparalleled conditions for recovery of (human) skeletal data” (Saul et al. 2005:299). The multiple caverns of the Ek Xux valley also contained considerable mortuary evidence for the common Maya. Skeletal remains were found in fairly equal representation of adult males and females, with abundant remains of children and immature individuals as well. The caverns provide exceptional new data on burial positions, health, nutrition, and cultural practices. There was also evidence for cranial shaping, dental decoration, activity indicators, stature, and even healed trauma.

Using a “bioarchaeological” approach, studying the human remains in their archaeological context, Vanessa A. Owen (2005) makes the case that sacrifice played a major role in the osteological deposition at the Barton Creek Cave (Belize). Here, over two dozen individuals were interred, often in quite deep, inaccessible areas, and in rimstone depressions, crevasses, and alcoves (see also Gibbs 1997). Some of these human remains represent formal burials, while others appear to have been more hastily, or haphazardly, deposited. A general absence of grave goods in the burials, especially elite-class items, reinforces the notion that these individuals were commoners in ancient Maya society (Owen 2005:331). Some of the interments in Barton Creek Cave were associated with humanly modified cave formations, and often were found with ash and charcoal lenses. The latter suggests that burning was a common feature associated with cave interments (Owen 2005:323).

While ethnohistoric and iconographic sources are often employed in anthropological discussions of sacrifice in ancient Mesoamerica, osteological remains can provide direct evidence for human sacrifice. This may be in the form of skeletal mutilation. Ethnohistoric sources on the Yucatec Maya mention human sacrifices in caves, and the use of caves as repositories for the victims (Owen 2005:325; Tozzer 1941). Some ethnographically documented uses of caves in Mesoamerica also note the presence of human remains (see Petryshyn 2005).

Over the past 30 years, a number of archaeologists have suggested that the ancient Maya may have buried sacrificed individuals in caves (Brady 1989; Gibbs 2000). Children and young adults, in particular, seem to have been favored as sacrificial victims in Mesoamerican societies (Hooten 1940; Macleod and Puleston 1978). In comparing the distribution of age groups from Barton Creek Cave and three others in western Belize, nearly half of the individuals identified ($N = 81$) were either infants (<3 years) or children (3–12 years) (Owen 2005:Table 17.4). The unnatural, contorted, or “bound” position of some adult individuals in the Barton Creek Cave suggests that these individuals were sacrificial victims (Owen 2005:332).

Cenotes, often viewed as sacred places with water, also produce evidence showing this preference for younger sacrificial victims. The recent study of human remains from the Cenote of Sacrifice at Chichen Itza by Vera Tiesler (2005) also reveals a predominance of subadults in the sample, matching the Colonial era accounts of the sacrifice of children at the great natural well.

Some archaeologists have noted that because the remains of Maya ancestors were often buried in caves, the lineages of these deceased were intimately connected to this landscape (McAnany 1995:110, 159). Through repeated use, caves became the focal point for Maya kin groups. Perhaps pilgrimages to caves in antiquity were held for commemorative rites and ritual feasting, not unlike the annual Day of the Dead ceremonies in present-day Mexico, to honor the memory of deceased family members (Zender et al. 2001).

Ethnography, Analogy, Cultural Continuity, and Epigraphy

Ethnographers in Mesoamerica have had a long-standing interest in the role of caves among indigenous groups. One ethnographer who has had a very significant impact on cave studies was Evon Z. Vogt (1964a,b). He contributed through providing 40 years of seminal ethnographic research with the Tzotzil Maya, and through his interest in using ethnographic data to better understand the ancient Maya. Vogt (1969, 1976) identified caves (and some mountains) as modern shrine sites employed by the Maya to communicate with the supernatural. His examination of caves as key elements of a “sacred landscape” was an important theoretical advancement (Vogt 1981). Virtually all cave research conducted by archaeologists today in the Maya subarea makes reference to Vogt’s seminal, detailed ethnographic work in the 1960s and 1970s.

Jaroslav T. Petryshyn’s (1969) early ethnographic study is also interesting, and translated into English for the first time in *Maw*.

He describes a cave pilgrimage in the Lacandon area (Mexico) that he observed firsthand in 1968. Given the known reluctance of the Lacandon to permit outsiders to visit their cave shrines, let alone observe cave ceremonies, this was a rare opportunity. He describes the Lacandon pantheon, the pilgrimage-like trek to the cave, the appearance of the cavern, and the ceremony itself. Human skeletal remains (of undetermined age) were noted inside the mouth of the cave. Copal incense was burned in specially made ceramic censers (God pots), and petitions made to the cave deity, *Tsibaná*. This deity is associated with the arts, and also the agricultural cycle. Caves and ancient Maya archaeological ruins are both viewed by the Lacandon as places of worship, and residences of the gods (Petryshyn 2005:330). They also believe that their God pots become the embodiment of their deities, who are present during cave rituals.

With this background, what kind of cave research is being conducted by ethnographers and linguists today in Mesoamerica? In *Maw*, there are several chapters devoted to modern ethnographic research with a focus on ritual use of caves. In regard to linguistic studies, new breakthroughs by Maya epigraphers, often working closely with ethnographers, have advanced our understanding of ancient Maya hieroglyphic texts and culture history (Martin and Grube 2000).

Chapters with an ethnographic focus in the new volumes include Alan R. Sandstrom's (2005) detailed study of a modern day pilgrimage by natives to a cave. In 1998, at a time of severe drought in the Huasteca region of Veracruz (Mexico), a group of Nahua and Otomi people set out on a religious trek to visit two caves in a tall, distant, sacred mountain (an extinct volcano) to appeal for rain. The group, about 50–60 individuals, viewed the caves as “the homes of water and thunder spirits” and “the pilgrims brought offerings to assuage the spirits’ apparent anger (Sandstrom 2005:35).

The pilgrimage to the caves was organized, over a period of months, by an elderly shaman (over 70 years old) from a Nahua village. The situation must have been grave because the costs to organize the pilgrimage were considerable (Sandstrom 2005:35). Indeed, only two pilgrimages like this had taken place in the previous century. The Nahua perform rituals at the cave for a pantheon of deities whose history can be traced to the Pre-Columbian era, or are today fascinating “syncretized” spirits, combining both Native Mesoamerican and Roman Catholic sacred beings (Sandstrom 2005:36). Rituals at the caves involved the construction of altars, blood sacrifice, divination, crystal gazing, circumambulation, chanting, music, dancing, and making offerings. Sometimes Nahua

pilgrims are known to visit Pre-Columbian archaeological sites with these too being recognized as sacred.

Offerings by the Nahua were designed to help achieve a balance (harmony) between human society and the forces of nature. These late 20th century cave rituals performed by the Nahua in Veracruz served as a “type of exchange so that people would be positioned to receive from the spirit realm the flow of benefits that are necessary for their lives” (Sandstrom 2005:37). Rainwater, of course, was one crucial element required, and essential to make their crops grow.

One female deity identified as of special interest for the Nahua is *tonantsij*, meaning “sacred mother.” She is closely associated with the earth and both human and crop fertility in her guise as a manifestation of the rain or water goddess (Sandstrom 2005:45). She is perceived by the Nahua to live in a cave, from which she can carefully watch crop growth, and the human production of children. Today in Mexico *tonantsij* is also closely associated with the modern image of the Virgin of Guadalupe, whose statue is removed by shamans each year for the winter solstice, and led in a procession of unmarried girls around a ceremonial circuit. Sandstrom’s (2005) documentation of the Nahua cave pilgrimage, religious beliefs, and ceremonies is fascinating because it hints at likely cultural continuity from the Pre-Columbian past to the present among the Nahua.

Several new essays are collaborations. These explore how ethnographic investigations of current ritual practices among the highland Maya, involving caves, potentially can reveal interpretive possibilities for archaeology. For example, Abigail E. Adams and James E. Brady (2005), an ethnographer and archaeologist respectively, combine their research interests to examine some Q’eqchi’ Maya cave rituals in Alta Verapaz (Guatemala). Adams, for her part, describes the sacred sites and deities, known collectively as Tzuultaq’a, of the Alta Verapaz region. Using the term “sacred geography,” she notes that this revered territory has not only religious significance to the Q’eqchi’, but also strong economic and political connotations as well.

Adams makes the important point that there is not just one holy site in Tzuultaq’a requiring devotion, but many (in fact, 13 principal sacred mountains with caves in them). These are all integrated within a “regional network of sites.” The number (13) is significant to the Maya, and each mountain has an associated deity, some male, some female. These deities of Tzuultaq’a are viewed as Earth Owners (or Earth Gods), and the Q’eqchi’ petition these supernaturals “for the resources necessary for subsistence agriculture and human health. The deities of Tzuultaq’a hold—and withhold—water, land, trees, wild game, corn, beans, chiles, squash, and other crops” (Adams and

Brady 2005:305). There is also a belief that all of these sacred mountains and their caves hold water (with springs and streams inside them). Again, the connection of mountains, caves, and water as part of the sacred landscape seems widespread among Mesoamerican groups (Vogt 1969:387). The Q'eqchi' state that their gods live in these mountain caves in their *rochoch pec*, or "stone houses."

The sacred sites of Tzuultaq'a are visited by the Q'eqchi' on special occasions to "conduct rituals concerned with subsistence agriculture, illness, rites of passage, and commerce" (Adams and Brady 2005:307). Offerings left at the sites during these ceremonies include candles, incense (copal-*pom*) burned in ceramic censers, cacao, corn, liquor, and flowers. In antiquity, of course, auto-sacrifice was also performed at many Maya shrines (Tozzer 1941:222). Sometimes, Adams reports, the Q'eqchi' hold all-night vigils before making (sacrificial) offerings, and/or conducting penitential purification rites (Wilson 1995).

Pilgrimages are organized by ritual practitioners to selected sites, involving multiple stops, some of which include buying and exchanging of goods for their offerings. As such, spin-off economic activities are connected to these sacred circuits today, and it is not unreasonable to suggest that this occurred in the prehistoric era as well (see Brady 2005; Patel 2005). The authors also describe a special "corn planting" ritual, and a cave pilgrimage. The richness of their ethnographic descriptions of the modern Maya preparations, pilgrimage, and the cave ceremonies is noteworthy, as is their discussion of gender and cave ritual.

In a very interesting, "Back to the Future" case of sacred site development, Brady describes how the archaeological discovery of Naj Tunich resulted in this spectacular Pre-Columbian cavern re-emerging as a pilgrimage site for modern Maya. By 1988, less than a decade after being reported by archaeologists with wide media coverage, inhabitants of over a dozen Maya villages were visiting this archaeological cave site to make offerings to the Corn God for a successful harvest (Adams and Brady 2005:314).

One of the most absorbing chapters, in both volumes, was written by Vogt, just prior to his death in 2004, and David Stuart, a Maya epigrapher, on ritual cave use by the ancient and modern Maya. The combination of vantage points (one modern, one Pre-Columbian) skillfully demonstrates the "remarkable degree of overlap" between ethnographic and epigraphic research (Vogt and Stuart 2005:155). The authors argue that it is precisely in these areas of overlap that the "most long-lasting and most essential Maya beliefs surrounding the surface and interior of the landscape" can be discerned.

Vogt provides descriptions of some highland Maya perspectives and practices related to caves (Vogt and Stuart 2005:164–179). Many of these are linked to the concept of the modern day Earth Owner (Earth Lord) who, the Maya believe, lives inside the earth, and surely represents a contemporary version of a Pre-Columbian God of the Underworld. Rain Gods, thunder and lightning, and rain clouds are all associated with caves. It is noteworthy that witchcraft rituals, related to shamans “giving illness” or repulsing sickness (curing), are still performed today at shrines in caves near modern Maya hamlets. Sweat baths also are symbolically linked with caves. Finally, caves are often perceived as the sacred abode of principal ancestors, and the dwelling spot for *naguales* (animal alter egos) of all living things. Even today, the Maya break off pieces of cave formations and place these on their family, household altars, due to their perceived historical connection with fertility and sexuality. These surely are a direct continuation of the ancient Maya use of speleothems (Brady et al. 1997, 2005).

Stuart’s contribution focuses on several exciting breakthroughs in the translation of ancient Maya hieroglyphs. In particular, it is suggested that a common element of many ancient Maya texts should probably be read in Maya as *ch’en* (or *ch’een*), meaning “cave.” The hieroglyph appears similar, and likely related, to the Maya sign reading *muk* (or *muknal*), meaning “burial.” Thus, the putative, newly identified hieroglyph for “cave” seems to have strong visual affinities with the themes of death, burial, and the Underworld (Vogt and Stuart 2005:157). It is also noted that this potential cave glyph often follows the verbal sign *och*, in Maya texts, meaning “to enter,” and is frequently associated with the sign *ha*, or “water,” again suggesting “cave” as a reasonable translation of the glyph. While other readings might exist, the evidence currently favors “cave” for the glyph.

The authors examine several hieroglyphic texts from cave sites which, using the new translation for “cave,” seem to record “arrivals” of various visitors and refer to caves as “a pilgrimage or ritual center” (Vogt and Stuart 2005:160–162). Stuart’s earlier work with ancient Maya texts enabled him to decipher the Maya expression for “writing,” *tz’ihb*, and the phrase *u-tz’ihb*, “he writes” from one of the cave paintings of Naj Tunich (Stone 1995, 2005a:142). He went further to show that the subject of this clause was the name of an ancient Maya scribe, with a special title of *itz’at*, or “sage.” The hieroglyph suggests that the scribe in question, with two other protagonists, came “to see” Naj Tunich, which phrase might actually be a Maya metaphor for “pilgrimage”. All this fits nicely with the themes, discussed earlier, of caves as pilgrimage sites and meeting places, sometimes used by scribes.

James E. Brady and Pierre R. Colas (2005) take Stuart's reading of *ch'een* ("cave") one step further, and present several Classic Maya texts that appear to cite the destruction of caves related to the conquest of kingdoms. In one case, the text refers to the capture of a king of Palenque by the neighboring center of Tonina, and that the cave of the Palenque king, an important symbol of his rulership, was attacked. In another instance, there is a reference in the hieroglyphs to the destruction (the burning or desecration) of a cave of the ruler of a site called Sak Tz'i, and his retaliation for this act. Other similar references are made to cave destruction at Yaxhá and Naj Tunich.

While these glyphs may be read as simply a metaphor for destruction, or desecration, Brady and Colas (2005:156–159) believe the texts are describing actual acts of violence and warfare. In ancient Mesoamerica the determination of the victor in warfare may have had less to do with the number of combat casualties, and more to do with the capture, or destruction, of places crucial to the enemy. Perhaps, in Pre-Columbian times, the desecration of a sacred cave was akin to the burning of an opponent's main temple. Caves may have been targeted because of their seminal role in "sanctifying and legitimizing both settlement and rulership" among the ancient Maya (Brady and Colas 2005:163).

All these ideas reinforce a basic theme running through the two volumes under review, namely that caves were more important in the Mesoamerican worldview than most anthropological researchers have, heretofore, realized. *Maw* and *Stone Houses* make abundant reference to both early and more recent ethnographic research concerning caves. These studies have enabled an enrichment of the interpretations of archaeological evidence. On the linguistic front, epigraphic advances, now coming at a rapid pace, have provided some remarkable, new insights to the role of caves in Maya ritual life.

CONCLUSION

Anthropologists have been drawn to the study of caves because of the long history of human use, and all that this might reveal about cultural evolution. In addition, caves have often provided extraordinary artifact preservation, either because of their inaccessibility (to looters), or due to their protection of cultural remains from harsh climatic conditions. These were factors which attracted my archaeological interest to caves in southern Mesoamerica over 30 years ago (Healy 1974).

Although there is a long history of scholarly interest in the use of caves in Mesoamerica, the early studies were viewed as only peripherally important within the discipline of anthropology, despite

ethnohistoric accounts which indicated that caves were key elements of native religion at the time of European contact. The marginalization of early cave studies was because many of the original explorations were short-term and cursory. Most were judged, therefore, to be largely speculative. With a few exceptions, only very general interpretations resulted from the early work. In the past two decades, interest in cave research has been revived among anthropologists, as exemplified by the two volumes reviewed here.

The investigations showcased in *Maw* and *Stone Houses* are much more empirically based. The volumes present the work of a new generation of researchers, drawn from all the subfields of anthropology, who are tackling the complex issues related to cave use in Mesoamerica. Their research has demonstrated that there are numerous caves with evidence of human activity in Mesoamerica. Recent work has led to some of the first close comparisons between cave and surface sites, and their respective assemblages. A four-field approach has enabled novel investigations (methodologically and theoretically), and generated new perspectives about caves and their use.

Contemporary ethnographies reveal that among more conservative, traditional native societies of Mesoamerica the sacred nature of caves continues to be recognized. The use of ethnographic analogy by archaeologists has enabled a better understanding of the range and type of religious activities associated with caves, and to identify many Pre-Columbian parallels (Brady and Prufer 2005c:365–6; Prufer and Brady 2005b). Today, more investigators are using a multi-faceted approach, looking at caves as unique sites in which to collect data directly about ancient religious beliefs and practices. Explicit reliance on ethnographic studies and analogy has helped to reveal some of the deeper meaning of these features in the “sacred landscape.” Cave studies have allowed archaeologists to examine the practice of pilgrimage and ritual, and moved anthropology to a fuller appreciation of ancient Mesoamerican religion and cosmology. By studying archaeological and bioarchaeological information about caves, in conjunction with ethnohistoric, ethnographic, and epigraphic research, caves are being recognized “as transitional loci between structurally opposite cosmological spheres—namely earth and underworld, night and day, life and death” (Morehart 2005:167). This transitional, liminal quality of caves makes them extremely interesting subjects for anthropological study of symbolically rich ritual activities (Turner 1969).

There remain problems with cave research in Mesoamerica. These include the difficulties of acquiring adequate study samples inside caves, while coping with the problems of conducting research in poorly

lit, and sometimes physically dangerous, localities. Most of the authors in the volumes under review glossed over the many difficulties of working in dark, dank, cramped, and inhospitable cave environments. With the assistance of professional spelunkers, however, many of the practical limitations of cave research should be overcome.

None of the authors in either volume discuss any alternative (non-ritual) uses of caves in antiquity, despite the fact that these sites regularly contain evidence for habitation (e.g., grinding stones, food residues, utilitarian ceramics, signs of fires), and may have provided temporary, or emergency, shelter in times of inter-center warfare (Healy and Prikker 1989). The authors of these volumes have a strong adherence to the belief that the caves of Mesoamerica in late Pre-Columbian times were all ritualized, sacred (not mundane) sites. Others would be less sanguine.

More emphasis needs to be placed on regional studies, including both surface sites and cave sites. It is clear from the ethnographic work of Vogt, Adams, Sandstrom, and others, that caves are but one element, albeit a crucial one, in pilgrimage circuits today (and likely in antiquity). To fully understand the sacred landscape, all of its components must be included. Progress has been made on this front, but more needs to be done.

Archaeologists working at surface sites need to learn to identify and document cave remains, such as speleothems, because such occurrences are not accidental. Current research demonstrates that their removal to surface sites was intentional, and documentation may reveal deeper insights to another form of activity associated with caves. At present, investigators are experimenting with techniques to "source" the calcium carbonate formations, using chemical isotopes, to help determine from which cave a speleothem was derived (Holley Moyes, personal communication, 2007).

Most of the latest cave research has been focused on the Maya lowlands, where there is a natural abundance of subterranean sites. There is, however, a need for cave studies in many other parts of Mesoamerica. While the ancient Maya were an important part of this culture area and their beliefs are (to some extent) likely representative of other cultures in Mesoamerica, this cannot be taken for granted. To fully understand the role and importance of caves, we need a broader geographic database to facilitate more accurate comparisons. There is, in this way, an unfortunate imbalance of geographic coverage in the volumes discussed.

Finally, it also would have been useful to see in these volumes a perspective on religion, ritual, and caves, from a non-Mesoamericanist. There is not enough of a cross-cultural, non-Mesoamerican comparison,

which might have been effectively included as a final, synthetic chapter to both books. From a broad anthropological perspective, these volumes are quite particularistic in their outlook. Applying current theories or comparative works on religion from outside Mesoamerica might have proven both interesting and enlightening.

Overall, however, the burst of new fieldwork in caves has spurred development of distinctive approaches, and is providing a body of data that offers valuable insights into the nature of Mesoamerican culture. This research has greatly benefited from a cross-fertilization of studies by archaeologists, ethnohistorians, osteologists, epigraphers, and ethnographers. More specific questions are being asked about who was using these caves, how, and why. Anthropologists are acquiring explicit information about the nature of the rituals conducted. An important contribution of the current cave research is that it has taken the often vague, even abstract, descriptions of ethnohistoric accounts about native cosmology, and linked these to empirically grounded archaeological data to understand the ideology underlying ancient Mesoamerican societies. All these developments indicate that the future of cave studies in Mesoamerica is guaranteed, with these two volumes demonstrating that an era of exciting, new research has begun.

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