Contextualizing Caves within an Animate Maya Landscape: Caves as Living Agents in the Past and Present

Brent K. S. Woodfill

Abstract: After groundbreaking work by multiple archaeologists in the latter half of the 20th century, caves in the Maya world are currently acknowledged as fundamentally ritual rather than domestic spaces. However, a more nuanced read of the anthropological literature and conversations with Indigenous collaborators in the past and present pushes us to move still farther and see caves not as passive contexts to contain ceremonies directed elsewhere but animate beings with unique identities and personalities in their own right. This article combines archaeological, ethnohistoric, and ethnographic documentation of Maya cave use in central Guatemala to build a foundation for examining caves as living beings, with particular attention played to the role they play as active agents in local politics and quotidian life. Through ritual offerings, neighboring residents and travelers maintain tight reciprocal relationships with specific caves and other geographic idiosyncrasies dotting the landscape to ensure the success of multiple important activities and the continued well-being of families and communities.

Keywords: ontology; cave archaeology; Maya; animate landscape; ritual

1. Introduction

After groundbreaking work by multiple archaeologists in the latter half of the 20th century (Thompson 1959; Carot 1976, 1989; Bonor Villarejo 1987; Bonor Villarejo and Sánchez 1991; Brady 1989; Brady et al. 1997; Awe et al. 2005; Awe and Helmke 2007; Bassie-Sweet 1991, 1996; Moyes 2000, 2005), the primarily religious, rather than domestic, nature of Mesoamerican cave use has been firmly established within the Western academy. Today, caves are often discussed within the literature as the setting for ritual activities—passive contexts to contain ceremonies directed towards beings who literally or metaphorically reside within them. For the ancient, historic, and modern Maya, however, there is ample evidence that caves are understood to be animate beings with unique identities and personalities in their own right, and they are often the recipient of ritual offerings and the primary audience of ritual activities.

This article combines archaeological, ethnohistoric, and ethnographic documentation of Maya cave use at the highland–lowland transition in central Guatemala to demonstrate the central role that caves play as active agents in local politics and quotidian life (Figure S1). Through ritual offerings, neighboring residents and travelers maintain tight reciprocal relationships with specific caves and other geographic idiosyncrasies dotting the landscape to ensure the success of multiple important activities and the continued well-being of families and communities.

2. Caves as Sacred Space

The “ritual turn” in Maya cave archaeology that began during the latter half of the 20th century was largely rooted in two specific and often overlapping models for interpreting caves, “caves as Underworld” and “caves as houses,” broadly defined. Two edited volumes that came out in the same year have titles that represent each perspective—In the Maw of...
The “caves as Underworld” model (e.g., MacLeod and Puleston 1978; Stone 1995; Bassie-Sweet 1996; Moyes 2016) draws from the cosmological orientation of the Maya universe, which is composed of three levels—the Heavens, the Earth, and the Underworld. Unlike the Judeo-Christian perspective, these are not isolated from each other but are spaces that multiple beings pass through. As described in the Popol Vuh (Christenson 2003), a colonial-period K’iche’ version of a broader Maya creation myth, the Hero Twins, their parents and uncle, and various other beings travel between the Earth’s surface and the Underworld; the sun, moon, and constellations move between the Heavens and the Underworld depending on the time of day. Humans were created in the Underworld and birthed from it onto the surface of the Earth at a place called, variously, “Seven Caves” or “Seven Caves, Seven Canyons” (Miles 1965; Castellón Huerta 2001; Christenson 2003). Cave entrances are often depicted or referred to as the mouth or vagina of the Earth, whose bowels or womb are the Underworld itself (Figure S2, e.g., Brady 1989; Bassie-Sweet 1996; Spenard 2014; Moyes 2016).

Caves represent a very real way for human actors to access the Underworld, following the paths of gods and ancestors as they descend and emerge. While there, they have access to the beings who live in the Underworld, often thought to be ancestors, deities, and various other mythological figures. There has been acknowledgment within the field that some caves are more important or more broadly recognized as superior entrances to the Underworld or even identifiable as places mentioned in specific myths (e.g., Dillon 1985, pp. iii–iv; Bassie-Sweet 2008). Such places draw their importance from multiple factors, such as proximity to important centers or trade routes or the quality of sensory experience while within its depths; still, all evidence points to the fact that caves, rock shelters, springs, nooks, cenotes, and lakes are thought of and can be treated as portals for the Maya.

The second approach, “caves as houses,” is rooted in linguistics as well as iconography and Indigenous literature, since a common term for cave in multiple Maya languages is “stone house”—naj tunich in Yukatek, och’och’ pek in Q’eqchi’. It is, thus, logical to think of them as containers. In this perspective, caves are the homes of beings who exist outside of the living human realm, typically ancestors and specific deities. The most common deities thought to live in such “stone houses” are the rain and wind gods, as identified in mythohistoric texts and ethnographic documents (e.g., Brady 1989; Angulo 1987; Dunning et al. 2014; Moyes 2016).

Caves are wet, dripping places and it is common to see misty clouds hanging near their entrances in the morning, suggesting that they, not the sky, are where rain originates. As noted eloquently by Vogt (1969, p. 387):

I have had a number of interesting conversations in which I have attempted to convince the Zinancantecos that Lightning does not come out of caves and go into the sky and that clouds form into the air. . . . [During] one of these arguments, . . . we watched the clouds and lightning in a storm in the lowlands some thousands of feet below us. I finally had to concede that, given the empirical evidence available to Zinancantecos living in their highland Chiapas terrain, their explanation does make sense.

In addition, cave entrances are also places that suck in or push out air depending on the time of day because of the differential temperatures between the external and subterranean environments, rendering it as logical that they are the ultimate origin of wind as well, associating them with gods of wind as well as rain.

Iconographically, caves, houses, and other buildings are all depicted in similar ways, as a roofed space where individuals sit (Figure S3). A corollary of this perspective is that temple-pyramids are artificial mountain-caves and/or that mountain-caves are used in a manner analogous to temple-pyramids. This idea was first proposed by Vogt (1964) and revisited by multiple authors (Coe 1988; Freidel et al. 1993; Bassie-Sweet 1996) before Stuart (1997) drove the point home by noting that the Classic Maya hieroglyphic texts referred to
pyramids as “witz” (mountain). More recently, the Cancuen Archaeological Project and its diaspora has used this idea to explain the lack of pyramids in the extreme southwestern lowlands where mountain-caves are plentiful (Demarest 2006; Spenard 2006; Woodfill 2010, 2011; Andrieu et al. 2020).

The underlying root of both the “cave as Underworld” and “cave as house” perspectives grows out of the ontological underpinnings of the largely Western scholars who promote them. I (and most of my colleagues) have tended to see caves as “places,” defined alternatively as “practiced spaces” and “something people do” (de Certeau 1988, p. 117; Camus 1955, p. 88; both cited in Basso 1996). As locations where things happen, places are inert containers for human behavior that only gain meaning through the associations people create and maintain with them. Places, thus, are often intentionally made by specific actors and institutions as they negotiate power relations and identity (Kinnard 2014).

A close examination of ethnographic and iconographic evidence surrounding the ritual use of caves and other “places” in Mesoamerica, however, forces a reconsideration of how we understand the very nature of caves, hills, and other sacred spaces. Our Maya collaborators tell us that these geographic features are living persons in a landscape teeming with life, and for over 2000 years, Maya artists, like the Late Preclassic muralist who created the image in Figure S3, have depicted these same features as living beings (Freidel et al. 1993; Wilson 1995; Brady and Ashmore 1999; Adams and Brady 2005; Bassie-Sweet 2008; Ashmore 2009; Harrison-Buck 2012; Palka 2014; Moyes 2016, n.d.; Woodfill 2019; Woodfill and Henderson n.d.b). In the early 18th century, Friar Ximénez (1950, p. 19) wrote:

The priests asked ‘to whom do you offer these sacrifices?’ They responded: ‘to the very high and uneven mountains and ridges and the dangerous passes and the crossroads, and to the great rapids of the rivers,’ because they understood that these lived and multiplied and that from them all of their sustenance came and the things necessary for human life”

Following the trailblazing work by Oakes (1950, p. 170), Harrison-Buck and Freidel (2021) forcibly argued in this present journal that both humans and divine beings were understood to regularly transform into animals and other natural phenomena in addition to their anthropomorphic countenance, rendering the human/non-human divide obsolete within Maya ontology. As for the caves-as-houses model, it works precisely because of the ample ethnographic documentation that houses, just like caves, are not simply containers for human activity. They were and continue to be ensouled through ceremonies that often include the ritual caching of objects (e.g., Vogt 1976; Mock 1998), meaning that they were also considered to be living beings who were also the recipients of offerings and ceremonial attention. Unfortunately, archaeologists are slow to integrate these data points in any systemic and inclusive manner. It is past time for us to take these observations to heart and incorporate them fully into archaeological interpretation, not as metaphor but as the foundation of a new interpretive framework.

Such a perspective makes clear that for the people who visited them, caves are not simply inert contexts for ritual activity or metaphorical stand-ins for mythic locations, but are the actual recipients of the ritual events, living beings who are important in their own right. While multiple archaeologists have acknowledged this fact, most, myself included, have not fully appreciated the radical departure from traditional interpretative frameworks this understanding necessitates, instead sometimes returning in the same work to discussing caves as passive locations. If we take our Indigenous collaborators seriously, as many in the new ontological turn in anthropology are calling us to do (Strathern 2004; Dean 2010; Descola 2013; Vivieros de Castro 2014; Bassett 2015; Peterson 2019), we need to engage seriously with what we are told and build our interpretive models up from their understandings of the world, not ours. It is my contention that the whole notion of “sacred places” is an artifact of Mayanist, not Maya, ontology, rooted in our own assumptions about the nature of the world and what populates it. These assumptions cloud our interpretative frameworks, rendering the manifestations of other ontologies invisible or channeling us to
take them as metaphor. What follows is not, as at least one of the reviewers of an earlier draft of this article has posited, an attack on any particular scholars or their interpretations. Instead, it is an exploration of the ramifications of the idea of caves as living persons and what it could mean for archaeological interpretation going forward, building upon and reframing extant works, both my own and that of my peers and colleagues.

3. Observing Contemporary Rituals

Before delving into an exploration of Maya ritual practice, it is valuable to emphasize that it has been subject to multiple significant and catastrophic ruptures over the past few millennia. Such ruptures include the rise and fall of Classic Maya civilization; the Spanish conquest of the Postclassic states and subsequent genocide and forced migrations of their citizens; and the further migrations and disenfranchisements stemming from the Liberal policies of the 19th and early 20th centuries. Most recently, the civil war in Guatemala (1960–1996) resulted in the death or disappearance of around 200,000 people, mostly Maya, and the displacement of an additional 1.5 million (CEH 1999).

Even beyond the trauma that military action wrought upon its largely Indigenous victims, there were several other factors that exacerbated its effects on Maya knowledge and ritual practice. Military forces explicitly targeted traditional spiritual leaders while promoting Evangelism, which was thought to be an effective deterrent of communist sympathies, while the forced migrations and common retreats into “communities in resistance” in the wilderness were especially hard on the elderly, who were the other primary repository of ritual knowledge. After the signing of the Peace Accords in 1996, the government officially sanctioned Maya ritual and religion, although some information was permanently lost. While these caveats do mean that we must be cautious about using ethnographic and historical evidence uncritically, I echo the argument of Edward F. Fischer for a much more stable “cultural logics” (Fischer 2001) or “ontological stickiness” (Woodfill 2019)—how cultures understand the basic organization of the universe and develop strategies to adapt to it—that can withstand significant political, economic, and social transformations.

During the early 2010s, I had the fortune of working closely with multiple Q’eqchi’ spiritual leaders representing two very different models for recovering the knowledge lost during the Guatemalan civil war. Both groups of ritual practitioners are rooted in the traditions and practices they observed and learned about from their elders, but the trauma of state-sanctioned violence, displacement, surveillance, and death, all of which were accompanied by pressure to reject the Maya worldview and convert to evangelism, often resulted in impartial transmission. To fill in the gaps, civil war-period and post-conflict Maya elders and village leaders have created local networks to discuss memories, dreams, and cultural logics, while some of their younger and more urban counterparts used ties to the Pan Maya movement to draw from related groups less affected by the war. Members of this latter group often refer to themselves as ajq’ij, “daykeepers” in the language of the neighboring K’iche’.

There are some significant differences between the resulting ritual traditions. The 260 day ritual calendar is central to the daykeepers’ practice, while it was unheard of among the village ritual specialists until recent interactions inspired them to begin to include it while planning specific ceremonies. Still, for the purpose of this article, I will simply state that these differences are largely based on idiosyncratic manifestations of the same deep ontological foundation.

What is striking about both manifestations of contemporary ritual practice among the Q’eqchi’ (at least from the perspective of a cave archaeologist) is the central importance of one type of being, the tzuultaq’a (literally “mountain-valley”). They are personified features on the landscape, individuals with names, personalities, desires, and relationships who can appear as caves, springs, mountains, ruined buildings, boulders, and lakes (Wilson 1995; Adams and Brady 2005; Permanto 2015; Ybarra 2018; Woodfill 2019). It is tzuultaq’a who are the ultimate owners of the surrounding landscape, and it is necessary to obtain their permission to plant on, harvest or extract from, travel through, build atop, or live upon
their territory. While they typically appear as still and silent geographic features, they can also take on a human form, typically as travelers on a road or in dreams, where they can make their identities and desires known to the local population.

In order to ask for permission from the local tzuluaq’as, the Q’eqchi’ regularly conduct a type of ceremony called *majejak* (literally “sacrifice” or “offering”), some of them quite extravagant, that involve prayers, petitions, and burnt offerings, often with associated feasts. In a previous article (Woodfill 2014), I described one such ceremony, conducted by a Q’eqchi’ ajq’ij associated with the Pan Maya movement in 2012.

A variety of offerings . . . , typically including sugar, incense, chocolate, multi-colored candles, rosemary, alcohol, a chicken, cologne, and cigars, are placed in a comal (clay pan for cooking tortillas and toasting spices) or, ideally, directly upon the earth in a slight depression that serves as an altar. These are then burnt, causing a sort of transubstantiation—the conversion of the offerings to smoke allows them to be consumed by the supernaturals to whom they are being offered. Each of the materials offered have all been previously smudged with a chocolate drink, alcohol, incense smoke, and chicken blood in a separate ceremony called a *wa’atesink* (which literally means “feeding”) and prayed over during several days leading up to the event.

As the sacred flame grows and gains strength, the daykeeper calls out to multiple tzuluaq’as (“hill-valleys”), supernatural owners of specific pieces of land in order to honor them and ask for their protection. All of the participants in the ceremony face each of the four cardinal directions in turn, praying and kissing the earth. As the fire continues to burn, each of the 13 avatars of the 20 nawales (spirits associated with specific days with specific powers and characteristics) are called and petitions are made to each one, beginning with the nawal of the present day. On the day Kan (snake), for example, the 13 avatars of Kan are chanted in order (Jun [One] Kan, Wiib’ [Two] Kan, etc., up to Oxlaju’ [Thirteen] Kan). Prayers specifically dedicated to Kan are then made before moving on to the 13 avatars associated with the following day, Keme’ (Death). Additional offerings are thrown in when a new nawal is called in order to keep the flame burning and further ingratiate the spirits to the petitioner.

The flame serves two functions according to the daykeepers—it is a vehicle to bring the offerings to the spirits and a tool for prognostication and interpretation. . . . Once the ritual is over and the flame dies, the daykeeper can see how much of the offering is left, which also speaks to the rite’s success. An ideal ceremony will leave nothing but ash and resin, while an offering that is not completely accepted will still have large chunks of unbroken or unburnt materials.

The setup for the ceremony began when Qawa’ Tomá cut a cross-and-circle shape through the burnt remains from a previous ceremony with a sharpened stick (one never uses metal on the altar), first making the cross pattern before carving a counter-clockwise swirl around it. This same shape was then repeated on multiple occasions throughout the preparations. The first offering to be deposited was sugar . . . , arranged in a circle-and-cross pattern with each spoke of the cross aimed towards one of the cardinal directions. Incense balls were placed atop the sugar in the same pattern, as were the candles and sticks of ocote (resinous slivers of pine), which were the last objects to be added. Near the conclusion of the ceremony, Qawa’ Tomá cut the cross into the offering again in order to break up some of the chunks that had been resistant to burning, and finally each of the principal participants in the ceremony circled the fire in a clockwise direction three times, cutting circles through the remains in order to signify the completion of the ceremony.

The repeated cross-and-circle pattern was intentionally likened to the four cardinal directions and the center throughout the ceremony, both literally through the
orientation of the cross and the prayers to the cardinal directions, and symbolically, as the candles that were placed in the offering were organized according to the colors of each direction—white for north, black for west, yellow for south, red for east, and blue and green for the sky above and earth below the center.

While the inclusion of and focus on nawales, beings who represent the days in the 260 day ritual calendar, stands in contrast to the “village” ceremonies I have participated in, it is clear here that the geographic features important in all Q’eqchi’ ceremonies are living persons. This basic cosmological tenet is found throughout the Mesoamerica, with the most famous Maya example likely being Pascual Abaj (Figure S4), a phallic boulder with a pronounced mouth on the outskirts of Chichicastenango, Guatemala. Ritual practitioners come throughout the day to feed him and leave him offerings, and even (last time I checked) set aside Sunday as a day in which tourists are welcome to climb the hill and observe their ceremonies. Other well-known examples of non-human persons (among ritual practitioners and anthropologists, at least) include Cerro Gordo in Teotihuacan, Xukaneb’ mountain on the outskirts of Coban, and the caves underneath Quen Santo (Figure S5) (Bassie-Sweet 2008; Brady et al. 2009; Robb 2017). Even geographic features not well known as persons likely are viewed as such. Popocatépetl Volcano, which looms between Mexico City and Puebla, is conceived by the farmers who live atop him as “Gregorio, a masculine being with long wavy hair . . . . Tradition requires he be venerated with offerings placed in a sacred cave high on the slopes of the mountain . . . in order to secure his favor and benevolence” (Plunket and Uruñuela 2008, p. 112).

4. Reinterpreting the Archaeological Record

If caves (and mountains, and lakes, and springs, and cenotes, and ruins) are themselves the object of ritual adoration and not the context or container for ritual directed elsewhere, what does that mean for archaeological interpretation? Implications for a variety of archaeological contexts will be discussed here, with a particular focus on the Northern Transversal Strip.

4.1. The Focus of Sustained Ritual Practice

Beginning with his dissertation research in Naj Tunich, Brady (1989, pp. 402–6) has argued for the presence of two distinct ritual spaces within cave contexts. High platforms at or near cave entrances are often associated with brightly painted, beautifully decorated, and, fundamentally, “expensive” ceramic vessels which, he argued, was evidence of ceremonies performed in front of a human audience, often by important ritual specialists or members of the elite class. Within the dark and restricted cave interior, the ritual assemblage tends to consist of plain utilitarian wares, indicating that the rituals were small scale (because of the tight quarters) and of a private nature (since the materials used were humbler).

During my dissertation research in the Candelaria Caves, many of the cave assemblages did not fit so easily into this public/private duality. The largest concentrations of finely decorated ceramics were found scattered throughout the floors of some of the largest cave entrances, but generally in locations where it would have been difficult for more than a few people to gather and observe, while many of the high stages were associated with a smaller interior space, often with significant architectural investment to make the area invisible to any potential audience members outside or below. As a result, I proposed (Woodfill 2010, pp. 266–68) the existence of four general ritual categories, organized on two axes—more/less visible and more/less elaborate (Figure S6). Briefly, they are as follows. Spectacle is where more elaborate and more visible ceremonies would have been conducted by ritual specialists (fundamentally Brady’s “public” category), while the adjacent dark zone (less elaborate and, since it was an integral part of public ceremonies, still more “visible”) was for backstage rituals. I argued that the cave interior and other restricted contexts were divided into locations with elaborate offerings to the non-human persons who resided within (elaborate, small-scale ritual) and the simple, private ceremonies where
non-elite individuals such as farmers would leave offerings to meet their responsibilities to
the supernaturals who held the fate of their fields in their hands (simple, small-scale ritual).

From my current vantage point in 2021, this ritual taxonomy is skewed, since it grew
out of my own fundamental assumption about the nature of power, or at least those who
hold it. Specifically, this interpretation was largely rooted in a Marxist cynicism that, for
people who hold power, public ritual is simply another tool to maintain it. The entire
premise of the theater state model for Javanese and Classic Maya kingships (Tambiah 1977;
Demarest 1992) is, in fact, a recognition of the potential for elaborate public ritual displays
to consolidate and maintain power differentials between the practitioner responsible for
lavish expenditure and conspicuous consumption, on the one side, and the audience who
observes these events on the other. In the subsequent section on ritual experience, I will
examine whether it is appropriate to reduce elite ritual simply to a power display without
considering the sincerity of the practitioners’ beliefs, for one can both take advantage of
a system and fundamentally believe in it. But here, I would like to shift the conversation
around to focus on who was understood to be watching the ritual and who was its intended
audience.

In that same 2010 monograph, I did propose that the elaborate, small-scale ceremonies
that involved the destruction of exquisite ceramic wares done in locations far from the
human eye were perhaps evidence of the recognition of a non-human audience, which I
posited was “a deity or other invisible being” (Woodfill 2010, p. 268). The locations for
such rituals were typically almost sensorially overwhelming: “these places—be they . . .
vast entrances . . . or . . . rumbling, restricted interior[s] . . . —strongly evoke the sense of
the numinous. Water is often not only seen but experienced in these places, where the
rushing current or crashing waterfall creates a steady aural backdrop to any activities there”
(Woodfill 2010, p. 267; see also Bjerck 2012).

If the intended ritual audience was, as I now posit, the cave itself and not the denizens
of the cosmological corners it symbolizes, then it becomes more likely that the sites chosen
to give the offerings to it are the places where its essence can be most strongly felt. The
rushing and dripping water; the cool, sweet breath emanating from the exterior; and the most
dramatic views are not simply “numinous” but archetypal (Woodfill and Henderson 2016;
Peterson 2019). Tzuultaq’as reveal themselves to the Q’eqchi’ in dreams, who then share
their location, name, nature, and desires to their human neighbors, so it makes sense that
the most intense parts of the caves are sought out and identified based on the experiences
and expectations of community members.

Still to this day, important tzuultaq’as who have been forgotten are rediscovered and
reintroduced to regular ritual circuits. Stone (1995), for example, mentions the return of
regular visitors to Naj Tunich since its publication in international media. These rediscover-
ies can be seen in antiquity as well. Two important Early Classic (ca. A.D. 480–550) ritual
locations in the Northern Transversal are found in specific chambers of the Candelaria
Caves and Hun Nal Ye (Woodfill 2014; Woodfill et al. 2012). The former (Figure S7) is a
ringed stone cross pecked into the cave’s bedrock and the latter (Figure S8) is a nook in
the cave wall containing an intricately carved stone coffer. Both are hard to access. The
Candelaria pecked cross is reachable only through swimming several hundred meters
upriver or wandering through multiple cave chambers and a lush garden growing in a
large sinkhole, while the Hun Nal Ye niche with the coffer involves braving multiple climbs,
squeezes, ledges in addition to a waterfall. Both also appear to have been abandoned for at
least a century before becoming important ritual locations again in the Late Classic period
(ca. A.D. 700). There were myriad other potential locations for ritual practitioners to leave
offerings, many of which create as overwhelming a sensory experience. But I argue that
these earlier ritual sites were chosen as the only locations of regularly occurring ritual in
the caves’ interiors during this later time period because of the earlier ritual activity which
indicates that here is where the tzuultaqa can be best accessed.

Tzuultaq’as are, as argued above, powerful beings among the Q’eqchi’, as are their
equivalents for other Mesoamerican cultures. They are the ultimate owners of the sur-
rounding landscape with the power of life or death over anyone within their domain, neighbors and visitors alike. As a result, it would have been imperative for merchants, rulers, farmers, architects, and all others who depend on the continued beneficence of the tz'uultaq’as to regularly give them offerings that demonstrate their fealty and respect. The beautiful vessels that were purchased, used, and smashed throughout “private” sections of the Candelaria Caves as well as the stone cof fer from Hun Nal Ye were intended to impress their recipients as well as any community members who observed their caching or destruction. As discussed in the following section, the physical and economic costs of ceremonial offerings were often steep, even when human subjects were not watching.

4.2. Ritual Experience for the Practitioner and Audience

Looking back at my earlier interpretations of ritual contexts, I have drawn a strict delineation between “elite ritual” and “non-elite ritual” both in terms of the function of ceremonies performed and the body of theory used to analyze them. For the former, I again skewed Marxist, focusing on how public elaborate ritual displays were important tools for naturalizing and maintaining social inequalities between the performers and their audience. For the latter, in contrast, I drew largely from comparative ethnography (Malinowski 1925; Gmelch 1971; Nielsen 2001) to focus on the experience of the ritual practitioner and how ceremonies can relieve anxiety during times of uncertainty, such as the period before harvest or traveling through unfamiliar terrain.

While such a delineation is useful, it obscures the simple fact that elite and commoner alike lived within the same ontological system and recognized the importance of placating the same non-human individuals. Elite ritual was a public engagement with these individuals, which, of course, served hegemonic ends, but by focusing on that aspect, I failed to realize that these rituals were sincere undertakings, often with perceived high stakes. Others have noted previously that the ritual paths taken by elite practitioners through caves could be grueling, even when hidden from the audience. The most telling example is one described by Moyes (2020) underneath the city of Las Cuevas in southern Belize, in which the Maya made multiple modifications in a 335 m ritual circuit behind an elite public stage to make the journey more uncomfortable. Walls with tiny doorways were built in three restrictions in addition to three partial blockages and one natural restriction, each of which would have required an intentionally uncomfortable crawl or squeeze.

Such modifications indicate that the experience of the ritual practitioner was important to the ritual outcome independent of its observation by a human audience and strongly suggest the sincerity with which the elite performed their ritual duties. Similar pathways have been found in the Northern Transversal Strip. In the Cave of Juliq’, for example, Maya ritual practitioners marked a ritual circuit through the cave’s interior with simple pictographs, consistently choosing the more difficult option when more than one route was possible (Figure S9, Woodfill and Henderson 2016).

The paths to the primary ritual focus of Hun Nal Ye and B’omb’il Pek caves are similarly difficult. For the former (Figure S10), ritual practitioners first have to cross over a waterfall of 12 m in height (if the water height is sufficiently low enough) or swim across the pool that feeds into the waterfall while fighting a strong current. Once across, they climb the vertical cliff face to reach the cave entrance, then climb down into its dark interior to reach a low-ceilinged room that will completely flood during the rainy season. The ritual chamber is accessible from there by climbing up another cliff, squeezing through a small doorway constructed below the ceiling, and crawling down a shallow slope, avoiding whole vessels left in travertine pools the entire way down. In order to traverse B’omb’il Pek, a cave adjacent to Juliq’, practitioners must climb into a deep cenote, traverse a large garden, and climb up a slick, steep slope on its opposite side to find a small hole carved into the rock wall that is barely big enough to accommodate an adult pelvis. A short distance into the cave is a second small carved hole which leads to a ledge overlooking a sheer, deep cliff; the ledge is narrow enough that my head and shoulders hover over the abyss before my body clears the squeeze. In these examples, as others described above, the sense
of passing through a dangerous and unfamiliar landscape is amplified through decisions made in the execution of ritual pathways, emphasizing the sincerity of the practitioners and the intensity of the experience.

One final indication of the importance of the ritual experience to practitioners, regardless of their social position, is the use of San Juan Cave (Woodfill 2019). This small cave, consisting of a single, steeply sloping tunnel connecting a high southern entrance to a lower northern one, is located near the summit of a large, freestanding hill a short distance south of the Nueve Cerros saltworks. After the abandonment of the city, this hill became the primary focus of rituals in the area, likely by local or regional salt producers who continued to exploit the source until well after the Spanish intrusion (see, for example, Tovilla 1960). At some point around A.D. 1390, the Maya built a high ritual stage visible from near the lower entrance along with rock art that augmented the experience for both the audience and the practitioner (Figure S11, Schwab et al. 2012; Schwab 2013; Woodfill 2019). For the audience members, faded images, including humanoid faces, were painted on the walls and ceiling in a way that framed the stage. For the practitioner, a partial calendric glyph (7 Ajaw, Figure S11b) and a handprint were painted in the ceiling above the stage and multiple faces were carved into formations facing it. The art visible to the practitioner was invisible to the audience members and vice versa, but each would have served as an important reminder of the supernatural audience that was observing the ritual and receiving the offerings proffered to them.

4.3. Blocked or Desecrated Caves

Examples abound throughout the Maya world that precontact groups blocked (Andrews 1970; Brady et al. 1997; Woodfill 2010, 2014; Moyes 2020) or burned (Brady and Colas 2005; Helmke and Brady 2014) cave features. While many of these actions are often interpreted (correctly, in my opinion) as acts of aggression to damage rival kingdoms, if caves were simply metaphorical houses or entrances to a universal Underworld, they could simply be reopened, cleaned, and reused as ritual space. But they are not.

An examination of ethnographic and ethnohistoric data reveals an understanding that tzuultaq’as and related beings are not immortal and eternal but can sicken and die if neglected (Remesal 1932, pp. 266–67; Permanto 2015; Woodfill 2019; Woodfill and Henderson n.d.a). Demarest et al. (2003) report a particularly dramatic case in which a cave entrance was literally entombed at Dos Pilas—one in royal style replete with offerings that was unoccupied other than the small cave entrance at its base. Together, each of these lines of evidence suggests that the reason for eliminating access to caves or burning and destroying them was sufficient to kill the tzuultaq’a upon whom the neighboring community depended, forcing them to abandon these ritual locations and search for other potential patrons.

Adams and Brady (2005) reports the sheer quantity of artifacts recovered from caves in the multidisciplinary Petexbatun project—approximately 1/3 of the ceramic sherds (and 15% of the fine wares), nearly half of the chert and hematite, and the majority of worked shell and bone. Excluding a lavish royal tomb excavated by project members (all of which were offerings to another important class of non-human person, the living ancestor), a full fifth of the obsidian and a quarter of the jade was recovered from caves. In the Northern Transversal, one of the most elaborate caches discovered outside of a major city was found in a small sealed shaft atop Oxjak’ Ha’ Mountain by a Q’eqchi’ farmer and spiritual leader (Figure S12, Woodfill 2018). The cache included a Jaguar God incensario, multiple small jars, lidded boxes containing obsidian prismatic blades, and small incense burners.

Dredged cenotes and subaquatic investigations throughout the Maya world demonstrate a similar economic investment in lavish offerings in watery contexts (Mata Amado 1974; Coggins and Shane 1984; Medrano 2015). At Cancuen, the sacred well in front of the royal palace was the centerpiece of the ritual termination of the city, the central act of which involved the execution of the entire royal family and the deposition of their bodies and prized possessions into the pool (Demarest et al. 2016). Watery contexts are even created
in multiple situations. Terminal Classic circular shrines associated with the wind god typically contain large quantities of marine shell and speleothems even when built far in the interior lowlands (Harrison-Buck 2012). Brady (1989) notes that small dams were built in Naj Tunich to create contexts where offerings were deposited which were abandoned after the water found an escape.

In each of these cases—subterranean, aquatic, and architectural, the quality and quantity of ritual offerings demonstrate the degree to which human communities depended on these non-human persons. Since these places/persons are so precious, their destruction as an act of aggression would have dealt a substantial blow to the livelihood of the communities who depended on them, and the fact that they were never reopened and reused after destruction and sealing indicates that the communities treated them as dead and gone.

5. Implications for Archaeological Investigation and Interpretation

This more nuanced understanding of the innate personhood of caves as well as mountains, lakes, houses, and archaeological sites for the ancient Maya should have at least two major effects on archaeological interpretation. The most immediate change is the recognition by cave archaeologists and other technical specialists who work in challenging geological contexts (e.g., subaqueous and alpine archaeologists) that their subfield is methodological, not theoretical. While the skill sets and tools needed to traverse, map, and excavate cave, mountain, and underwater environments will continue to be highly specialized, the recognition that each of these landforms is simply one kind of person in a heavily-populated landscape necessitates larger interpretative frameworks that include an examination of all types of non-human personhood. As a result, landscape studies must broaden their focus to present unified theoretical fronts instead of the current disjointed patchwork (see also Brady and Ashmore 1999; Palka 2014; Harrison-Buck and Freidel 2021).

The second change must be discipline wide. There is a long history in archaeology of giving lip service to Indigenous “cosmology,” “religion,” “worldview,” or “ontology” without actually grappling with the implications of said perspectives beyond works that focus specifically on these topics. Many interpretations within economic archaeology are a painfully obvious straw man to set up this point—we tend to create models of resource production and commodity transport using least-cost calculations as if we were unaware of the ritual obligations to the non-human persons in the Maya landscape, resulting in gross miscalculations of raw materials, production time, output, and transportation routes and costs (Woodfill and Henderson n.d.a). But this same critique can be applied to most every aspect of archaeological interpretation, be it the aforementioned Marxist cynicism we ascribe to political leaders who perform elaborate public rituals as a way to maintain entrenched power imbalances between the elite and common classes, studies in energetic inputs for architectural construction, or the spatial relations between urban centers and their rural hinterlands.

Fundamentally, the acknowledgement of non-human personhood in the archaeological past is necessary, since any relevant and engaged social science should reflect the actual worldviews and experiences of the people we claim to study instead of imposing our own assumptions and beliefs upon them. While this endeavor is ultimately impossible—Geertz (1973, p. 452) argues forcefully that “the culture of a people is an ensemble of texts, themselves ensembles, which the anthropologist strains to read over the shoulders of those to whom they properly belong”—we can always strive to be better.

6. Conclusions

The recognition of non-human personhood within the natural landscape can and must be incorporated into the urban landscape as well, of course. The ubiquitous “inauguration ceremonies” for ensouling houses needs to be taken literally, both in terms of how they were understood as ways to breathe life into structures humans create, and as significant expenses for Maya households because of the amount of energy, attention, and resources
they require. Temple-pyramids (and their smaller-scale “household shrine” siblings) were not just monuments to the deceased individuals buried within them, but were the physical manifestation of the beings they became after death, monumental tzuultaq’as who were fed and adored in the same way as the tzuultaq’as who exist without direct human intervention.

Although he has proven to be ultimately incapable of taking his own advice, enamored as he is with French social theory, Brazilian ethnographer Vivieros de Castro (2014) argues that anthropologists must take our informants seriously whenever we conduct research. Fundamentally, what that means is that we listen to their explanations and work to push through our own biases and imposed categories so we can better reflect the ontological foundations of those we strive to understand. While we may never reach the clarity Geertz laments in the above passage, such an approach will allow us to create models that would much more closely represent the actual lived experience of the social, political, and economic realities of the peoples they study. An engagement in this new ontological turn has the potential to hew closer to actual ancient behavior, cognition, practice, and problem-solving approaches; flesh out nuanced links between archaeological cultures and their living descendants; and further embrace the anthropological goal of documenting the variability of human experience. But in order to do so, archaeologists must reorient their interpretations and reassess the disciplinary common sense that mutes Maya voices.

Caves (and “sacred places” in general) are one area of inquiry where this has proven to be hard, since we have to sift through a mountain of our own baggage regarding the nature of space, the sacred, and personhood. Cave archaeology, subaquatic archaeology, and other landscape specialties have made vital insights into the nature of the Maya cosmos, ritual practice, pilgrimage, and political order. Unfortunately, many of these insights are often overlooked or weakly incorporated into the field’s larger common sense. I believe that this is because, with several notable exceptions (Brady et al. 1997; Brady and Ashmore 1999; Prufer et al. 2011; Moyes and Prufer 2013; Palka 2014), many of our publications focus on cave contexts to the exclusion of other types of non-human persons, be they natural, constructed, hybrid, or reborn after death. We are as guilty as our mainstream colleagues in reading too narrowly, lingering too long in our own methodological cliques, and overlooking Maya ontology by staying firmly entrenched in our own Western view with its discrete geological categories. Such intellectual ruts are hard to overcome, especially if we continue to ignore other related subfields as we strive to advance our own. In order for all of the landscape studies to truly move from the margins and begin to lead the way forward for the field as a whole, we must dismantle our respective subdisciplines and rebuild them into a single unified front. Let us kill cave archaeology as anything other than a methodological specialization so that we, along with others in the larger field, can fully reckon with the nature of caves in an animate landscape teeming with life.

**Supplementary Materials:** The following are available online at https://www.mdpi.com/article/10.3390/rel12121109/s1, Figure S1: Locations discussed in this article. Map by the author from NASA base maps. Figure S2: Figurine from El Aragón depicting headless lord sitting atop an earth monster with a toothed mouth. Photo by the author. Figure S3: Detail of the San Bartolo mural depicting a deity sitting inside of a living cave. Painting © Heather Hurst. Figure S4: Pascual Abaj, a personified stone on the outskirts of Chichicastenango. Photo by the author. Figure S5: Rock art depicting different sorts of persons and beings. (a) Frog sculpture from Izapa, (b) humanoid from Quen Santo, (c) ruler emerging from earth monster from Quirigua. Photos by the author. Figure S6: Proposed ritual “styles.” Figure by the author. Figure S7: End pecked cross. Photo by Matt Oliphant. Figure S8: hny coffers. Photo by Horacio Martinez. Figure S9: Juliq’ circuit and pictographs. (a) Carlos Efrain Tox Tiul climbs down a difficult stretch of the ritual circuit, (b–d) pictographs marking the ritual circuit through Juliq’s northern passage. Photos a, c, and d by the author, photo c by Matt Oliphant. Figure S10: hny path. Map by Carlos Efrain Tox Tiul. Figure S11: san juan cave. (a) plan map of the cave, (b–g) rock art and carved faces in the cave. (a–b) by Proyecto Salinas del Los Nueve Cerros, (c–d) by Charlie Savvas, (e–f) by Matt Oliphant. Figure S12: Oxlaju’ Ha’ cache. Drawings by Luis Fernando Luin.
Author Contributions: This is the work of an individual author who is responsible for everything said here. The author has read and agreed to the published version of the manuscript.

Funding: This research received funding from the Alphawood Foundation; the Ahau Foundation; the Foundation for the Advancement of Mesoamerican Studies, Inc.; the United States Agency for International Development; and the InHerit Foundation.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Review Boards of Winthrop University (IRB19102R, 2018-2021).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data that served as the basis of this publication will be made available upon request.

Acknowledgments: The author would like to thank the Instituto de Antropología e Historia, the Departamento de Monumentos Prehispánicos, and the communities of the Ecorregión Lachua and the municipalities of Raxruha and Chicxulub Pueblo for permission to conduct research. This work was made possible through the hard work of the members of Proyecto Salinas de los Nueve Cerros and staff and faculty at Winthrop University, Georgia State University, the University of Minnesota, the University of Louisiana, Vanderbilt University, the Universidad de San Carlos, and the Universidad Autónoma de Yucatán. Finally, he’d like to thank Mary Coleman, Megan Leight, and the editors and peer reviewers of this special edition of Religions for comments and suggestions.

Conflicts of Interest: The author declares no conflict of interest.

References

Adams, Abigail, and James Brady. 2005. Ethnographic Notes on Maya Q’eqchi’ Cave Rites: Implications for Archaeological Interpretation. In The Maw of the Earth Monster: Mesoamerican Ritual Cave Use. Edited by James E. Brady and Keith M. Prufer. Austin: University of Texas Press, pp. 301–27.

Andrews, Edward W. 1970. Balankanche, Throne of the Tiger Priest. Publication 32. New Orleans: Middle American Research Institute.

Andrieth, Chloé, Julien Sion, Divina Perla-Barrera, Jackeline Quiñónez, Rafael Cambranes, Efrain Tox, and Felipe Trabanino. 2020. Raxruha Viejo: La historia de una frontera cambiante entre Tierras Altas y Bajas mayas. In XXXIII Simposio de Investigaciones Arqueológicas en Guatemala, 2019. Edited by Bábara Arroyo, Luis Méndez Salinas and Gloria Aju Álvarez. Guatemala City: Ministerio de Cultura y Deportes, pp. 627–42.

Angulo, Jorge V. 1987. The Chalcatzingo Reliefs: An Iconographic Analysis. In Ancient Chalcatzingo. Edited by David C. Grove. Austin: University of Texas Press, pp. 133–58.

Ashmore, Wendy. 2009. Mesoamerican Landscape Archaeologies. Ancient Mesoamerica 20: 183–87. [CrossRef]

Awe, Jaime J., and Christophe G. B. Helmke. 2007. Fighting the Inevitable: The Terminal Classic Maya of the Upper Roaring Creek Valley. Research Reports in Belizean Archaeology 4: 28–42.

Awe, Jaime J., Cameron Griffith, and Sherry Gibbs. 2005. Cave Stelae and Megalithic Monuments in Western Belize. In The Maw of the Earth Monster: Mesoamerican Ritual Cave Use. Edited by James E. Brady and Keith M. Prufer. Austin: University of Texas Press, pp. 223–48.

Bassett, Molly H. 2015. The Fate of Earthly Things: Aztec Gods and God-Bodies. Austin: University of Texas Press.

Bassie-Sweet, Karen. 1991. From the Mouth of the Dark Cave: Commemorative Sculpture of the Late Classic Maya. Norman: University of Oklahoma Press.

Bassie-Sweet, Karen. 1996. At the Edge of the World: Caves and the Late Classic Maya Worldview. Norman: University of Oklahoma Press.

Bassie-Sweet, Karen. 2008. Maya Sacred Geography and the Creator Deities. Norman: University of Oklahoma Press.

Basso, Keith H. 1996. Wisdom Sits in Places: Notes on a Western Apache Landscape. In Senses of Place. Edited by Steven Feld and Keith H. Basso. Santa Fe: School of American Research, pp. 53–90.

Bjerck, Hein. 2012. On the Outer Fridge of the Human World: Phenomenological Perspectives on Anthropomorphic Cave Paintings in Norway. In Caves in Context: The Cultural Significance of Caves and Rockshelters in Europe. Edited by Knut A. Bergsvik and Robin Skeates. Oxford: Oxbow Books, pp. 48–64.

Bonom Villarejo, Juan Luis, and Ismael Sánchez. 1991. Las cavernas de municipio de Oskutzcab, Yucatán, México: Nuevas aportaciones. Mayab 7: 36–52.

Bonom Villarejo, Juan Luis. 1987. Exploraciones en las grutas de Calcehtok y Oskinkot, Yucatán. Mayab 3: 24–32.

Brady, James E. 1989. An Investigation of Maya Ritual Cave Use with Special Reference to Naj Tunich, Petén, Guatemala. Ph.D. dissertation, Department of Anthropology, University of California, Berkeley, CA, USA.

Brady, James E., and Keith M. Prufer, eds. 2005. In the Maw of the Earth Monster: Mesoamerican Ritual Cave Use. Austin: University of Texas Press.
Brady, James E., and Wendy Ashmore. 1999. Mountains, Caves, Water: Ideational Landscapes of the Ancient Maya. In Archaeologies of Landscape: Contemporary Perspectives. Edited by Wendy Ashmore and A. Bernard Knapp. Oxford: Blackwell Publishers, pp. 124–48.

Brady, James E., Allan Cobb, Linda Palit, Donald Arburn, Sergio Garza, Christian Christiansen, Arturo Perez, Ann Scott, and Arnulfo Delgado. 2009. Quen Santo Revisited: Updating Eduard Seler’s 19th Century Cave Investigations. In Exploring Highland Maya Ritual Cave Use. Edited by James E. Brady. Austin: Association for Mexican Cave Studies, pp. 9–25.

Brady, James E., and Pierre-Robert Colas. 2005. ‘Nikte’ Mo’ Scattered Fire in the Cave of K’ab Chan’te’: Epigraphic and Archaeological Evidence for Cave Desecration in Ancient Maya Warfare. In Stone Houses and Earth Lords: Maya Religion in the Cave Context. Edited by Keith M. Prufer and James E. Brady. Boulder: University Press of Colorado, pp. 149–66.

Brady, James E., Ann Scott, Alan Cobb, Irma Rodas, John Fogarty, and Monica Urquiüz Sánchez. 1997. Glimpses of the Dark Side of the Petexbatun Project: The Petexbatun Regional Cave Survey. Ancient Mesoamerica 8: 533–64. [CrossRef]

Camus, Albert. 1955. Noces Sui vi de L’été. Paris: Editions Gallimard.

Carot, Patricia. 1989. Arqueología de Las Cuevas del Norte de Alta Verapaz. Cuadernos de Estudios Guatemaltecos I. Mexico City: Centre d’Études Mexicaines et Centraméricaines.

Castellón Huerta, Blas Roman. 2001. Chicomoztoc. In The Oxford Encyclopedia of Mesoamerican Cultures. Edited by David Carrasco. Oxford: University of Oxford Press, pp. 189–90.

CEH. 1999. Guatemala Memoria del Silencio: Casos Presentados. Tomos VIII-XI. Guatemala City: Oficina de Servicios para Proyectos de las Naciones Unidas (UNOPS).

Christenson, Allen J. 2003. Popol Vuh: The Sacred Book of the Maya: The Great Classic of Central American Spirituality, Translated from the Original Maya Text. Norman: University of Oklahoma Press.

Coe, Michael. 1988. Ideology of the Maya Tomb. In Maya Iconography. Edited by Elizabeth Benson and Gillett Griffin. Princeton: Princeton University Press, pp. 225–35.

Coggins, Clemency, and Orrin Shane III, eds. 1984. Cenote of Sacrifice: Maya Treasures from the Sacred Well at Chichén Itzá. Austin: University of Texas Press.

de Certeau, Michel. 1988. The Practice of Everyday Life. Translated by Steven Rendall. Berkeley: University of California Press, vol. 1. Dean, Carolyn. 2010. A Culture of Stone: Inka Perspectives on Rock. Durham: Duke University Press.

Demarest, Arthur A. 1992. Ideology in Ancient Maya Cultural Evolution: The Dynamics of Galactic Polities. In Ideology and Pre-Columbian Civilizations. Edited by Arthur Demarest and Geoffrey Conrad. Santa Fe: School of American Research, pp. 135–57.

Demarest, Arthur A. 2006. The Petexbatun Regional Archaeological Project: A Multidisciplinary Study of the Maya Collapse. Vanderbilt Institute of Mesoamerican Archaeology. Nashville: Vanderbilt University Press, vol. 1.

Demarest, Arthur A., Claudia Quintanilla, and José Suasnnavar. 2016. The Collapses in the Wests and the Violent Ritual Termination of the Classic Maya Capital Center of Cancuen. In Ritual Violence and the Fall of the Classic Maya Kings. Edited by Gyles Iannone, Brett Houk and Sonya Schwake. Gainesville: University Press of Florida, pp. 159–86.

Demarest, Arthur A., Kim Morgan, Claudia Woolley, and Héctor Escobedo. 2003. The Political Acquisition of Sacred Geography. In Maya Palaces and Elite Residences: An Interdisciplinary Approach. Edited by Jessica J. Christie. Austin: University of Texas Press, pp. 120–53.

Descola, Philippe. 2013. Beyond Nature and Culture. Translated by Janet Lloyd. Chicago: University of Chicago Press.

Dillon, Brian D. 1985. Preface to the English Edition. In The Verapaz in the Sixteenth and Seventeenth Centuries: A Contribution to the Historical Geography and Ethnology of Northeastern Guatemala. Edited by Karl Sapper. Translated by Theodore E. Gutman. Occasional Paper 13. Los Angeles: Institute of Archaeology, University of California, pp. i–vii.

Dunning, Nicholas P., Eric Weaver, Michael P. Smyth, David Ortegon Zapata, and Travis Stanton. 2014. Home of Ancient Maya Rain Gods and Water Managers. In The Archaeology of Yucatan. Edited by Travis W. Stanton. Oxford: Archaeopress, pp. 65–80.

Fischer, Edward F. 2001. Cultural Logics & Global Economies: Maya Identity in Thought and Practice. Austin: University of Texas Press.

Freidel, David A., Linda Schele, and Joy Parker. 1993. Maya Cosmos: Three Thousand Years on the Shaman’s Path. New York: Harper Collins.

Geertz, Clifford. 1973. Deep Play: Notes on the Balinese Cockfight. In The Interpretation of Cultures. Edited by Clifford Geertz. New York: Basic Books, pp. 412–53.

Gmelch, George. 1971. Baseball Magic. Transaction 8: 39–41. [CrossRef]

Harrison-Buck, Eleanor, and David A. Freidel. 2021. Reassessing Shamanism and Animism in the Art and Archaeology of Ancient Mesoamerica. Religions 12: 394. [CrossRef]

Harrison-Buck, Eleanor. 2012. Architecture as Animate Landscape: Circular Structures in the Ancient Maya Lowlands. American Anthropologist 114: 64–80. [CrossRef]

Helmeke, Christophe, and James E. Brady. 2014. Epigraphic and Archaeological Evidence for Cave Desecration in Ancient Maya Warfare. In A Celebration of the Life and Work of Pierre Robert Colas. Edited by Christophe Helmeke and Frauke Sachse. Munich: Verlag Anton Saurwein, pp. 195–227.

Kinnard, Jacob N. 2014. Places in Motion: The Fluid Identities of Temples, Images, and Pilgrims. Oxford: Oxford University Press.

MacLeod, Barbara, and Dennis E. Puleston. 1978. Pathways into Darkness: The Search for the Road to Xibalba. In Tercera Mesa Redonda de Palenque. Edited by Merle G. Robertson and Donna C. Jeffers. Monterrey: Herald Peters, vol. 4, pp. 71–77.
