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Introduction

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Caves are special places. They are mysterious. They captivate us. They draw us in. They can protect or entrap. Whether they fascinate or frighten, we recognize caves as otherworldly, transitional, or liminal. Archaeologists are interested in caves because many are data rich, containing keys to unlocking the human past. They are one of archaeology's most important resources, often having excellent artifact preservation and deep stratigraphic deposits (see Colcutt 1979; Farrand 1985; Ford and Williams 1989, 317; Sherwood and Goldberg 2001, 145; Straus 1990, 256; 1997; Woodward and Goldberg 2001, 328). In addition to containing well-preserved material, in contexts of deep antiquity, cave sites are often easily located, whereas open-air sites may be ephemeral or more difficult to find. No doubt differential preservation and accessibility led early archaeologists to believe that in the remote past dwelling in caves preceded living in open-air sites so people must have preferred to live in caves.

Despite the information that can be gleaned from the wealth of cave deposits, the sites themselves, their functions, and their contexts have often been misunderstood. As inside Plato's allegorical cave, archaeologists see only shadows of realities (in this case, the past) that are subject to interpretation. It has long been assumed that caves functioned primarily as domestic spaces, an idea so prevalent that it reached the status of an interpretive paradigm—one that seldom came into question. This work challenges that model and elucidates an underrepresented aspect of cave use.

The chapters in this volume focus on the ritual use of caves for sacred, religious, special, or cultic pursuits as a generalized cultural phenomenon, cross-cutting temporal and spatial boundaries. It is the first effort to address directly the role of caves in ritual practice, myth, and worldview from a cross-cultural global perspective. The chapters encompass six continents and span temporal periods ranging from the Paleolithic to the present. Despite their collective breadth, however, these offerings barely scratch the surface of the topic. With literally tens of thousands of ethnographic, historic, and archaeological reports that address the ritual use of caves, how does one begin to understand the phenomena of ritual cave use? In order to move this research agenda forward, those contributors working in areas with strong cave traditions have been asked to synthesize the current state of knowledge from a regional perspective, whereas those working in areas in which cave investigations are less developed were asked to present case studies. Also included are historical and ethnographic accounts that illuminate aspects of cave use that are difficult to detect in the archaeological record—such as the roles of caves as political space or in identity construction—and chapters that directly advance the methodology, comparative studies, and cognitive considerations of archaeological cave studies.

In this volume, major regional cave traditions spanning long temporal periods are separated into Old and New World traditions. Old World traditions begin with Paleolithic caves in Europe. In chapter 1, Jean Clottes reminds us that this tradition is not only the earliest but also the longest-lasting religious tradition in the history of the world. Robin Skeates examines changes in ritual cave use from the Upper Paleolithic through the Bronze Age in the Apulia region of Southeast Italy in chapter 2, followed by Simon Stoddart and Caroline Malone's discussion of natural and man-made caves in late Neolithic Malta. In chapter 4, Peter Tomkins contributes one of the first synthetic considerations of the Neolithic caves of Crete, and the Neolithic is again the period of focus in Andrew Chamberlain's report on mortuary caves in Britain in chapter 5. Next, Yorke Rowan and David Ilan examine Chalcolithic burial caves in the Levant. Stuart Tyson Smith analyzes the role of caves in ancient Egyptian cosmology in chapter 7, followed by Mark Aldenderfer's synthetic chapter on the use and meaning of caves in Tibetan Buddhist traditions. Concluding the section on Old World ritual cave traditions, Paul Taçon and his colleagues Wayne Brennan, Mathew Kelleher, and Dave Pross investigate cave use in Australia, focusing on changes in use between the Pleistocene and the Holocene.

Turning to the New World, James Brady and I provide a synthesis of Mesoamerican cave research that defines a 3,000-year tradition of ritual cave use that can still be found today (chapter 10). Scott Nicolay advances a long-overdue synthesis of ancient ritual cave use in the American Southwest in chapter 11, followed by Patty Jo Watson's discussion of the evolution of cave archaeology in the Eastern United States. In chapter 13, Jan Simek and his colleagues Alan Cressler and Joseph Douglas present a current synthesis of cave art in the Southeastern United States, while Cheryl Claassen offers fresh interpretations of archaeological assemblages from Southeastern caves in chapter 14. The late Olaf Prufer and Keith Prufer reconsider the use of prehistoric caves and rockshelters in Ohio (chapter 15), while George Sabo III and his colleagues Jerry Hilliard and Jami Lockhart evaluate spatial patterning of ritual caves and rockshelters in the Ozarks (chapter 16).

The four case studies in Part III on ritual cave use include a reevaluation of the Neolithic cemetery within Niah Cave in Borneo by Graeme Barker and Lindsay Lloyd-Smith (chapter 17). Two chapters address the spectacular Iron Age Adriatic site of Nakovana: Timothy Kaiser and Stašo Forenbaher (chapter 18) describe and interpret this sealed site, while Joanna Appleby and Preston Miracle (chapter 19) present a methodological analysis of the faunal remains, offering insights into how this artifact class may generally contribute to examining ritual behavior. Finally, chapter 20, a case study of Preacher's Cave in the Bahamas by Robert Carr, William Schaffer, Jeff Ransom, and Michael Pateman breaks new ground in the interpretation of caves in the Caribbean.

Five chapters investigate historic or modern ritual use of caves. In chapter 21, Patrick McCafferty surveys Irish prehistoric and historic caves and examines their relationships to Irish folklore. Terence Ranger takes a deep historical perspective in describing the role of caves as power places in the construction of indigenous identity in Zimbabwe in chapter 22. Next, Sandra Pannell and Sue O'Connor discuss the political and social importance of caves in East Timor. Joseph Hobbs then focuses on how cave use both encourages social cohesion and reinforces ethnographic identity in modern Malaysian Hindu, Buddhist, and Taoist shrines (chapter 24). Nathan Craig in chapter 25 takes a quantitative ethnographic approach in his analyses of the uses and perceptions of caves among indigenous societies in the Andes. Donald Blakeslee then uses data gleaned from ethnographic reports to understand the cosmological implications of archaeological remains in and near caves of the Great Plains (chapter 26).

Some of the most forward-looking chapters in the volume present new ways to regard ritual caves, focusing on the cave space itself as a unit of analysis. Art historian Andrea Stone presents us with a synthetic piece that advances cross-cultural comparisons of ritual cave use and argues for emergent patterns based on levels of sociopolitical complexity and subsistence practice. Her chapter (27) also serves as a reminder of the importance of the changing relationships of humans to the landscape.

The final two chapters focus on how humans perceive the cave space itself. Ezra Zubrow (chapter 28) demonstrates the utility of spatial-constraint theory for intersite spatial analysis to examine the possible variations in the use of the cave space. His concern is to provide idealized models for comparing how a cave *can* be used as opposed to how it *is* used. This type of comparison highlights human behavioral patterns found in cave interiors, providing a unit of analysis that potentially addresses not only the behaviors themselves but the intentionality underlying behavioral patterns. This line of research is promising in looking at ritual practices in caves, and could aid in separating ritual from domestic usage.

In the concluding chapter (29), Daniel Montello and I examine the cross-cultural generality that caves—particularly their dark zones—are used as ritual spaces. We attempt to shed light on *why* this pattern is so robust by investigating shared human perceptions about caves or cave-like spaces using theories from environmental psychology and cognitive science. We hypothesize that shared perceptions of cave spaces lead to similar functions and meanings cross-culturally.

The chapters presented here illustrate the utility of both regional and case studies and represent a remarkable diversity in theoretical orientation. They demonstrate that data from caves may be employed not only in studies of cosmology, ritual, and religion, but in changing our understandings of ideologies and sociopolitical structures as well.

This volume may be counted as a success if it encourages researchers to critically evaluate and reevaluate archaeological and historical material from cave studies. The chapters collectively challenge early assumptions about the nature of cave use that lulled generations of archaeologists into an interpretive complacency. The following is a brief history of how caves initially and erroneously came to be thought of as domestic spaces.

THE ICONIC CAVE MAN

For over a century, the idea of living in caves has gripped the imagination of both scholars and the general public to the point that, in popular culture, the term *cave man* has become synonymous with early humans. This is not surprising when we consider that European caves produced some of archaeology's seminal finds. A short survey demonstrates that the popular notion of the cave man was well-entrenched by the late 1800s.

Much of the earliest evidence for the antiquity of man came from European caves in which Pleistocene mammal bones co-occurred with stone tools (see Daniel 1952). The cave man makes his appearance in early scholarly works such as Sir John Lubbock's *Pre-historic Times: As Illustrated by Ancient Remains, and the Manners and Customs of Modern Savages*, first printed in 1865. Lubbock devoted a chapter to "cave men" and noted in this early volume, "that some of the European caves were inhabited by man during the time of these extinct mammalia seems to be well established" (p. 257). A few years later, in his synthetic volume on European cave archaeology, *Cave Hunting: Researches on the Evidences of Caves Respecting the Early Inhabitants of Europe* (1874), W. Boyd Dawkins concluded that stone tools found in association with extinct mammal bones were the remains of "a hunting and fishing race of cave-dwellers" present in Europe during the Pleistocene (p. 430). The book was published only 15 years after Darwin's *On the Origin of Species* (1859) and only 3 years following *The Descent of Man, and Selection in Relation to Sex* (1871), which dealt with human evolution. The impact of such findings on a public that was only just coming to terms with the antiquity of humans (and for that matter, of the earth itself) had to have been considerable.

Given the early scholarship surrounding Paleolithic caves, it is hardly surprising that cave dwelling became the standard image of early man in popular culture. Images of our cave-dwelling ancestors have sparked the imaginations of the general public and raised the cave man to iconic status. As Bryan Hayden notes, the popular press often refers to prehistoric Europeans as "cave men" (2003, 100), and he goes on to observe that in prehistory, caves were not used as domestic spaces, though rockshelters were.

In a recent article, Judith Berman (1999) traces images of the cave man from the late 1800s to the present. The article features an 1873 artistic rendering from *Harper's Weekly* of a skin-clad couple camping in a rockshelter, labeled "The Neanderthal Man." The first Neanderthal discovery was in 1856 (Trinkaus and Shipman 1994, 4), so the illustration demonstrates that these kinds of images were in place soon after. By the 1870s, articles of archaeological interest were finding their way into popular magazines in Britain and the educated elite were expected to know something about the subject—so not only were these early finds popular among the general public, but they were part of the canon of knowledge for the well educated (Daniel 1952, 111–113).

Berman argues that the cave man image has a certain tenacity, and points out that some images are salient, taking on a life of their own that persist over time. Popular images with scientific merit can become galvanized, ceasing to be data dependent as scientific thought changes. The image of the cave man has this persistent quality and the distinction between the scientific models and popular culture have diverged only recently so that "the shaggy, grunting Cave Man, who fights dinosaurs, talks 'rock,' and woos prehistoric-bikini-clad Cave Women with a club, is firmly in place" (1999, 289).

Stereotypes of cavemen have been reinforced by over 150 films dating back to D. W. Griffith's 1912 silent movie *Man's Genesis*. More recent films like *The Clan of the Cave Bear* (1986), based on a 1980 novel by Jean M. Auel, and *Quest for Fire* (1981), based on the 1911 French novel by the brothers J.-H. Rosny, emphasize differences between Neanderthals and modern humans. The more primitive Neanderthals live in caves while the more advanced modern humans live in open-air sites. Although depictions of the cave man in the media are amusing, they are often quite racist, contrasting modern humans as more sophisticated and intelligent, less hairy, and possessing finer features, light skin, and blonde hair (e.g., Daryl Hannah in *The Clan of the Cave Bear*). Besides these skewed representations, popular culture not only reinforces but reinvents the stereotype that the preferred habitation for early man was the cave. It is interesting that even when spectacular cave art was discovered in Europe and became widely known in the early twentieth century, few images in popular culture depict ritual behavior or artistic expression as occurring in caves.

In 1910, in an address to the Anthropological Society of Washington titled "The Cave Dwellings of the Old and New Worlds," J. Walter Fewkes presented one of the first synthetic cross-cultural comparisons of human cave use. This and other early works focused on the evolutionary idea that people first lived in caves and that caves were the inspiration for later permanent structures. He concluded that caves were the "simplest kind of durable house" and that, as man's first form of habitation, provided the natural referent for the built environment. While he acknowledged that ritual and ceremony occurred in caves, these were minor considerations compared with the idea that, for early humans, caves were primarily dwellings.

The notion of the cave dweller did not easily die. It was revived by author David Kempe in 1988 in his volume *Living Underground*, which focused on cave dwelling from the past to the present. Though the work primarily expanded on Fewkes's 1910 paper, it is worth mentioning because it is one of the few volumes to examine cross-cultural cave use, and it included a short section on burial sites and ritual caves. However, Kempe introduced the book by parroting Fewkes's "cave first" model, stating that "for the first cave men, in the Stone Age, there was little option, unless one preferred to live in the open. Once the secret of fire had made cave dwelling so much safer and easier, it must indeed have been the first choice" (p. 7). In his final analysis, he relegated ritual use to a "secondary" status (p. 250). Kempe assumed that all caves were originally habitations and offered little explanation as to why caves transitioned to mortuary or ritual sites, other than to suggest that, due to superstitions about the dead, caves became places of fear once they were populated with burials.

Archaeologists are not immune to the appeal of the cave dweller. The legacy of early cave studies and the entrenched notion of the "cave man" in popular culture produced an interpretive climate in which archaeologists were willing to accept without question that caves were dwellings. They were rarely faulted. Archaeologists were rarely faulted when they assumed that cave deposits were the results of domestic behavior or storage, and the burden of proof typically lay in demonstrating that deposits were symbolic or ritual in nature. Nowhere is this better exemplified than in Mesoamerican archaeology. Although explorers and scholars found and recorded numerous deep caves for over 150 years, it was not until the 1970s that they were recognized as ritual spaces (Brady 1989; Brady and Prufer 2005; Moyes and Brady this volume). Artifacts found within caves were thought to be the result of habitation or storage, and this interpretation was not questioned until J. Eric S. Thompson published his 1959 article, "The Role of Caves in Maya Culture." Based on ethnographic analogy as well as his archaeological investigations, Thompson's article articulated a number of possible uses for caves that included their use as ritual venues. The 1959 piece was not originally well distributed, but it was reprinted in 1975 with a wider distribution. Partially because Thompson was the foremost Mayanist of his day, with great influence in the field, archaeologists began to recognize the significance of caves in Mesoamerican cosmology and worldview. However, it was not until the late 1990s, following archaeological investigations and reinterpretations of major cave sites, that the field widely accepted archaeological interpretations of caves as sacred space (see Brady 1989).

Mesoamericanists were not the only archaeologists to be affected by the paradigm of the cave dweller. Patty Jo Watson (this volume) discusses a similar shift in interpretive frameworks over the past 40 years of cave research in the Eastern United States and Peter Tomkins (this volume) makes a strong case for new interpretations for the caves of Neolithic Crete.

While interpretive frameworks are one of the challenges that have faced archaeologists, other issues include categorizing, describing, and defining the space itself. Exactly what do we mean by the word *cave*? The following is a good example of the problem of classification.

In his 1951 article, Robert Braidwood proposed a "cave stage"—a period during which people inhabited caves—as the earliest phase of Middle Eastern cultural development. In his model, cave dwelling transitioned into a stage in which people lived in open-air sites, and not until then did they begin to live in settled villages such as Jarmo. A few years later, in his discussion of general prehistoric cave use, Braidwood (1967, 48) clarified this position, suggesting that early people lived in open encampments as well as caves. He further states that they didn't actually live in caves but instead inhabited the *mouths* of caves. He goes on to say that they actually preferred rockshelters: "I'll go on using the term 'cave' since it is more familiar, but remember that I actually mean rock-shelter, as a place in which people actually lived."

The conclusion that caves are desirable dwellings can only be drawn when the term *cave* is employed in its most general usage. Likewise, the word *habitation* may further confuse the issue. For instance, to explain cave art in dark zones, Abbé Henri Breuil and Raymond Lantier (1965, 178–179) imagined that Paleolithic groups conducted weeks-long ceremonies while living underground. In this conceptualization, all cave use thus became "habitation." This example suggests that more-specific use of language needs to accompany shifts in interpretive frameworks.

In the few synthetic works on cave use, natural caves, man-made caves, and the many morphological cave types are all lumped together as functional equivalents. This

lumping of ontological categories obscures potential patterns. As research on caves grows, it is becoming clear that subsuming all subterranean spaces under one term creates a methodological roadblock in comprehending patterns in human cave use. For instance, the notion of dwelling in caves is bolstered by modern and historical examples of people who live in man-made caverns and tunnels. In works aimed at understanding cave use as a cross-cultural phenomenon, Fewkes (1910), Kempe (1988), and later Clive Bonsall and Christopher Tolan-Smith (1997) offer many examples of constructed and architecturally modified caves from Europe, Asia, Africa, the Near East, and the New World. These include cliff dwellings and pit houses from the American Southwest, villages constructed into rock faces and in front of natural caves in the Loire and Dordogne Valleys in France, and dwellings excavated from loess or volcanic tuff. Some of the best-known examples of excavated sites are from Cappadocia, Turkey. The area was occupied as early as 2000 BC by the Hittites, but it is the Byzantine-aged structures created by early Christians that attract the most attention. Dwellings, hermitages, monasteries, chapels, and churches were carved into "fairy chimneys," the cone-shaped, soft-tuff deposits for which the area is noted (Kostof 1972). They are picturesque and currently part of a thriving tourist industry that features "cave hotels" with luxury suites that are both plumbed and well lit, reinforcing the notion that living in a cave is desirable. Dwellings excavated from volcanic tuffs and loess are also common in Europe, the Mideast, Africa, and Asia—anywhere that the soft material can be found. Mark Aldenderfer (this volume) points out that, similar to Cappadocia, early monastic institutions in Tibet constructed monks' quarters from loess deposits, but he cautions that these are not natural caves and therefore are not regarded as sacred spaces in and of themselves. In Buddhist tradition, it is natural caves that contain *gnas,* a spiritual presence, whereas man-made caves must be imbued with it through ritual action.

THE PROBLEMATIC TERM *CAVE*

For years scholars have used the term *cave* to mean any cavity in the earth. Ontologically caves are holes. Defining holes and examining what constitutes their "holeness" is a complicated exercise taken up by philosophers. The very existence of holes is questionable, as they cannot exist alone but are dependent on their hosts. Holes are not made of anything, but they are not always empty and they can be filled. They are not just regions in space, they can be moved. They are subject to whole–part relationships. They are morphologically complex and come in many different forms. Philosophers Alberto Casati and Achille Varzi (1994) describe three basic types of holes: superficial hollows dependent on surfaces; perforating tunnels through which a string can pass; and internal cavities, like holes in swiss cheese, wholly enclosed within three-dimensional objects and having no contact with the outside environment. Each of these types has its own set of problems in theories about holes, which impacts how we describe, analyze, understand, and talk about them (Casati and Varzi 1994). As holes, caves entail many of the problems that philosophers describe regarding their ontology. Therefore, definitions of caves are slippery and difficult to pin down.

While *cave* may be a noun used to describe certain kinds of spaces, the definitions of caves depend on human interaction. In the *Encyclopedia of Caves*, geoscientist William White defines a cave as "a natural opening in the Earth, large enough to admit a human being, and which some human beings choose to call a cave" (1988, 60; Culver and White 2004, 81). Similarly in the *Encyclopedia of Caves and Karst Science*, John Gunn (2003) notes that the term *cave* is "commonly applied to natural openings, usually in rocks, that are large enough to permit entry by humans" (vii). In both encyclopedias the authors stress the human–cave interaction as important to their very definition, suggesting that caves are partially defined by human perceptions of them and cannot be defined in terms of their geology alone. Therefore the word *cave* is generally considered a nonscientific term.

Because the definition of caves is so broad, it conveys little useful meaning and must be context specific. Geologists tend to classify caves by their formation processes, such as solution, volcanic, glacier, crevice, littoral, piping, and erosion caves (Klimchouk 2003, 204). These classifications are useful for the discipline but are only minimally useful in conveying possible human interactions—or, borrowing J. J. Gibson's terminology, "affordances" (see Montello and Moyes, this volume). For anthropologists and archaeologists, a typology needs to reflect human perception combined with the geomorphology of the feature, particularly in regard to the presence, absence, or quality of light. Natural light not only impacts the affordances of human usage, but of the biology of the cave as well.

One commonly recognized morphological distinction is between caves and rockshelters, and is a consequence of the functional and perceptual differences between them. A rockshelter is usually defined as "a cave, often at a cliff base, with a more or less level floor extending only a short distance so that no part is beyond daylight" (Jennings 1997). Thus, rockshelters are caves but caves are not necessarily rockshelters, and the terms should not be used interchangeably. In studies involving the human use of these spaces, the distinction between the two is critical to archaeological interpretations.

The quality of light in cavities may be divided into three zones: light, twilight, and dark (Faulkner 1988). When cavers refer to "caves," they are usually describing spaces that can be entered by humans and that contain a dark zone, as opposed to rockshelters, which are open and possess light or twilight areas. There are many combinations of the two, and geomorphology plays a large role in creating dark zones. For instance, a space may consist of a very long, narrow, straight tunnel enabling light to enter or it may have a relatively shallow tunnel whose passage makes an abrupt turn, creating a dark zone.

The myriad of morphological possibilities makes classification difficult, so archaeologists typically describe sites as best they can. Many archaeologists who work in caves have no background in spelunking or karst studies, making standardized description more difficult. In addition, though descriptive nomenclature developed by professional or avocational cavers is certainly the most systematic for describing cave features, it does not always include phenomena most useful to archaeologists. It is no wonder that there has been so much descriptive confusion, and that basic components of cave morphology as well as descriptions of light quality are often omitted in archaeological reports.

THE DARK ZONE

The distinction between caves and rockshelters and their quality of light is critical to understanding the cave context and to constructing plausible archaeological interpretations. Rockshelters containing light and twilight zones have often been used for habitation but these same sites may also contain ritual deposits, such as in cases presented from the North American Midwest by Prufer and Prufer in this volume. Changes in shelter function and use may also occur over time, complicating interpretive efforts.

Although shelters may be used in habitation, the use of cave dark zones as living spaces is rare. According to William Farrand (1985, 23), dark zones of true caves are useless for even temporary habitation except under extreme or desperate conditions. Examples could include refuge in times of war (see Ranger, this volume) or as shelters in extremely cold conditions. Paul Taçon and his colleagues (this volume) describe dark-zone habitation in Tasmania under brutally cold conditions about 30,000 BP. It is such a rare occurrence that if prehistoric people were living in dark zones, the question one should ask is, why?

The notion that dark zones served as ritual, symbolic, or liminal spaces in prehistory is not new. Many archaeologists have argued that Paleolithic people did not inhabit deep caves despite the early seductive interpretive paradigm of the "cave man." In 1933, Miles Burkitt wrote:

> The expression "cave man" is somewhat misleading; our prehistoric forerunners never lived in the depths of their caves. For one thing caves are very damp and rheumatism seems to have been as rife then as it is now; furthermore, they would have required perpetual artificial light. They did, however, frequently inhabit the mouths of caves where these were not too draughty, but seem to have preferred situations under overhanging cliffs where natural differential weathering had produced rock-shelters. (1933:7)

Burkitt further suggested that Paleolithic deep caves were cult shrines (p. 174). This was echoed later by others (Faulkner 1988; Hole and Heizer 1965, 47) who contended that dark zones of caves were used most typically as ritual spaces. The notion was later elaborated by Brian Hayden,

> Rockshelters were far preferred for habitation areas since they were less damp and had much better lighting . . . they also acted to concentrate the warmth of the winter sun if they were south facing . . . [I]n the few instances when true caves were used for living at all, camps or structures were always made near the mouth of the cave, where there was both light and shelter . . . [T]he deep recesses of the caves were used only for sporadic ritual purposes. (2003, 100)

Chester Chard (1975, 171) suggested that, historically, most "caves" used for refuge were actually rockshelters. In their recent article on the geoarchaeology of caves, Paul Goldberg and Sarah C. Sherwood (2006, 15) also note that humans did not use cave interiors as habitation areas. This pattern is discussed and elaborated upon by many of the authors in this volume (e.g., Clottes, Craig, Moyes and Brady, Claassen, Watson). The data are particularly compelling in Mesoamerica (Moyes and Brady, this volume), where deep caves are abundant and well investigated. These tropical caves are dank, and often infested with bats and insects that carry a number of deadly diseases, including histoplasmosis, rabies, and chagas.

It is not only the physical conditions that prevent people from inhabiting dark zones, but the perceptions and concepts associated with them. Patrick McCafferty (this volume) points out that, historically in Ireland, caves are prominent in the mythical past and are depicted as the entrances to a magical, mysterious underworld that contains powerful beings, and as a result should be avoided. Throughout Mesoamerica these kinds of beliefs also underpin prohibitions against entering caves, which are thought to be entrances to the underworld and are traditionally considered spiritually dangerous (see Moyes and Brady, this volume). In ancient Eygpt, caves represented the entrance and exits to the Netherworld, a place of death, where the sun god Re made his daily descent to battle the forces of

chaos and rise victorious every morning (see Smith, this volume).

Not only do real and imaginary beliefs about caves influence human interaction with them, but, as Daniel Montello and I argue (this volume), cave dark zones awaken something much more fundamental in the human psyche. We contend that the physical properties of caves have particular implications for human psychological responses and that our shared human perceptions of cave dark zones lead us to interpret these spaces in similar ways.

FINDING AND INTERPRETING RITUAL

Throughout this discussion I have referred to cave dark zones as "ritual," "sacred," "ceremonial," or "liminal" spaces—that is, as having "nonhabitational" use and thus standing in opposition to dwellings, which suggests a Durkheimian sacred–profane dichotomy. While this type of binary opposition may be attractive to the Western mind, many have argued that it is too static and does not express the complexity of religious or symbolic expression in many non-Western societies. Clottes (this volume) reminds us that in many cultures there is no dichotomy between the natural and a spirit world and we must keep in mind that what we call "ritual" is an etic construct.

There has been much recent debate about the definition of ritual (e.g., Kyriakidis 2007). Scholars tend to fall into two camps: those that limit ritual to religious rites and those that recognize nonreligious rituals, such as political ceremonies and rites. The logical extreme of the latter view is that any activity or performance, such as brushing your teeth, can be considered a ritual act. While Colin Renfrew (2007, 120–121) supports the broader view, he, like Clottes, reminds us that there is no separation between the religious and the secular in many societies, but that when "one begins to incorporate the cosmos within the equation," then the act must be designated religious. In many cases it is possible to demonstrate that cave dark zones are salient features of cosmology, and therefore activities enacted in them may be considered rituals in the religious sense, which is our interest here. Also, religious and political rites are often intertwined, particularly in transegalitarian or complex societies in which social hierarchies may be bolstered by control of the supernatural realm.

Archaeologists tend to talk about caves as "ritual" spaces because they can link the material remains to activities conducted in them, but cosmologies and beliefs underpin ritual practices and potentially may be inferred from them. While it has been argued that religious beliefs are the hardest inferences to attain in the archaeological record (Hawkes 1954), such inferences are not impossible, particularly among cultures with deciphered writing systems, well-studied iconography, and cultural continuity.

In archaeological cave sites, there are two circumstances in which ritual has traditionally been inferred unquestionably: in the presence of cave art and in mortuary contexts. It was not until the discovery of art in the Paleolithic caves in France and Spain that caves were recognized as ritual or symbolic venues, and this recognition remains a fundamental component in ritual interpretations. However, not every society created cave art. For instance, Clottes (this volume) argues for Neanderthal ritual cave use by noting the presence of a complete Neanderthal human burial containing bear and deer bone as well as other grave goods at the cave of Régourdou, in the Dordogne, France. This burial is so distinct that it could only have been placed by human agency.

Some major cave traditions are primarily defined by burial caves. This volume reports a number of major burial traditions during the Neolithic period. Andrew Chamberlain analyzes seventy-five burial caves in Britain, noting that their numbers rival constructed monuments as ritual places associated with the dead. Niah Cave in Borneo was used by foragers in the Late Pleistocene and Early Holocene but became a cemetery during the Neolithic (Barker and Lloyd-Smith, this volume). Skeates reports a similar regional trajectory for caves in the Apulia region of Italy, in which caves begin to be used as cemeteries in the Late Neolithic. He suggests that caves may have became tied to ancestors at this time. Peter Tomkins also notes that burials in caves became more common in the Late Neolithic and suggests that these practices relate to an increasingly elaborated social hierarchy and the control of symbolic natural resources.

It is much more difficult to infer ritual use from artifact assemblages alone, and as both Skeates (1997, 80) and Tomkins (this volume) note, archaeologists have not always been successful in defining ritual assemblages, particularly from early eras. This brings us back to the core issue of successfully dividing "ritual" from "domestic" uses that has plagued cave archaeology. For instance, Bonsall and Tolan-Smith (1997) suggest that caves fall into the categories of "economic" and "ritual." Their economic uses included long- and short-term residence, acquisition of raw materials, storage, and disposal of waste. However, some of these categories are not mutually exclusive of ritual practice. For istance, in the Americas and elsewhere there is considerable evidence that minerals were mined in caves in prehistory, but is this solely an "economic" activity? Brady and Rissolo (2006) argue that in Mesoamerica, cave mining was a ritual pursuit with little economic benefit. Material extracted from caves was likely considered "special" and used in the manufacture of sacred objects, in ritual architecture, or as

curatives. In ancient Egypt in Sinai, temples devoted to the goddess Hathor were connected with mining copper and turquoise (Smith, this volume).

Waste disposal may also be a problematic characterization, as sites may contain "ceremonial trash" (Walker 1995). William Walker suggests that objects used in ceremonies or rituals are made sacred and must be disposed of in respectful ways. Many of us report finding broken objects in caves that may be the result of ritual activities occurring at the site, so broken votive offerings may be an imperative of ritual practice. Ethnohistorically we know that among the Maya, year-renewal offerings consist of old, worn out, or broken objects (Tozzer 1941). Ritual breakage is so common in ancient Maya caves that I have suggested elsewhere (Moyes 2006) that the practice is tied to the ancient creation myth recounted in the *Popol Vuh* (Tedlock 1996). In the myth, the beings living in the underworld are chastised for their bad behavior. The punishment comes in the form of placing limitations on ritual offerings they may receive to "scabrous nodules of sap" and "brittle things broken to pieces" (p. 138).

In older studies, Mesoamerican archaeologists misinterpreted artifacts in caves as domestic assemblages because they so often consisted of household objects. This is not an isolated problem but occurs elsewhere. Peter Tomkins (this volume) points out that one of the problems with cave interpretations in Neolithic Crete has been that ritual was traditionally treated as a polar opposite to domestic life. This notion asserts itself in the identification of ritual assemblages that are expected to differentiate themselves by containing specialized ritual equipment or votive objects. Rather than rest interpretations on the objects themselves, Tomkins argues that context cannot be ignored. Invoking Richard Bradley (1998), he notes that ritual time and space are understood to be distant from everyday life and that liminal spaces such as mountain peaks, rivers, monuments, tombs, and caves help to create this distance or otherness.

Another method of inferring ritual behavior in the archaeological record and understanding the meaning of caves as sacred space has been through the use of both formal and relational analogies. The debate surrounding the utility of analogs and what constitutes a good analogy has raged in archaeology since its inception (see Ormy 1981). The use of analogy fell into early disrepute based on its indiscriminant use by classical social evolutionists, who compared objects and artifacts across time and space with no regard to causal factors, resulting in weak or inappropriate analogies (Wylie 1985). Although analogy never completely disappeared, it was later invigorated by Waldo Wedel (1938) in his paper, "The Direct Historical Approach in Pawnee Archaeology." His direct historical approach was tailored to geographical areas demonstrated to have continuous occupations from historical to prehistoric times. Inferences were produced by working back in time from the ethnographically known to the archaeologically unknown using ethnographic, historical, and archaeological data. The strength of the method was that it concerned itself not only with continuities but with discontinuities as well. This particular approach is perhaps best suited to recent eras whose culture histories are more readily traced and migrations noted, as in many cultures of Mesoamerica. Other analogical approaches rely on cultural traits shared over regions, on generalities shared over time and space, or on cultures that share environmental or sociopolitical similarities.

Analogical approaches have been vitally important in understanding the function and meaning of ancient Maya caves sites (Brady 1989; Brady and Prufer 2005; Moyes and Brady, this volume), where cultural continuity and regional patterns can be demonstrated. In his ethnographic and ethnohistoric overview of Plains Indians, Donald Blakeslee (this volume) identifies patterns in beliefs about caves of the Great Plains and relates them to archaeological sites, suggesting that older cave interpretations warrant revisiting by archaeologists. In this volume, Cheryl Claassen brings analogy to bear on caves in the Eastern United States. She does the important work of revisiting older interpretations of cave assemblages in order to elaborate on ancient cave rites and find evidence for women's rituals.

In their comprehensive survey of dark-zone cave art in the Eastern Woodlands of the United States, Simek and his colleagues (this volume) shun the use of analogy, instead calling for analyses that focus on the archaeological record itself by using chronologies, spatial patterning, and the composition and structure of motifs. With this change in focus, different questions can be posed, such as why some sites are located far away from urban habitation and others are not. These sorts of data also lend themselves to a behavioral approach (Reid, Schiffer, and Rathje 1975; Schiffer 1995; Walker 1995) that shifts research efforts away from the interpretation of the meaning of artifacts to questions aimed at understanding the behaviors that created the site's depositional patterns.

As if to answer Simek's call, George Sabo and his colleagues (this volume) offer a spatial analysis of caves and rockshelters from the Ozark uplands of the American mid-South. This regional study takes a landscape approach, using Geographic Information Systems (GIS) to investigate the relationship between caves, rockshelters, and their associated communities. Their analysis reveals the presence of a ritual complex within an integrated cultural landscape, tying mound centers and rockshelters to other sites and natural features.

THE CONSTRUCTED CAVE

A testament to the deep meaning of caves within their cultural contexts is inferred by referents to these spaces in the constructed environment. Aldenderfer (this volume) poses the question, "How do caves influence the nature of monument construction and how do monuments evolve around them?" Moyes and Brady (this volume) note that in Mesoamerica, many site cores, palaces, temples, and (more recently) churches were built over natural caves. It is also well established that ancient Maya pyramids were representations of sacred mountains, while their interior chambers represented caves. Research suggests that natural and man-made caves are foundational to Mesoamerican rulership in that they provide the cosmic referents to the landscape that underlie the power of ancient earth-based religions, establishing and maintaining ties to the land and to earth deities.

In ancient Egypt, cosmology was materialized through the construction of dark sanctuaries in temples and by the excavation of deep underground tombs. According to Smith (this volume), pyramids represented the gateway to the Netherworld, and their underground burial chambers mimicked the sinking of the king-as-sun into this lower realm in order to defeat chaos and become reborn. Some temples were built around natural shallow grottoes or niches and some were excavated into mountains, but in general, constructions in temple architecture typically moved one from light into darkness, again mimicking the sun's journey through a cavernous underworld and reflecting Egyptian cosmology as part of ritual practice. What is extraordinary about Egyptian cosmology and temple architecture is that there are no deep caves in the Nile area, suggesting that the actual landscape referents came from elsewhere. Caves are an integral part of sacred landscapes, instrumental in shaping cosmological ideas, and even in their absence they have salient qualities that become embedded in cosmological traditions.

In cultures lacking epigraphic data, the architectural construction of metaphorical caves can provide a great deal of information about a culture's cosmology and the control of its associated power. Simon Stoddart and Caroline Malone (this volume) argue that Neolithic temples in Malta are synecdochical constructs that represent the island's landscape features. These large stone edifices emulated both the natural and man-made caves of the island with their tortuous underground chambers and passages. Over time, as the society moved away from an egalitarian system, temples became less accessible and penetrated deeper into the earth, suggesting greater social control of the ritual spaces by those in power.

Skeates similarly notes the construction of underground cave-like spaces in Apulia, Italy, beginning in the late Neolithic. The first of these, the Manfredi hypogeum, appeared to have functioned as both a ritual and a mortuary space. Later, these constructions were typically mortuary in nature though many have evidence of ritual feasting. As with the Maltese temples, access to the spaces became more restricted with the development of social inequality. This agrees with Tomkins, who sees a similar trend in the use of natural caves in Bronze Age Crete. He argues that caves, as power spaces important to the construction of identity and territoriality, were appropriated by emerging elites.

CAVES AS CONTEXTS

Lawrence Straus (1997) suggested that caves may be thought of as "convenient cavities" used opportunistically. This volume argues that caves are not simply conveniences but are ideologically charged spaces imbued with meaning. As Robin Skeates argues (this volume), caves are not just geographic features but are cultural constructs. We now think of cave use as a nuanced and culturally mediated phenomenon. As such, caves not only inform us about ancient religion and ritual practice, but also shed light on the social, economic, and political structures of which they are a part, at times elucidating their transformations (see Moyes 2006). These issues are explored in Peter Tomkins's analyses of the Neolithic caves on Crete (this volume), where caves are viewed as power places that are integral to the development of complexity, territoriality, and group identity. We see these themes also played out in Pannell and O'Connor's investigations of sacred sites in East Timor and in Ranger's examples from Africa, where sacred places become highly politicized in times of threat or war. They become highly charged symbols in identity construction and maintenance by creating deep historical connections and ties with the landscape under threat. These studies agree with David Lewis-Williams's (2002:229) extensive study of Paleolithic cave sites, in which he concluded that caves were "active instruments in both the propagation and the transformation of society."

It stands to reason that the very nature of the cave as a natural, chthonic, immovable cavity, carved in stone, can represent the earth itself, its associated deities, and its enduring presence. The only way to destroy a cave is to blow it up, a measure that was taken in colonial Africa (Ranger, this volume). This is in itself a testimony to the spiritual and political value that is often associated with caves. Pannell and O'Connor are the only archaeologists in the volume who were able to work directly with indigenous people in their archaeological investigations, but their contribution highlights the importance of the roles of caves in maintaining social memory. Caves can be the conduits for traditional values, active agents in identity construction, or

focal spaces for revitalization movements and indigenous rights. This reminds archaeologists of the importance of partnering with indigenous people in their research and respecting the rights of other stakeholders in their investigations. In the case of East Timor, archaeological investigations were welcomed and valued by the indigenous community, but this may not always be the case. Depending on the culture, indigenous beliefs and ritual practices can be at odds with scientific archaeology. In these circumstances, investigations that are not condoned by or conducted in partnership with local communities may be construed as desecration of sacred sites. Therefore, researchers are responsible for maintaining ethical standards and articulating their research goals with the values of indigenous peoples.

While the chapters in this volume are diverse in their approaches, they all share a single vision—each author considers caves to be special contexts and each strives to deal with the place of caves within cosmology, religion, and sociopolitical structure. They clearly demonstrate that cave sites are potentially as fruitful as surface contexts in our understanding of both ancient and modern cultures. These contributions further our understandings of how humans think about caves by fostering new interpretations of cave artifacts and features, encouraging the inclusion of caves as part of the sociopolitical landscape, weaving cave use into the social fabric, and thinking about the cave itself as context. Finally, gaining a better understanding of caves as symbols and understanding their uses in ritual contexts promotes sensitivity in cave researchers that will be crucial in dealing with issues of heritage management involving indigenous people.

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