

NIGHT AND DARKNESS IN ANCIENT MESOAMERICA

edited by
Nancy Gonlin and David M. Reed

UNIVERSITY PRESS OF COLORADO
Louisville

© 2021 by University Press of Colorado

Published by University Press of Colorado
245 Century Circle, Suite 202
Louisville, Colorado 80027

All rights reserved
Manufactured in the United States of America



The University Press of Colorado is a proud member of
the Association of University Presses.

The University Press of Colorado is a cooperative publishing enterprise supported, in part, by Adams State University, Colorado State University, Fort Lewis College, Metropolitan State University of Denver, Regis University, University of Colorado, University of Northern Colorado, University of Wyoming, Utah State University, and Western Colorado University.

∞ This paper meets the requirements of the ANSI/NISO Z39.48-1992 (Permanence of Paper)

ISBN: 978-1-64642-100-8 (hardcover)

ISBN: 978-1-64642-187-9 (ebook)

<https://doi.org/10.5876/9781646421879>

Library of Congress Cataloging-in-Publication Data

Names: Gonlin, Nancy, editor. | Reed, David M., editor.

Title: Night and darkness in ancient Mesoamerica / edited by Nancy Gonlin and David M. Reed.

Description: Louisville : University Press of Colorado, [2021] | Includes bibliographical references and index.

Identifiers: LCCN 2021034814 (print) | LCCN 2021034815 (ebook) | ISBN 9781646421008 (hardcover) | ISBN 9781646421879 (ebook)

Subjects: LCSH: Night—Social aspects. | Night—Religious aspects. | Indians of Central America—Antiquities. | Indians of Mexico—Antiquities. | Antiquities, Prehistoric—Central America. | Antiquities, Prehistoric—Mexico.

Classification: LCC GT3408 .N54 2021 (print) | LCC GT3408 (ebook) | DDC 306.4—dc23

LC record available at <https://lcn.loc.gov/2021034814>

LC ebook record available at <https://lcn.loc.gov/2021034815>

Cover photograph, Classic Maya ceramic cylinder vessel no. K1278, © Justin Kerr.

Contents

<i>List of Figures</i>	ix
<i>List of Tables</i>	xiii
<i>Preface</i>	xv
Introduction to Night and Darkness in Ancient Mesoamerica	
<i>David M. Reed and Nancy Gonlin</i>	3
1. Classic Maya Social Distinctions and Political Power: Inserting a Nocturnal Dimension into the Hierarchy of Consumption	
<i>David M. Reed, W. Scott Zeleznik, and Nancy Gonlin</i>	39
2. Mesoamerican Plants of the Night: Ethnographic and Paleoethnobotanical Perspectives	
<i>Venicia Slotten</i>	59
3. Extending the Notion of Night and Darkness: Volcanic Eruptions in Ancient Mesoamerica	
<i>Rachel Egan</i>	79
4. Illuminating Darkness in the Ancient Maya World: Nocturnal Case Studies from Copan, Honduras, and Joya de Cerén, El Salvador	
<i>Nancy Gonlin and Christine C. Dixon-Hundredmark</i>	103

5. Teotihuacan at Night: A Classic Period Urban Nocturnal Landscape in the Basin of Mexico	
<i>Randolph J. Widmer</i>	141
6. The Sounds in the Dark of the Temazcal at Cerén, El Salvador	
<i>Payson Sheets and Michael Thomason</i>	158
7. The Heat of the Night: Duality in Aztec Health and Nocturnal Healing Activities with a Focus on the Temazcal	
<i>Jan Marie Olson</i>	174
8. The Cave and the Skirt: A Consideration of Classic Maya <i>Ch'een</i> Symbolism	
<i>Jeremy D. Coltman</i>	201
9. Night and the Underworld in the Classic Period Ulúa Valley, Honduras	
<i>Jeanne Lopiparo</i>	225
10. The Light Burned Brightly: Postclassic New Fire Ceremonies of the Aztec and at Xaltocan in the Basin of Mexico	
<i>Kirby Farah</i>	257
11. Under Cover of Darkness: Blindfolds and the Eternal Return in Late Postclassic Mexican Art	
<i>Cecelia F. Klein</i>	281
12. Nighttime and Darkness: Activities, Practices, Customs, and Beliefs	
<i>Julia A. Hendon</i>	326
<i>Index</i>	335
<i>Contributors</i>	349

*Introduction to Night
and Darkness in
Ancient Mesoamerica*

All lies placid and silent in the darkness, in the night.

—POPOL VUH (CHRISTENSON 2007, 58)

DAVID M. REED

AND NANCY GONLIN

Not so long ago, nighttime was an essentially dark experience throughout the world. The nocturnal light that emanated from natural sources¹ did not entirely drown out the darkness, making the night inherently linked with the dark. Our restless planet does not sleep at night but carries on with many phenomena, which we have imbued with cultural significance. Had the Earth been seen from above at night even a hundred years ago, much of it would have remained in shadowy darkness, as the archaeological consideration of the night has for so long, too. Nights of the past were far darker than those of today. There was no glitter or glare pouring forth from incandescent, fluorescent, or LED bulbs that overpowered the nocturnal habits of our planet (Edensor 2015a). Perhaps our twenty-first-century experiences with bright nights have left us with little imagination on how humanity prospered for eons under dark skies and how integral this darkness was to their existence. Throughout the past, interior and outdoor lighting was partial, limited, costly, and often dangerous. Only in modern times, with ubiquitous illumination, have humans' encounters of night and its darkness become rarer and disengaged from their activities. One author put our reliance on nocturnal lighting in this fashion: "We treat light like a drug whose price is spiraling toward zero" (Hanson 2014, 4).

DOI: 10.5876/9781646421879.0000b

It may be because of our modern experience with the night that we have not fully considered how ancient peoples navigated the night, the significance of having dark nights (Bogard 2013), the meaning of darkness and night throughout the ancient world (Mothrè and Becquelin 2016; Nagao 2020), and the role of luminosity in the past (Bille and Sørensen 2007). How does one establish an “Archaeology of Darkness,” and what benefits might be derived from such a field of inquiry? Also, what constituted darkness in the past? How and why were dark places illuminated, and what was the role of such lighting? In some instances, ancients purposely sought out darkness, sought out the night. A couple of broad inquiries we believe are worth pondering include: (1) whether the study of human behavior is of interest when it occurs only during the day, and (2) whether existing anthropological concepts and theories hold equal applicability to daytime, nighttime, and levels of darkness. Research on nights and the symbolism of darkness adds an essential component to our understanding of human lifeways in the past and present, regardless of whether we explore ancient, historical, or contemporary times (Becquelin and Galinier 2016; Dowd and Hensey 2016b; Edensor 2017; Ekirch 2005; Galinier et al. 2010; Gonlin and Nowell 2018a; Koslofsky 2011; Palmer 2000; Schnepel and Ben-Ari 2005).

The authors in this volume address the topics of night and darkness for some of the peoples who lived in Mexico and Central America before the advent of electricity and mass lighting. Anthropological archaeology is well suited to undertake such studies and contribute to an archaeology of the night (Gonlin and Nowell 2018a) and darkness (Dowd and Hensey 2016b). The initial foray into these concepts has fostered a fuller appreciation of the past. Such work has underscored the cultural diversity and similarities across the globe. Understanding the influences of light and darkness across the totality of day and night or in other contexts is as vital as the recognition of the influences of gender (Conkey 2018), ideology, ecology, economics, or materiality to culture and human behavior. Nightscapes and darkscapes possess qualities divergent from day-lit ones. Our anthropological archaeological frameworks, such as cultural ecology, cultural materialism, economics, power, gender, agency, or practice theory, fail to explicitly incorporate, recognize, or take for granted the dimensions of nighttime and darkness as part of human lifeways. We need to build a framework for how ancient Mesoamericans interacted with night and darkness (Nagao 2020). One way in which we can do so is to examine how ancient Mesoamericans themselves viewed these concepts: “While scholars have critiqued many of the details of Levi-Strauss’s analyses, structural oppositions have consistently been shown to be of great import

to Mesoamerican myth and cosmology as expressions of dualistic religious and cultural concepts (Graulich 1983: 575)” (Looper 2019, 12; see Chinchilla Mazariegos 2017). An example of the utility of this dualism is the concept of *tz’ak*, as expressed in Classic Mayan glyphs. It represents an abstraction that connotes a single whole, as in day and night completing a diurnal cycle (Stuart 2003). Night comes before the day, but only when the two are joined is order achieved, completeness reached, and the world is whole.

To address the paucity of studies in these realms, we reconsider the relationship among humans, night, and darkness by gathering scholars to explore aspects of these concepts in ancient Mesoamerica while showing the value of integrating humanistic issues into the scientific practice of archaeology. The authors explore diverse topics from sweat baths (*temazcales*) to dark, wild untamed forests to blindfolds to glyphs to remains of plants, ceramics, lighting, and other realia.

The value of inquiring into the dichotomy of night and day is a rewarding theoretical experience (Fogelin 2019, 63–66), but we are not suggesting a simplistic, reductionist approach. Darkness itself is an obvious component of nighttime, but without requiring the temporal aspect. Darkened spaces can exist outside the boundaries of the time of day, such as within the interiors of structures, whether they are houses, sweat baths, or temples; in portals to the underworld, such as caves and cenotes; and in the deep dark depths of forests. Darkness is created by eclipses (Aveni 2018), a natural phenomenon that ancient Mesoamericans were adept at tracking and imbuing with cultural significance. Dark skies can be created by volcanic eruptions (Egan, this volume), many of which continue to plague contemporary peoples in Mexico and Central America and others living along the Pacific Ring of Fire. Darkness exists in certain conditions, such as being in the womb, being blindfolded (Klein, this volume), or being blind.

Darkness is intricately linked to liminality, indicating a sensory threshold. In darkness, our identities are masked. Many rites of passage have a “dark” component that corresponds to liminality; such life-changing events have been well studied. For example, Victor Turner (1969, 95) writes, “Thus, liminality is frequently likened to death, to being in the womb, to invisibility, to darkness, to bisexuality, to the wilderness, and to an eclipse of the sun or moon.” Darkness does indeed have a psychological component. Cecelia Klein (this volume) investigates the temporary blindness induced by the wearing of a blindfold in Aztec society (also referred to as the Mexica), harkening back to the beginning of time when all was obscured in darkness. Liminality among the Classic Maya was symbolized by deer, a creature whose prominence at

dusk and dawn was well-known (Looper 2019). The sun during the dry season and during its daily setting was perceived to be weakened (Looper 2019, 167), especially as it made its way to the underworld.

In scientific terms, shades of darkness range from the phases before and after nightfall (e.g., golden hour, blue hour, and civil, nautical, and astronomical twilight at dawn and dusk [Geoscience Australia 2018; Spitschan et al. 2016, 2017; Time and Date AS 2018]), to ill-lit or low artificial illumination, to moonlit and starlit, to lightless pitch-dark and the absence of light, as well as visual deprivation with blindfolds or blindness.

Location, in terms of latitude and season, notably impacts experiences and durations of night and darkness. Hence, in addition to differences in cultural interpretations of night, regional perspectives of the night influenced perceptions. The remains of ancient lifeways of Mexico and Central America provide productive candidates for researching nightways due to the massive amount of excavations that have been conducted (Evans 2013), interpretations of iconography and epigraphy, the abundance of ethnohistoric sources, and insightful ethnographic research. In terms of modern national boundaries, the culture area of Mesoamerica includes central and southern Mexico, Belize, Guatemala, western Honduras, and western El Salvador. These areas and areas just outside of Mesoamerica are the focus of this volume. Located between the Tropic of Cancer and the equator, this region has relatively consistent hours of darkness throughout the year. For reference, figure 0.1 is a map of the main locations mentioned in this volume, and table 0.1 provides a comparative overview of the time periods our authors discuss.

DEFINITIONS PERTAINING TO THE DARK AND NIGHT

Several terms are useful for studying the night and darkness. Darkness has been removed from the archaeological record, often intentionally by us archaeologists (Hensey 2016, 3), a situation that dramatically alters the relationship among place, object, and experience in the modern world. Artifacts are excavated from the dark depths of the Earth, and monuments are lit up to better view them (2016, 3). By envisioning darkscapes, “the sensory experience of physically and spiritually navigating dark . . . spaces” (Dowd and Hensey 2016a, xi), we can more accurately duplicate the experience of past lives. Shadows and darkness were essential elements of numerous past practices. The nightscape is part of the darkscape, but the reverse is not necessarily true. The nightscape is composed of all the material objects, non-material culture, activities, and sensations associated with or used during the time of day when the sun has set



FIGURE 0.1. Map locating the main sites mentioned in the volume.

and before it rises (or in the most northern and southern latitudes, when one typically shifts from daily activities to nightly activities).

We introduce and define the term *nightways* as the role of night in society. Nightways refers to the cross-disciplinary study of nocturnal customs, behaviors, habits, and items of a group of people to understand the anthropological complexity of nycthemeral practices. Nightways deal with the interconnected ideas, values, formalized behaviors, and material objects that are organized and reenacted through the performance of social roles and tasks related to experiences of the night. While nighttime is a regularly occurring period of darkness, its cultural meanings and symbolism are tightly involved in constructing and maintaining social and ideological relationships in specific contexts. Within any setting, various nightways can be found—they are not single overarching structures or frameworks but a plurality of patterns or aspects of cultural systems to be understood with models that differ according to the scale of analysis.

The study of ancient nightways includes the recovery of realia, including the material remains of lighting and quotidian nightly activities. Analysis of the evidence of production, distribution, consumption, and disposal of night-associated items contributes to the interpretation of social processes and

TABLE 0.1. Major time periods highlighted in the volume

<i>Maya</i>	
Diego de Landa, bishop of the Yucatan, burns the books and images of the Maya outside the church at Mani	July 12, 1562 CE
Late Postclassic	1250–1540 CE
Early Postclassic	1000–1250 CE
Terminal Classic	900–1000 CE
Late Classic	600–900 CE
Early Classic	250–600 CE
Late Preclassic	300 BCE–250
Middle Preclassic	1000–300 BCE
Early Preclassic	2000–1000 BCE
Archaic period	7000–2000 BCE
<i>Teotihuacan</i>	
Aztec	1150–1500 CE
Postclassic	900–1150 CE
Epiclassic	600–900 CE
Classic	150–600 CE
Formative	1 BCE–150 CE
<i>Aztec</i>	
Colonial	1521–1821 CE
Cortés conquers Tenochtitlan	August 13, 1521 CE
Cuauhtémoc	1521–1525 CE
Death of Motecuhzoma II	June 30, 1520 CE
Cuitláhuac briefly reigns	1520 CE
Motecuhzoma II receives Cortés	November 1519 CE
New Fire Ceremony	1507 CE
Motecuhzoma II	1502–1520 CE
Templo Mayor completed	1487 CE
Ahuitzotl	1486–1502 CE
Tizoc	1481–1486 CE
Axayacatl	1469–1481 CE
New Fire Ceremony	1455 CE
Motecuhzoma I	1440–1469 CE

continued on next page

TABLE 0.1—*continued*

<i>Aztec</i>	
The Triple Alliance formed	1428 CE
Itzcoatl	1427–1440 CE
Chimalpopoca	1417–1426 CE
New Fire Ceremony	1403 CE
Huitzilihuitl	1396–1417 CE
Acamapichtli	1375–1395 CE
New Fire Ceremony	1351 CE
Tenochtitlan founded	1345 CE
<i>Volcanic Eruptions</i>	
Pacaya eruption	830–930 CE
Almolonga eruption	750–850 CE
El Chichón eruption	680–880 CE
El Chichón eruption	490–690 CE
Loma Caldera eruption, buries Cerén	660 CE
Ilopango eruption, causes evacuation of Zapotitán Valley	539 (440–550) CE
Amatitlan eruption	380–1300 CE

actions that underlay nightways in antiquity. By studying familiar questions from a different angle—the nocturnal angle—we can better understand culture and its influence on behavior, identity, and the role of the natural world on lifeways. This parallax perspective has been effective in enriching our understanding of numerous ancient lifeways (Gonlin and Nowell 2018b, 6).

Recently, the concept of “abundance” has been introduced into archaeology to consider the agrarian state (Winter 2007), food (Gremillion 2011, 93–114), urban economies (Smith 2012), and myriad other economic, social, and political features (Smith 2017a). This concept relates to both natural and cultural situations (Smith 2017b, 10–12). Nighttime is one of the most natural states of abundant darkness, tempered by meteorological and seasonal phenomena and technology, in the past and present. An abundance of darkness can be found in other circumstances and places beyond but sometimes associated with the night, such as tombs and burials (Lopiparo, this volume), volcanic eruptions (Egan, this volume), eclipses (Aveni 2018), caves (Moyes 2012), interior rooms of buildings (Isbell 2009), under the deep dark depths of water, *temazcales* (Olson; Sheets and Thomason, both this volume), blindfolds (Klein, this

volume), and mines (James 2016). Evidence for both ancient nightly practices and experiences of darkness at night and in such a variety of dark locations has been recently identified in the archaeological record (Dowd and Hensey 2016b; Gonlin and Nowell 2018a). The abundance of artifacts, features, and sites attributable to these concepts substantially improves and expands our understanding and interpretations of the past (Coltman, this volume).

Artificial darkness can occur intentionally by human actors intent on creating an atmosphere that is psychologically charged from a liminal state to one of permanence. The liminality created by wearing a blindfold is evaluated in Cecelia Klein's chapter (this volume). The placement of a jade mask over the face of the deceased ensures darkness, as does covering the body with earth or a sarcophagus lid; death permanently ensconces one in the dark. Jeanne Lopiparo (this volume) discusses how inhabitants of the Ulúa Valley entangled death with ancestors. One of the most famous Mesoamerican examples of this behavior was recovered at the Classic Maya site of Palenque by Dr. Alberto Ruz Lhuillier (1973). The long-lived Ahau K'inich Janaab Pakal I (603–683 CE), buried in the Temple of the Inscriptions, was elegantly dressed for the afterworld with a mask, ear flares, a collar, a pectoral, and bracelets—all made of jade and collectively weighing several pounds (Marken 2007; Ruz Lhuillier and Mason 1953; Tiesler and Cucina 2006).

Artificial darkness is also accomplished through actively engaging with the landscape. The Classic Maya conception of the watery underworld was deep and dark in the depths of water. Shells associated with water (Nagao 2014), such as the conch shells on Temple 11 at the Classic Maya city of Copan (Schele and Miller 1986, 122–123), evoked this dangerous place. Cenotes, water-filled sinkholes in limestone topography, were likewise perceived as portals to a watery underworld and a haven of the Moon Goddess during the day (Iwaniszewski 2016, 39).

BACKGROUND

The premise of this volume was developed out of Pre-Columbian Nights in Mexico and Central America, a session that was organized by Nancy Gonlin for the 82nd Annual Meeting of the Society for American Archaeology held in Vancouver in 2017. Eureka, or “ah-ha,” moments rarely happen during a career. Sometimes the moment occurs when previously unconsidered issues suddenly come to mind. In other instances, the discovery of a residence or grave provides the moment. Here, the senior editor was enjoying an evening of reading and refreshment when it occurred to her that we seem to focus

on only issues of “daily” behaviors when studying the past or in building our social theories (Gonlin 2018, xxix). Scholars indirectly, if ever, consider the night separately or in conjunction with the day in reconstructions. Yet we spend a tremendous part of our lives performing nightly activities and, by consequence, in various levels of darkness. While the study of daily activities was never meant to exclude nightly activities or those that occur in dark conditions, it does fail to incorporate explicit nocturnal and dark aspects. In this volume, authors apply a variety of frameworks to explore nightways and darkways and how humans in antiquity behaved during or utilized aspects of night and darkness.

An action undertaken during daylight hours often takes on different connotations when that same action is performed in the shadows, in darkened conditions, or during nighttime. In addition, certain activities are associated with the time of day in which they occur. Darkness reveals cultural aspects that scholars take for granted and, as a juxtaposition to the default daytime approach, requires us to evaluate both familiar and new points of analysis. By focusing studies on nocturnal actions, we expand our understanding of how the environment influenced behavior and how nightly associations are cultural constructs that vary over time and space, as well as over variations in social identities.

In the process of researching the topic, we learned that although a few scholars have studied nightly behavior, little anthropological or archaeological research has been done. Apart from cultural astronomers (e.g., Aveni 2008), the few notable exceptions in darkness and nighttime studies are by Jacques Galinier and his colleagues (2010; Becquelin and Galinier 2016; Galinier and Zamudio Vega 2016), with explicit investigations by archaeologists being rare (Dowd and Hensey 2016b). Now, however, this volume stands in companionship with a previously edited volume by the senior editor and April Nowell, *Archaeology of the Night: Life after Dark in the Ancient World* (2018a). In that publication, cultures from several times and places were explored, with three of the chapters pertaining to Mesoamerica. Jeremy Coltman (2018), an epigrapher and iconographer, considered how darkness represented creation, especially among the ancient Maya. Anthony Aveni (2018), a well-known cultural astronomer, elaborated on the meaning of night in day for eclipses that were predicted and experienced by the Classic Maya and others. Nancy Gonlin and Christine Dixon (2018) employed a nighttime household archaeology (Gonlin 2020, 398–399) approach to round out quotidian practices of the Classic Maya at Copan, Honduras, and Joya de Cerén, El Salvador. Integral to those three chapters was the consideration of religion and ideology alongside the material

record of daily life. Building on insights gained from a nightways perspective, we dedicate here a volume of explorations into what night and darkness meant to some of the ancient peoples of Mesoamerica.

Historical scholars who have examined aspects of nocturnality and cultures of darkness (Palmer 2000), improved lighting technology, and the spread of the availability of new foods together gave rise to a new nightscape that brought forth major cultural and behavioral changes throughout historical Europe (Baldwin 2012; Bogard 2013; Ekirch 2005; Koslofsky 2011). Many of these aspects are ones we consider commonplace and normal today but that are actually recent modifications to our behavior. For instance, Craig Koslofsky (2011, 1) focused on the nocturnal revolution in early modern Europe, noting that night imposed several limits on daily life while acting “as a many-faceted and evocative natural symbol.” Essentially, he identified the transition in public behavior and culture that occurred in the early eighteenth century because of the then newly available artificial domestic lighting, public street lighting, and the non-alcoholic beverages of tea, chocolate, and coffee (2011, 2, 276): “In 1660, no European city had permanently illuminated its streets, but by 1700 consistent and reliable street lighting had been established in Amsterdam, Paris, Turin, London, and Copenhagen, and across the Holy Roman Empire from Hamburg to Vienna” (2011, 2) through the extensive use of oil lamps (or, in Paris, candles) in glass-paned lanterns. Late hours of the day were transformed into times of sociability as cities removed curfews and coffeehouses appeared (2011, 276). The results were that people stayed out late and went to bed late. Sleep patterns were affected and shifted from a “first sleep,” a period of an hour or more of wakefulness, and a “second sleep” (Ekirch 2005, 300–301) to a single period (Koslofsky 2011, 6, 276). Social patterns of labor changed as working days were extended much further into the nights (“burning the midnight oil”).

BATS, PROWLERS, HOWLERS, PRANCERS, AND PLANTS IN THE DARK

Changes in human nocturnal behaviors alter human experiences and interactions with significant elements of our lives, particularly nocturnal animals, darkness, and even death. There are animals that are associated with the night for numerous reasons, some of which have connections with the underworld (Quirarte 1979) or darkness. Others have nocturnal or crepuscular habits or represent nocturnal celestial bodies. In the Neotropics, there were, and still are, fauna that frequent the night and flourish in the dark. Such creatures include jaguars, dogs, pumas, coyotes, bats, owls, deer, rabbits, toads, and numerous

others: “Many animal combinations express a duality in Precolumbian symbolism that is also a duality in nature: predator and prey, captor and captive, above and below. Jaguar and deer are hunter and hunted: they interact in origin myths; [and] they are shown together in art” (Benson 1997, 13). Four of these animals were especially significant to ancient Mesoamerican nights, and the literature is full of material regarding their role in darkness and the night (Benson 1997; Brown 2005; Looper 2019). Below, we discuss a sample of these animals (bats, jaguars, dogs, and deer) and their powerfulness in these contexts, although other animals could be considered as well. These four animals, among others, were incorporated into calendar symbols used by ancient Mesoamericans in their recordkeeping. Sometimes these animals are portrayed with each other, as they share qualities of the night: “In Maya art the deer represented the symbolic inversion of the jaguar, embodying the herbivore versus carnivore, weakness versus strength, and timidity versus fierceness” (Looper 2019, 202).

BATS

Mesoamerican cultures experienced their surrounding world as plagued with mysteries and superhuman strength, and generally interpreted it in light of religious belief. In this context, animals had a prominent role because they possessed physical characteristics and a vital force lacking in humans. In the case of bats, this is markedly obvious due to their capacity to fly, get their bearings at night, and avoid obstacles without needing sight. In this sense, these animals are located within the sphere of the divine, either as deities, representations, or manifestations. (Navarro and Arroyo-Cabrales 2013, 603–604)

One need not have a deep knowledge of bat species to know the basics—these small flying mammals are most active at night and twilight, flying about in search of food through echolocation; they do not need light to see; they hang upside down; and some are hematophagous. In Mesoamerica alone, there are 165 species (*Chiroptera* family) classified along the lines of their diet (Navarro and Arroyo-Cabrales 2013, 583). They are more numerous in iconographic representations from a wide swath of Mesoamerican cultures than in actual physical remains, most likely due to their fragile nature and small size (2013, 586), although a few remains are notable (e.g., Brady 2019). Linguistically, bats are present in every Mesoamerican language, from the *zotz* of Mayan speakers to the *quimichin* of Aztec Nahuatl, though there are more representations of bats in Maya art than any other Mesoamerican culture. The bat’s significance to the Maya is illustrated in the Classic Maya emblem glyph (Martin 2005)

FIGURE 0.2. *Emblem glyph (on Stela L/CPN 18) of the Classic Maya city of Copan, Honduras, that incorporates the face of a bat with cross-hatched markings for darkness. Drawn by David M. Reed, after Maudslay (1889–1902) and Schele (1987).*



of the city of Copan, Honduras, whose politicians made use of a bat with its distinctive nose-leaf (figure 0.2) as its fearsome animal protector (see Martin 2020 for an exploration of “emblem” glyphs in Classic Maya polities).

Bat representations in Late Postclassic Mexican codices clearly illustrate the bat deity associated with decapitation and sacrifice (Brady and Coltman 2016, 229; Navarro and Arroyo-Cabral 2013, 596–599); however, such symbolism is missing from Classic Maya Lowland depictions, contra Eduard Seler (1904) (Brady and Coltman 2016, 229–230). Bats are important symbols in some ethnographically known Mayan-speaking groups, such as the Highland Tzotzil, the people of the bat. James Brady and Jeremy Coltman (2016) aptly summarize the many roles bats play in Maya ideology: bats are emblematic of certain lineages; they are servants and messengers and have a connection with scribes; bats are nocturnal pollinators and critical to agricultural fertility; and they are *wahy* beings (Stuart 2021), potentially bringing disease.

As in Western culture, bats generally have a negative image in Mesoamerica (e.g., bats can bring death). Their connections to caves, darkness, and the night are seen throughout Mesoamerican cultures through time and space (Cajas 2009). However, bats are necessary to agriculture. For example, they have been observed dispersing seeds and pollinating night plants that are vital to the well-being of various cultures: the agave plant and the sacred ceiba tree among

them (Brady and Coltman 2016; Navarro and Arroyo-Cabrales 2013). This connection is a strong one for the very positive attributes bats have and may even be considered to be sexy.

JAGUARS

In Mesoamerica, the jaguar (*Panthera onca*), an apex predator, figures prominently in iconography from the Preclassic to the Postclassic periods and beyond. Well-known from the Olmec is the were-jaguar, a human-feline form that was perhaps the royal offspring of Olmec rulers and mythical jaguars (Saunders 2001, 385). From the Popol Vuh, it is known that the jaguar is associated with the sun as it journeys through the underworld at night. The ancient Maya believed many animals had sacred powers, especially the jaguar. In Maya mythology, the second age of the world was the age of the “jaguar sun,” when Tezcatlipoca changed into a jaguar (Tozzer and Allen 1910, 358). This crepuscular animal represented rulership, royalty, power, transformation, shamans, warfare, and the night. For instance, from the tomb of Ahau Jasaw Chan Kawil (Burial 116) at Tikal in the Temple of the Jaguar (Temple 1), incising on bones pictures the Paddler Gods transporting the Maize God through the waters of the underworld. At the front of the boat is the Old Jaguar Paddler, marked by the symbol for darkness—*ak’bal*—and at the stern is Old Stingray Paddler, denoted with the *k’in*, or day symbol (Martin and Grube 2008, 46–47). Such a vivid illustration shows the kind of nocturnal (and diurnal) association to be found in a study of ancient Maya beliefs.

Classic Maya rulers were often depicted sitting on jaguar thrones (e.g., Lord Chac of Uxmal [Kowalski 1985]), wearing jaguar pelts (as in the Bonampak murals), and incorporating the Maya name for jaguar, *b’ahlam*, into their own titles, such as Ahau Itzamnaaj B’ahlam II of Yaxchilan, Mexico (father of Bird Jaguar IV [Fitzsimmons 2009, 120]), or “White Eye Jaguar” of Tikal (Stuart 2007). Elsewhere, a dedication of fifteen jaguars beneath Altar Q at Copan, Honduras, stands as one example of jaguar sacrifices that were used to mark auspicious occasions. Altar Q is a square monument that illustrates the succession of rulers from the dynasty founder, K’inich Yax K’uk’ Mo’, through the sixteenth king, Yax Pasaj Chan Yopaat.

In Postclassic Aztec society, the highest-ranking military were members of either the elite jaguar society or the eagle society. The regalia of Aztec rulers, like Maya royalty, included jaguar pelts. Nicholas Saunders (1994, 113) noted that the Aztec and Maya consistently used jaguar iconography for “warfare and status-related situations.” Therefore, we see that the jaguar and its

associations (e.g., spotted skin, paws, and behaviors) held nocturnal qualities that ran deep in ancient Mesoamerican supernatural beliefs, mythology, and psyche and symbolized power and military prowess. Notably, Seler (1902–1903, 172) translates from the Codex Telleriano-Remensis a passage describing jaguars as the demons of darkness, thus an animal specifically associated with a symbol of darkness, the interior of the earth, and the earth itself throughout ancient Mesoamerica.

Dogs

Another animal with Precolumbian ties to night and darkness is the dog (*Canis familiaris*). Death is a form of darkness, and its symbolism is tied to canines: “The dog’s association with the dead is almost worldwide” (Benson 1997, 24). Given the natural behaviors of these carnivores, Elizabeth Benson (1997, 24) concludes:

Dogs are appropriate escorts for the dead. They walk with their noses to the ground. They dig in the earth, bury bones, and hunt in burrows. They eat carrion and make themselves smell of it. They have night vision; they howl at night; they know what is there in the darkness. Relating to the earth, to dead things, to sounds and smells that are imperceptible to humans, dogs have esoteric knowledge and special connections with the underworld.

Justin Kerr (2001) writes about “the Last Journey” (figure 0.3) of an individual’s funerary procession that is featured on a pottery vessel known as the Ratinlinxul vase. His retainers and servants accompany and carry him, while a dog escorts the procession to Xibalba, the underworld. Elizabeth Hill Boone (1994, 137) writes that “dogs filled functional and symbolic roles in Aztec culture. They were kept for food, but also were often buried with the dead in the belief that their spirits could lead the deceased on the hazardous journey through the underworld.”

Dogs played many roles in ancient Mesoamerica. As early as the Preclassic period, particular breeds were used for food, some were traded, while others were used as sacrifices (Sharpe et al. 2018). Matthew Looper (2019, 32) considers it possible that dogs were utilized by the ancient Maya for hunting, based on Mary Pohl’s work (1985), a reasonable supposition given the widespread use of dogs in such capacity cross-culturally. Both the Maya and the Aztec considered dogs as psychopomps (Beyer 1908; Neumann 1975; Seler 1902–1903, 157) and believed a dog was responsible for having brought fire to humans (Neumann 1975; Thompson 1930, 151). The Mayan glyph for dog (*tzul*)



FIGURE 0.3. *Classic Maya vase (K0594) depicting a deceased individual in a palanquin with his funerary procession to the underworld, accompanied by his dog. Drawn by Alexandre Tokovinine.*

combines animal ribs with a death sign and sometimes with the symbol for darkness placed above one eye (Neumann 1975). The Aztec god Xolotl, their god of lightning and death, also held similar dog and mythological associations, including forming part of the Nahuatl name for the Mexican hairless dog, the *xōlōitzcuintli*.

DEER

Deer were the most important species hunted by ancient Mesoamericans throughout time long before writing was invented (see chapters in Götz and Emery 2013). They provided an essential form of protein; they were utilized for their bones and antlers in tool making and stone working; their hides were fashioned into garments; their sinew was necessary for compound tool manufacture; and their antlers were often incorporated into dances and ritual as masks or drum beaters (e.g., a deer mask was recovered at Joya de Cerén [Brown and Gerstle 2002, 99]) (Looper 2019, 39–49). Their ubiquitous presence at sites spanning from Archaic to modern times illustrates the high degree to which Mesoamericans long depended on this animal.

A recent book by Looper (2019) provides an extensive consideration of this ruminant and contextualizes it within Maya culture, past and present. Much of the discussion here is taken from Looper's treatise and is applicable to wider Mesoamerican beliefs and practices. He identifies three species of deer found in the Maya area, each of which carries a distinctive Mayan name (2019, 22), but he notes that it is the white-tailed deer (*Odocoileus virginianus*) that is most commonly portrayed in Classic Maya art (figure 0.4) rather than the red brocket (*Mazama temama*) or the Yucatan brown brocket deer (*Mazama pandora*) (2019, 21).

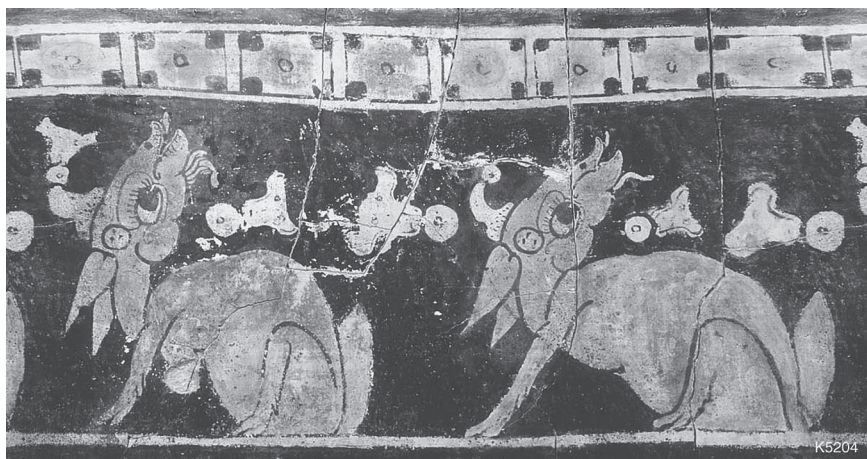


FIGURE 0.4. *Classic Maya vase (K5204) of two deer with sky band and star glyphs. Deer were a key resource for all Mesoamericans. Note the black background, which may symbolize darkness or night. Permission from Justin Kerr.*

Deer have crepuscular habits and most often feed at dawn and dusk (Looper 2019, 26), which may be opportune times for hunting them (2019, 30) by all kinds of beings, whether human or jaguar. Of the many hunting methods employed by humans, two stand out since they are known to have taken place at night, as recorded in ethnohistoric and ethnographic sources consulted by Looper (2019, 30):

Night-light hunting takes advantage of the strong reflection of light from the eyes of deer in the dark, making them easier targets (Pohl 1977: 540). In the early twentieth century, split-pine torches were attached to hats for this purpose (Gann 1918: 24).

Waiting on an elevated platform or hammock-like seat is also a well-known technique, often done at dawn or dusk or at night when deer are active. These are located adjacent to the fields, along game trails, or near water sources or fruiting trees, especially from April to July (Jorgenson 1993: 61, 110). Deer were hunted using this method after the fields were burned, when the deer were tempted to lick the saline ashes (Gann 1918: 24).

Hunting, as expressed in Classic Maya art, was a male activity that was portrayed by figures with “dark patches of paint on the body or face (possibly camouflage), broad-brimmed or bowler-style hats, headdresses incorporating the heads of various animals, striated skirts and capes (possibly made of grass),

conch shells, and weapons, usually spear-throwers, a typically long-range weapon” (Looper 2019, 33).

Deer are integral to the mythology of Mesoamerica, as relayed by Elizabeth Benson (1997, 24):

In Oaxaca, the original mythic Mixtec couple was named One Deer (a calendrical name). The Codices Vindobonensis and Bodley show that the original couple had thirty-two offspring, most of which were human; one was a deer. In an Aztec myth a two-headed deer fell from the sky, shot down by a hunting god, Mixcoatl. Forced to cohabit with him, she gave birth to the culture hero and deity Quetzalcoatl (“Quetzal-Serpent”).

Dogs and deer are connected through hunting and symbolism, as each can represent death. Deer were essential elements of sacrificial rituals; they symbolized the ancestors, sexuality, fertility, and rain and were associated with junior elites (although not typically rulers) in Classic Maya society (Looper 2019, 48). They also represented the setting sun (Looper 2019). As the sun sets, there is no guarantee that it will rise the following day: these liminal time periods that bookend the night can be dangerous ones for deer and humans alike. Looper (2019, 35) concludes that deer images in Classic Maya society were used as a metaphor for borders, especially those between forest and field. Deer represent disease, enemies, and wilderness—all of which threatened the cosmic order.

Deer may very well have been associated with darkness and the night, as exemplified in Classic Maya culture by the Starry Deer Crocodile, a mythic supernatural creature with deer attributes (Looper 2019, 104–106): “Because its body is sometimes shown studded with stars, it seems to be associated with the night sky” (2019, 105). In central Mexican mythology, “stars are conceptualized as deer and the Morning Star as a hunter (Seler 1996: 218)” (2019, 106). Deer do, however, sport the symbolism of the sun and lack the quintessential Mayan glyph for darkness, *ak’ab*, though they are most associated with the setting sun of the West (2019, 157).

PLANTS IN THE DARK

Perhaps less well-known than the nocturnal animals of Mexico and Central America are the nocturnal plants and the nocturnal uses of plants. Paleoethnobotanist Venicia Slotten, a contributor to this volume, greatly enhances our understanding of ancient nights by including discussion of the nocturnal associations of flora in Mesoamerica. Plants need the night, just as

animals do, to function properly. Particular species were adapted to nocturnal blooming, and the uses to which ancient Mesoamericans put plants during the nighttime are bolstered by archaeobotanical, linguistic, ethnohistoric, and ethnographic evidence. Taken together, the neotropical flora and fauna created a landscape that differed for its inhabitants, depending on the time of day one experienced it. The night could be a foreboding place, full of sensations, sights, sounds, tastes, and smells that created an environment unique to the dark, but it also offered opportunities unparalleled by those of the day.

PRECOLUMBIAN SENSE OF TIME

The concept of night is a fundamental component of understandings of time. A basis for conceptualizing how ancient Mesoamericans perceived time can be found through an examination of their mythos. For example, the Aztec and Maya clearly held distinct connotations tied to either the nighttime or the daytime hours. These cultural ideas influenced how, when, and where activities were performed, as well as how ancient Mesoamericans experienced and thought about nighttime. It is little wonder that the ancient Mesoamericans were superb astronomers, as their myths were directly tied in with the dark night sky: “Astronomical events being observed and recorded in hieroglyphic books, in architectural alignments, and in stone monuments were not perceived as objective scientific observations. Rather, they served to tie the present to the recent and distant past, based on patterns and cycles displayed in the sky that were attributed to foundational events undertaken by supernaturals in mythic time” (Vail and Hernández 2013, xxiii). It is no surprise that the sun and moon figured prominently in Maya myths (Chinchilla Mazariegos 2017). Here, we focus primarily on the abundance of published materials on the Aztec and Maya to illustrate the above points, although other Mesoamerican cultures shared similar features.

AZTEC NIGHTS

The ancient Aztec held religious beliefs they connected to qualities of the night. Central to this view was their concept that the cosmos was organized into binary opposites, such as night and day. As told in the origin story of the Legend of the Five Suns, the universe had been created and destroyed four times prior to our present universe. Each creation formed an age called a “sun.” The fifth era began in darkness with the gods gathering at Teotihuacan. Two gods sacrificed themselves by jumping into a fire and rising as the sun and the

moon, respectively. The remaining gods then sacrificed themselves, their blood setting in motion the sun and moon. From then on, the daily movement of the sun, and therefore the continuation of life itself, depended on the nourishment of the gods with human blood.

One god of the nocturnal sky was Tezcatlipoca, or Lord of the Mirror Smoking, so called because of the black, magical mirror worn in place of a lost right foot. As a deity of Toltec origin, he was associated with the earth and the moon (Bunson and Bunson 1996). Obsidian was his symbol and the jaguar his animal disguise. One alias was Yohualli Ehecatl (Night Wind), for which Tezcatlipoca was the divinity associated with nightly and evil characteristics of the wind (Olivier 2015). Tezcatlipoca's central role in creation myths was the forecasting of the end of eras and announcing the rise of future lords and the emergence of new "suns" or historical epochs (Milbrath 2014).

The jaguar characteristic of Tezcatlipoca, whose spotted skin was compared to the starry sky, is traced to Classic period Teotihuacan, as seen in the Patio of the Net Jaguars of the Palace of the Jaguars. The netted jaguar is considered the precursor to later images showing Tezcatlipoca wearing a netted cape (Anawalt 1996, 198, figure 19). From this observation, a connection with Maya lunar imagery is extended: the Classic Maya moon deity was a lunar jaguar, and a net features prominently in Maya folktales of the moon (Milbrath 1999, 41, 120–145, figures 4.2–4.5).

MAYA NIGHTS

Among the ancient Maya, Tezcatlipoca's counterpart—Kawil—was, intriguingly, associated with vegetation symbols, principally maize (Milbrath 2014). Kawil undergoes numerous transformations over a period spanning more than a thousand years, but his imagery consistently has celestial associations, including sky bands, sky glyphs, and stars. Kawil's mirror may represent the planet Jupiter as an orb shining in the night sky. The study of monuments that record texts with dated events shows an association between Kawil and Jupiter's retrograde period. Jupiter played a significant role, especially in the events recorded in the lives of Classic Maya rulers, many of whom were represented with the insignia of Kawil (2014, 192). Kawil's mirror is linked with smoking axes and burning torches, symbols that may refer to thunder and lightning. Like Kawil, Tezcatlipoca had a connection with planetary cycles and the moon, but his aspect, or manifestation, was more capricious. Tezcatlipoca is a lord of fate who seems connected with astrological cycles linked to the motions of the sun, moon, and planets (2014, 194).

These centuries' long beliefs, with their roots in Toltec, Maya, Teotihuacan, Aztec, and possibly Olmec cultures, indicate that nighttime concepts were as consequential as daytime ones and that nightly activities in tandem with behaviors in the dark or dark places featured prominently in the lives of ancient Mesoamericans. The chapters that follow interweave many of the themes discussed here, as well as other perspectives of the nightways of Ancient Mexico and Central America.

EXPLORING THEMES OF NIGHT AND DARKNESS

The chapters in this volume are examinations of facets of the night and darkness among the ancient, historical, and contemporary peoples of Mexico and Central America (figure 0.1). The authors contribute to nightways research by drawing on archaeology, art history, chronicles, ethnology, geology, palynology, and resource estimation. Rather than limiting the volume to only archaeological studies, the inclusion of historical and contemporary groups, as well as natural phenomena, enriches our understanding of the concepts of darkness and its relationship to the night (table 0.1). Although many themes are explored, this volume is not comprehensive, since the topics of night and darkness are only beginning to be incorporated into Mesoamerican research.²

The topics and cultures presented herein were largely determined by scholars willing to step outside of familiar themes and explore new avenues. Brigitte Steger and Lodewijk Brunt (2003) faced similar hurdles in bringing together researchers willing to think differently and write about their unfamiliar topic of night and sleep, as did Gonlin and Nowell (2018a) in their night volume. Scholars in this publication discuss myriad different associations attached to night and darkness when drawing on studies of the Maya, Teotihuacanos, Maya-Ulúa, Otomí, and Aztec. Contributors were able to develop and discover ideas and directions for future research and further thinking on notions of night and darkness in the past. Within these pages we hope you will find encouragement in their attempts and fresh conceptualizations, well beyond simply identifying areas inferred to be places where sleep, an obvious nighttime activity, occurred in buildings.

A major theme that runs through this volume is a nocturnal ecology, of which some parameters were discussed above. Modified and imbued with meaning, the ancient Mesoamericans created their own nightscapes and darkscapes—inscribing various media with their perceptions, engaging in different practices, recording their thoughts about these aspects, and leaving behind the material traces for us to interpret. For example, the ancient

Maya likely had nocturnal associations with food; sociopolitical and economic aspects played key roles through such associations. Practice theory provides a framework for the interplay of power, wealth, and behavior through which one can build a better understanding of nightways in Mesoamerica. Similar to other authors' insights, the integration of archaeology, ethnography, and iconography is instrumental to robust interpretations of nighttime foodways. A nocturnal dimension to consumption is a near cultural universal, but this dimension has not been fully explored for Mesoamericans. The duality of Mesoamerican concepts lends itself to a consideration of nocturnal foodways that conveyed entangled messages that could be read by a wide audience (Reed, Zeleznik, and Gonlin, this volume). The role of consumption in inequality extended to nighttime contexts.

Plants were part of the Mesoamerican worldview and figured prominently in origin myths. A compendium of night plants with which the ancient Maya and other Mesoamericans would have been familiar is produced by Venicia Sloten. Her botanical review of the vines, bushes, and flowers that are active at night gives insight into the nocturnal landscape. Relying on linguistic cues, ethnohistory, ethnology, and archaeology, Sloten discusses medicinal uses of plants that likely occurred only at night, including treating headaches, fevers, stomachaches, night sweats, and myriad other ailments. For example, insomnia had many cures that involved the ingestion of plant substances that were widely available, judging from archaeobotanical remains across the region. For nighttime sleeping, ethnohistorical accounts name specific plants that were chosen for inducing sleep. Some of these species have been recovered archaeologically. Color and fragrance were characteristics to be considered when choosing bedding materials. The ritual uses of plants during the night are many, judging from ethnographic accounts. Going back in time where remains of similar plants are recovered during Classic times, one can speculate that there was a nocturnal element to their use, some even during lunar eclipses. Sloten further connects particular flora to the Maya cosmovision, with the sacred tree of life embodied in the ceiba. The remains of charcoal, as commonly recovered from archaeological sites, indicate that the woody taxa would have been used in nighttime capacities for torches, hearths, cooking, and rituals. A multitude of known flora of the Mesoamerican past is thus reinterpreted through the lens of nocturnality.

Darkness does not arise only from the onset of the night. There are other natural phenomena that bring on darkness during the day, such as a total solar eclipse (e.g., Aveni 2018) or massive dust storms. Astronomical events were accurately predicted by ancient Mesoamericans. For decades, scholars have

studied how and what features of the sky the ancient Maya and Aztec found of interest (e.g., Aveni 1975). Stargazing is surely one of the oldest natural sciences (Sari 2016, 11), and many ancient settlements are best viewed in relationship to their night skies (Ashmore and Sabloff 2002). Nuria Sari (2016, 11) advocates this viewpoint for the island of Cozumel and the preservation of its heritage. The political geography of ancient Mesoamericans included the dark, night sky and all its wonders, yet most scholars do not consider darkness an explicit and essential element in our theories and re-creations of the past. Still, we readily accept that Mesoamericans aligned their architecture according to the stars, planets, and calendars (e.g., Galindo Trejo 2016).

However, another type of natural event was unpredictable: an explosive volcanic eruption with its hallmark plume of smoke and ash shooting high into the sky. The tectonically active landscape of Mexico and Central America has numerous volcanoes, some of which have exploded during our own lifetime. Rachel Egan informs us about explosive eruptions and the “volcanic nights” they produce. Such nights have their own characteristics that engage the senses. Egan describes the smells associated with a volcanic eruption that would have been distinct to this phenomenon. It is known that ancient inhabitants experienced explosive eruptions, yet curiously, reference to such events by literate peoples, such as the Classic Maya, has not been found. Research on volcanic eruptions furthers our understanding of migrations, political economies, and collective and individual responses to such catastrophes that created an unnaturally dark world.

Illumination and the dark have gone hand in hand throughout human existence. Our first recorded success with fire stretches back millennia, possibly even prior to the dawn of *Homo sapiens* (Gowlett 2016). The anthropological study of luminosity was inspired by Mikkel Bille and Tim Flohr Sørensen’s (2007) seminal article on this topic, as well as by lychnology, the study of pre-modern lighting devices (Micheli and Santucci 2015; Strong 2018, 2021).³ Sociocultural dimensions of light and darkness are explored through the natural landscape, sources of artificial lighting, and aspects of the built environment. Remains from the ancient Maya city of Copan, Honduras, and the ancient agricultural community of Joya de Cerén, El Salvador, provide concrete evidence as well as possibilities for ancient lighting technologies through Nancy Gonlin and Christine Dixon-Hundredmark’s research. The role that hearths, torches, candles, ceramics, mirrors, and even fireflies may have played in illumination is considered, as well as the symbolic aspects of these objects. Inequality existed across the social spectrum in terms of how one experienced the night through access to such technologies and the type of house in which

one spent the night. A reconsideration of mundane artifacts in terms of the night is in order so we can expand our understanding of the Late Classic Maya way of life and encompass all of the social spectrum (Lohse 2014).

The technology of illuminance is used to make an *entrée* into Teotihuacan nights. The investigation of night lighting in the Early Classic period Highland Mexican metropolis, which perhaps as many as 125,000 residents called home, contributes to sensory archaeology. Jesper Nielsen and Christophe Helmke (2018, figure 4.2) identify a number of icons portraying unlit, smoking, and lit torches at this grand city, providing us with concrete evidence of their use. One can envision, hear, and smell the city at night, the crackling of the torches going strong. One of the residents' major concerns would have been obtaining fuel for a variety of purposes, including illumination. From where the population obtained fuel sources, what those sources were, and how much fuel was available are addressed. Firewood was needed for other activities as well, such as heating the cool night air, cooking, rituals, and craft activities. But perhaps the largest amount of fuel would have been used for lime production. The sights, noises, and aromas of ancient urban life were many; some pertained to activities that were subversive in nature. Nocturnal illumination facilitated a range of activities, legal and illicit. By applying ethnohistorical data from the Codex Mendoza and the Florentine Codex and ethnographic insights to supplement the archaeological data, Randolph Widmer enlivens the bustling city of Teotihuacan to the extent that we can easily picture nightlife in this ancient, crowded nightscape.

It is well-known that as the sense of sight diminishes in darkness for humans, other senses rise to the fore. It is common for humans to have enhanced hearing in dark places, and one of those is the inside of the *temazcal*, a structure and activity readily identified with Mesoamericans in the past and present and across the geographic extent of this culture area. An understudied characteristic of this built environment is an appreciation of its acoustic properties, as reported by Payson Sheets and Michael Thomason who studied Structure 9, the sweat bath, at Cerén, El Salvador. This Classic Maya community was preserved by volcanic ash around 660 CE and exhibits extraordinary preservation of structures, artifacts, features, and other aspects of the built landscape. The acoustical studies were made possible by using a replica of the sweat bath that was created for visitors to this World Heritage site. Human voices are enhanced and amplified, adding to the mystical qualities of the darkness. The *temazcal* itself plays a major role in this experience through its unique resonances. The members of Household 2, who were likely the caretakers of the *temazcal*, could engage the community in darkness by maintaining and protecting this essential element of

their lives. Jan Marie Olson delves into the deep meanings and the darkness of the temazcal to reveal its place in Aztec life and their dualistic philosophy. Its functional uses cannot be separated from its non-material attributes, and we should not isolate the medicinal from the religious, as was the case for Spanish colonizers. Balance could be achieved by way of the sweat bath for men and women, and those who were ill could become well again. Nighttime was ideal for seeking the healing powers of night forces, feminine goddesses, the temazcal, and human healers. The sweat bath is gendered, as the feminine space represents the womb and an entrance into the Earth, just as caves do. Women go to the sweat bath to give birth and to cleanse in contemporary societies, and it is likely that we can extend these practices into ancient times. Symbolic re-birth also occurred in the sweat bath, whether one was attempting to cleanse physical or mental ailments (a false dichotomy for many peoples). Just as central as the structure itself is the associated firebox. A study of structural variations in Late Aztec period temazcales is revealing, as shape and location loosely correlate with each other. Given the fact that Europeans of the sixteenth century rarely bathed (Classen, Howes, and Synnott 1994, 70–71), it is no wonder that daily bathing among the Aztecs was misunderstood by the colonizers and many sweat baths were destroyed. Despite those acts of destruction, numerous temazcales have been recovered in the archaeological record, and they illuminate these dark spaces and often nightly practices of the past.

Rituals, ancestors, darkness, the underworld, and the night are all connected in the Mesoamerican cultures. The ancients used glyphs and iconography to express these connections, and in this volume, they are illustrated in case studies of the Classic Maya, peoples of the Ulúa Valley, the Otomí, and the Aztecs. The concept of primordial darkness is necessary to better understand what darkness meant to ancient Mesoamericans. Jeremy Coltman presents a foundation for the Classic Mayan *ch'een* glyph that symbolizes caves but also wells, cisterns, dark interiors, or burials. Represented by a motif of cross-bones and eyeballs and set against either a dark or a cross-hatched background, this symbol first appears in the Preclassic at the ancient Maya city of Holmul, Guatemala. In his chapter, Coltman explores how *ch'een* is used to imbue primordial darkness and the wild untamed forest. An association of *ch'een* with leafy arbors and bowers furthers this interpretation. This glyph was utilized by ancient Mesoamericans to show the power of deities. The skull and cross-bones motif may be most familiar from Aztec iconography, but a clear argument is made for its precursor among the Classic Maya. Coltman's chapter builds on his previous publications on the night where he explores darkness, creation, and the ancient Maya worldview (Coltman 2018).

The underworld in Mesoamerican cosmology is intrinsically connected with the night, death, the landscape, and ancestors. To illustrate these vital connections, Jeanne Lopiparo provides an example from Late to Terminal Classic sites (ca. 600–1000 CE) at communities in the central alluvium of the Ulúa Valley (household sites [CR-80, CR-103, and CR-381] and the larger center of Currusté [CR-32]). Household renewal rituals manifested in structured deposits and were often closely associated with human burials. The interaction of the living and the dead was an integral part of existence. These shared practices transcended hundreds and in some cases thousands of years of occupation. Concepts of renewal and regeneration were expressed materially through polychrome vessels, figural artifacts, and structured deposits. Relying on archaeology, iconography, epigraphy, ethnohistory, ethnography, and analogy with the Classic Maya, Lopiparo presents a robust case for the interpretation of the built landscape and the daily and nightly journey of the sun and other celestial bodies.

Numerous nocturnal rituals were associated with fire, but perhaps the best-known one from ancient Mesoamerica is the Aztec New Fire Ceremony, which occurred every fifty-two years to coincide with the meshing of the Mesoamerican ritual and solar calendars. On the night of this ominous date, household and temple fires were extinguished throughout the empire and priests gathered outside Tenochtitlan at Citlaltepētāl, as described by Kirby Farah. Such descriptions are well-known from ethnohistorical sources that highlight the Aztec version. However, this ceremony was practiced before the existence of the Aztec Triple Alliance. Evidence from the northern Basin of Mexico Otomí capital of Xaltocan informs us about variation in ideology and sociopolitical organization and that Early Postclassic polities conquered by the Aztecs often retained their own identities through the maintenance of rituals. Archaeological evidence for the New Fire Ceremony has been uncovered at central Mexican sites. Kirby uses these data to examine dynamics of evolving power, politics, and practices. Similarities and differences between the pre-Aztec New Fire ritual at Xaltocan and the New Fire Ceremony that defined the Aztec Empire are indicative of both continuity and identity. The element of darkness was essential, as the appropriate time for such rituals was during the night.

Cecelia Klein offers a deep exploration of the use of the blindfold (*ixquimilli*) among the Aztecs and its association with darkness. Hampered by non-indigenous interpretations of this device, colonial explanations relied on a Christian heritage that incorrectly associated the blindfold with guilt and sin. Klein proposes that the blindfold did indeed symbolize that a transgression had occurred but also that the wearing of it could make amends, since the

wearer was returned to the darkness of Creation when dressed in the blindfold. The generative aspect of darkness the Aztecs assigned to the blindfold was thus used for healing. Only two deities in the painted manuscripts wear blindfolds, Tezcatlipoca (“Mirror Smoking”) and Tlazolteotl (“Divine Filth”), both of whom have the ability to erase errors and are associated with the night and the wind. The propitious hour of midnight was ideal for donning the blindfold for naked clients to petition the deities to erase the damage. This practice recalls the rituals of many other cultures, both ancient and modern and across Mesoamerica and beyond.

We are fortunate to have Julia Hendon synthesize and reflect on night and darkness in the Mesoamerican past. Her prolific work has focused on social practices of ancient cultures, and her insights afford additional reflection on the significance and meaning of the night and darkness to the ancient peoples of Mexico and Central America. Hendon effectively concludes the volume by highlighting the centrality of the night and considers why archaeologists have not paid more attention to it. She offers directions for further research, as we do, below.

INTO THE FUTURE

In past and recent scholarship, night has often been, at best, implicit with interpretations considered within the context of daily or daylight behavior. There has been a bias toward day and daytime activities research; a diecentrism has existed, as Steger and Brunt (2003) indicate. Theories almost invariably focus on that which is perceived during daylight; thus night and darkness remain underexplored themes. Here, we propose a research agenda aimed at explicitly discovering such influences on behavior. The authors in this volume have begun to rectify our knowledge of these missing components—nighttime and darkness—in their many motifs, and, by extension, ramifications are assessed in some ancient Mesoamerican cultures. The intentions are to delineate and illustrate how adding a nightways dimension augments archaeological issues within an anthropological framework where the aspect has been previously neglected. The results demonstrate that the concepts of night and darkness enrich and strengthen anthropological and humanistic explanations of behavior, ecology, power, economy, ideology, and the supernatural—thus working toward a more holistic, encompassing anthropological discourse of the study of humanity. Night and darkness are constituent parts of the human experience and our behaviors. In a similar way to Robert Shaw (2015), we propose considering the experiences of levels and types of darkness in greater

detail in archaeology, with attention to the nuances of dark and light, to the relationships between lit and unlit spaces and objects within those spaces, to luminosity following Bille and Sørensen (2007), to the role of shadows, and to the exploration of the behaviors involved. We seek new boundaries in understanding darkness beyond those found in cave archaeology, where scholars such as Charles Faulkner (1988) explicitly discuss the quality of light as an interpretative issue and the identification of *dark zones*. Paul Pettitt (2016) emphasizes the ways light and darkness figured in ancient belief systems, and Holley Moyes's (2012) edited collection on the ritual use of caves provides new insights. Our authors go beyond the human experiences and perceptions that have been explored only recently by art critics and urban sociologists (Garcia-Ruiz and Nofre 2020), geographers (Edensor 2013, 2015a, 2015b, 2017; Morris 2011; Segre 2020), and historians (Ekrich 2005; Koslofsky 2011).

Nighttime, when discussed in archaeology, is nearly always in association with astronomy, where incredible insights into the past have resulted. The night sky was as essential to ancient peoples as their economic or political organization. Heritage strategies that incorporate the nightscape do greater justice to the past, and as advocated for the island of Cozumel, "the preservation of dark skies would allow for development of archaeological and astronomical research projects that would support making nocturnal landscapes another exceptional attraction" (Sari 2016, 16). In our research as archaeologists, we must consider the local communities affected and the context in which archaeological remains were situated, and that pursuit includes the preservation of archaeological remains as well as dark nights.

Systematic studies of the anthropological aspects of nightways remain open directions of research. Our current theories neglect to directly address nocturnal elements and thus require revisions; rarely is more than a passing mention made of nocturnal behaviors. This volume is a continuation of the theme of the archaeology of the night (Gonlin and Nowell 2018a), but it also expands on the concept of darkness (Dowd and Hensey 2016b) and luminosity (Bille and Sørensen 2007). By re-imagining the vast records many of us Mesoamericanists already have, we can use those data to great effect in creating an understanding of the role of night, darkness, and luminosity among ancient peoples of Mexico and Central America.

ACKNOWLEDGMENTS

We thank April Nowell and Christine Dixon-Hundredmark for their careful reading of the ideas presented in this introductory chapter, for their

substantive edits, and for helping us clarify our thoughts on many points. Insights from Matthew Looper and Gabrielle Vail are much appreciated. Three anonymous reviewers provided critical feedback.

NOTES

1. Such sources of light include the moon, the stars, the Milky Way, natural gas flares, magma and lightning from volcanoes, auroras, wildfires, and bioluminescent organisms. https://www.nasa.gov/mission_pages/NPP/news/earth-at-night.html.
2. In 2010, the Pre-Columbian Society of Washington, DC, held a symposium titled *Under Cover of Darkness: The Meaning of Night in Ancient Mesoamerica*. Six presentations were made, but these papers were not published. One of the presenters, Cecelia Klein, expanded her original paper, which is included in this volume.
3. <http://www.lychnology.org/>.

REFERENCES

- Anawalt, Patricia. 1996. "Aztec Knotted and Netted Capes: Colonial Interpretations vs. Indigenous Primary Data." *Ancient Mesoamerica* 7 (2): 187–206.
- Ashmore, Wendy, and Jeremy A. Sabloff. 2002. "Spatial Orders in Maya Civic Plans." *Latin American Antiquity* 13 (2): 201–215.
- Aveni, Anthony F. 1975. *Archaeoastronomy in Pre-Columbian America*. Austin: University of Texas Press.
- Aveni, Anthony F., ed. 2008. *Foundations of New World Cultural Astronomy*. Boulder: University Press of Colorado.
- Aveni, Anthony F. 2018. "Night in Day: Contrasting Maya and Hindu Responses to Total Solar Eclipses." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, 139–154. Boulder: University Press of Colorado.
- Baldwin, Peter C. 2012. *In the Watches of the Night: Life in the Nocturnal City, 1820–1930*. Chicago: University of Chicago Press.
- Becquelin, Aurore Monod, and Jacques Galinier, eds. 2016. *Las cosas de la noche: Una mirada diferente*. Mexico City: Centro de Estudios Mexicanos y Centroamericano. <https://doi.org/10.4000/books.cemca.4201>.
- Benson, Elizabeth P. 1997. *Birds and Beasts of Ancient Latin America*. Gainesville: University Press of Florida.
- Beyer, Herman. 1908. "The Symbolic Meaning of the Dog in Ancient Mexico." *American Anthropologist* New Series 10 (3): 419–422.

- Bille, Mikkel, and Tim Flohr Sørensen. 2007. "An Anthropology of Luminosity: The Agency of Light." *Journal of Material Culture* 12 (3): 263–284.
- Bogard, Paul. 2013. *The End of Night: Searching for Natural Darkness in an Age of Artificial Light*. New York: Little, Brown.
- Boone, Elizabeth Hill. 1994. *The Aztec World*. St. Remy Press and Smithsonian Books: Montreal and Washington, DC.
- Brady, James E. 2019. "Evidence of Bat Sacrifice in Ancient Maya Cave Ritual." *Archaeological Discovery* 7: 84–91.
- Brady, James E., and Jeremy D. Coltman. 2016. "Bats and the Camazotz: Correcting a Century of Mistaken Identity." *Latin American Antiquity* 27 (2): 227–237.
- Brown, Linda A. 2005. "Planting the Bones: Hunting Ceremonialism at Contemporary and Nineteenth-Century Shrines in the Guatemalan Highlands." *Latin American Antiquity* 16 (2): 131–146.
- Brown, Linda A., and Andrea Gerstle. 2002. "Structure 10: Feasting and Village Festivals." In *Before the Volcano Erupted: The Ancient Cerén Village in Central America*, ed. Payson Sheets, 97–103. Austin: University of Texas Press.
- Bunson, Margaret R., and Stephen M. Bunson. 1996. *Encyclopedia of Ancient Mesoamerica*. New York: Facts on File.
- Cajas, Antonieta. 2009. "Bats in Maya Art." *FLAAR* (June): 1–10.
- Chinchilla Mazariegos, Oswaldo. 2017. *Art and Myth of the Ancient Maya*. New Haven, CT: Yale University Press.
- Christenson, Allen J. 2007. *Popol Vuh: Sacred Book of the Quiché Maya People*. Norman: University of Oklahoma Press.
- Classen, Constance, David Howes, and Anthony Synnott. 1994. *Aroma: The Cultural History of Smell*. London: Routledge.
- Coltman, Jeremy D. 2018. "Where Night Reigns Eternal: Darkness and Deep Time among the Ancient Maya." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, 201–222. Boulder: University Press of Colorado.
- Conkey, Margaret. 2018. "Afterword: A Portal to a More Imaginative Archaeology." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, 387–390. Boulder: University Press of Colorado.
- Dowd, Marion, and Robert Hensey. 2016a. "Background and Acknowledgements." In *Darkness: Archaeological, Historical, and Contemporary Perspectives*, ed. Marion Dowd and Robert Hensey, xi–xii. Oxford: Oxbow Books.
- Dowd, Marion, and Robert Hensey, eds. 2016b. *Darkness: Archaeological, Historical, and Contemporary Perspectives*. Oxford: Oxbow Books.

- Edensor, Tim. 2013. "Reconnecting with Darkness: Gloomy Landscapes, Lightless Places." *Social and Cultural Geography* 14 (4): 446–465.
- Edensor, Tim. 2015a. "The Gloomy City: Rethinking the Relationship between Light and Dark." *Urban Studies* 52 (3): 422–438.
- Edensor, Tim. 2015b. "Introduction to Geographies of Darkness." *Cultural Geographies* 22 (4): 559–565.
- Edensor, Tim. 2017. *From Light to Dark: Daylight, Illumination, and Gloom*. Minneapolis: University of Minnesota Press.
- Ekirch, A. Roger. 2005. *At Day's Close: Night in Times Past*. New York: W. W. Norton.
- Evans, Susan Toby. 2013. *Ancient Mexico and Central America: Archaeology and Culture History*, 3rd ed. London: Thames and Hudson.
- Faulkner, Charles H. 1988. "Painters of the 'Dark Zone.'" *Archaeology* 41 (2): 30–35.
- Fitzsimmons, James L. 2009. *Death and the Classic Maya Kings*. Austin: University of Texas Press.
- Fogelin, Lars. 2019. *An Unauthorized Companion to American Archaeological Theory*. <https://arizona.academia.edu/LarsFogelin>.
- Galindo Trejo, Jesús. 2016. "Calendric-Astronomical Alignment of Architectural Structures in Mesoamerica: An Ancestral Cultural Practice." In *The Role of Archaeoastronomy in the Maya World: The Case Study of the Island of Cozumel*, ed. Nuria Sanz, Chantal Connaughton, Liza Gisbert, José Pulido Mata, and Carlos Tejada, 21–36. Paris: United Nations Educational, Scientific, and Cultural Organization.
- Galinier, Jacques, Aurore Monod Becquelin, Guy Bordin, Laurent Fontaine, Francine Fourmaux, Juliette Roullet Ponce, Piero Salzarulo, Philippe Simonnot, Michèle Therrien, and Iole Zilli. 2010. "Anthropology of the Night: Cross-Disciplinary Investigations." *Current Anthropology* 51 (6): 819–847. <https://doi.org/10.1086/653691>.
- Galinier, Jacques, and Mario A. Zamudio Vega. 2016. *Una noche de espanto: Los otomíes en la obscuridad*. Mexico City: Tenango de Doria UICEH, Universidad Cultural del Estado de Sociéte d'Ethnographie Centro de Estudios Mexicanos y Centroamericanos.
- Gann, Thomas William Francis. 1918. *Maya Indians of Southern Yucatan and Northern British Honduras*. Bureau of American Ethnology Bulletin 64. Washington, DC: Bureau of American Ethnology.
- Garcia-Ruiz, Manuel, and Jordi Nofre, eds. 2020. *ICNS Proceedings*. Lisboa: ISCTE Instituto Universitario de Lisboa.
- Geoscience Australia, Canberra. 2018. "Astronomical Definitions." <http://www.ga.gov.au/scientific-topics/astronomical/astronomical-definitions>.

- Gonlin, Nancy. 2018. "Preface." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, xxix–xxx. Boulder: University Press of Colorado.
- Gonlin, Nancy. 2020. "Household Archaeology of the Classic Period Lowland Maya." In *The Maya World*, ed. Scott R. Hutson and Traci Ardren, 389–406. New York: Routledge.
- Gonlin, Nancy, and Christine C. Dixon. 2018. "Classic Maya Nights at Copan, Honduras and El Cerén, El Salvador." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, 45–76. Boulder: University Press of Colorado.
- Gonlin, Nancy, and April Nowell, eds. 2018a. *Archaeology of the Night: Life after Dark in the Ancient World*. Boulder: University Press of Colorado.
- Gonlin, Nancy, and April Nowell. 2018b. "Introduction to the Archaeology of the Night." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, 5–24. Boulder: University Press of Colorado.
- Götz, Christopher M., and Kitty F. Emery, eds. 2013. *The Archaeology of Mesoamerican Animals*. Atlanta: Lockwood.
- Gowlett, John A.J. 2016. "The Discovery of Fire by Humans: A Long and Convoluted Process." *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 371 (1696): 20150164. <https://doi.org/10.1098/rstb.2015.0164>.
- Graulich, Michel. 1983. "Myths of Paradise Lost in Pre-Hispanic Central Mexico." *Current Anthropology* 24: 575–588.
- Gremillion, Kristen J. 2011. *Ancestral Appetites: Food in Prehistory*. Cambridge: Cambridge University Press.
- Hanson, Dirk. 2014. "Drowning in Light." *Nautilus* 11: 4–22.
- Hensey, Robert. 2016. "Past Dark: A Short Introduction to the Human Relationship with Darkness over Time." In *Darkness: Archaeological, Historical, and Contemporary Perspectives*, ed. Marion Dowd and Robert Hensey, 1–10. Oxford: Oxbow Books.
- Isbell, William H. 2009. "Huari: A New Direction in Central Andean Urban Evolution." In *Domestic Life in Prehispanic Capitals: A Study of Specialization, Hierarchy, and Ethnicity*, ed. Linda R. Manzanilla and Claude Chapdelaine, 197–219. *Memoirs of the Museum of Anthropology* 46. Ann Arbor: Museum of Anthropology, University of Michigan.
- Iwaniszewski, Stanislaw. 2016. "Time and the Moon in Maya Culture: The Case of Cozumel." In *The Role of Archaeoastronomy in the Maya World: The Case Study of the Island of Cozumel*, ed. Nuria Sanz, Chantal Connaughton, Liza Gisbert, José Pulido Mata, and Carlos Tejada, 39–55. Paris: United Nations Educational, Scientific, and Cultural Organization.

- James, Sian. 2016. "Digging into the Darkness: The Experience of Copper Mining in the Great Orme, North Wales." In *Darkness: Archaeological, Historical, and Contemporary Perspectives*, ed. Marion Dowd and Robert Hensey, 75–83. Oxford: Oxbow Books.
- Jorgenson, Jeffrey Paul. 1993. "Gardens, Wildlife Densities, and Subsistence Hunting by Maya Indians in Quintana Roo, Mexico." PhD thesis. University of Florida, Gainesville.
- Kerr, Justin. 2001. "The Last Journey." <http://www.mayavase.com/jour/journey.html>.
- Koslofsky, Craig. 2011. *Evening's Empire: A History of the Night in Early Modern Europe*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511977695>.
- Kowalski, Jeff Karl. 1985. "Lords of the Northern Maya: Dynastic History in the Inscriptions of Uxmal and Chichén Itzá." *Expedition* 27 (3): 50–60.
- Lohse, Jon C. 2014. "Alienating Ancient Maya Commoners." *Archaeological Papers of the American Anthropological Association* 23 (1): 81–94.
- Looper, Matthew. 2019. *The Beast Between: Deer in Maya Art and Culture*. Austin: University of Texas Press.
- Marken, Damien B, ed. 2007. *Palenque: Recent Investigations at the Classic Maya Center*. Lanham, MD: Altamira.
- Martin, Simon. 2005. "Of Snakes and Bats: Shifting Identities at Calakmul." *PARI Journal* 6 (2): 5–13.
- Martin, Simon. 2020. *Ancient Maya Politics: A Political Anthropology of the Classic Period 150–900 CE*. Cambridge: Cambridge University Press.
- Martin, Simon, and Nikolai Grube. 2008. *Chronicle of the Maya Kings and Queens*, 2nd ed. London: Thames and Hudson.
- Maudslay, A. P. 1889–1902. "Archaeology Plate 65." In *Biologia Centrali-Americana, or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America: Archaeology*, vol. 1: *Plates*, 65, ed. F. Ducane Godman and Osbert Salvin. London: R. H. Porter and Dulau.
- Micheli, Maria Elisa, and Anna Santucci, eds. 2015. *Lumina: Convegno Internazionale di Studi Urbino 5–7 giugno 2013*. Pisa, Italy: Edizione ETS.
- Milbrath, Susan. 1999. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press.
- Milbrath, Susan. 2014. "The Maya Lord of the Smoking Mirror." In *Tezcatlipoca: Trickster and Supreme Deity*, ed. Elizabeth Baquedano, 163–196. Boulder: University Press of Colorado.
- Morris, Nina J. 2011. "Night Walking: Darkness and Sensory Perception in a Night-time Landscape Installation." *Cultural Geographies* 18 (3): 315–342.

- Mothrè, Ève, and Aurore Monod Becquelin. 2016. "La Profundidad de la Noche Maya." In *Las cosas de la noche: Una mirada diferente*, ed. Aurore Monod Becquelin and Jacques Galinier, 99–112. Mexico City: Centro de Estudios Mexicanos y Centroamericano. <https://doi.org/10.4000/books.cemca.4201>.
- Moyes, Holley, ed. 2012. *Sacred Darkness: A Global Perspective on the Ritual Use of Caves*. Boulder: University Press of Colorado.
- Nagao, Debra. 2014. "An Interconnected World? Evidence of Interaction in the Arts of Epiclassic Cacaxtla and Xochicalco, Mexico." PhD thesis, Columbia University, New York City, NY.
- Nagao, Debra. 2020. "Proscenium of the Dark: Darkness and Liminality in Pre-Columbian Mesoamerica." In *México Noir: Rethinking the Dark in Contemporary Writing and Visual Culture*, ed. Erica Segre, 1–25. Bern, Switzerland: Peter Lang.
- "NASA-NOAA Satellite Reveals New Views of Earth at Night." https://www.nasa.gov/mission_pages/NPP/news/earth-at-night.html.
- Navarro, Laura, and Joaquin Arroyo-Cabrales. 2013. "Bats in Ancient Mesoamerica." In *The Archaeology of Mesoamerican Animals*, ed. Christopher M. Götz and Kitty F. Emery, 583–605. Atlanta: Lockwood.
- Neumann, Franke J. 1975. "The Dragon and the Dog: Two Symbols of Time in Nahuatl Religion." *Numen* 22 (1): 1–23.
- Nielsen, Jesper, and Christophe Helmke. 2018. "'Where the Sun Came into Being': Rites of Pyrolatry, Transition, and Transformation in Early Classic Teotihuacan." In *Smoke, Flames, and the Human Body in Mesoamerican Ritual Practice*, ed. Vera Tiesler and Andrew K. Scherer, 77–107. Washington, DC: Dumbarton Oaks Library and Research Collection.
- Olivier, Guilhem. 2015. "Enemy Brothers or Divine Twins? A Comparative Approach between Tezcatlipoca and Quetzalcoatl, Two Major Deities from Ancient Mexico." In *Tezcatlipoca: Trickster and Supreme Deity*, ed. Elizabeth Baquedano, 59–82. Boulder: University Press of Colorado.
- Palmer, Bryan D. 2000. *Cultures of Darkness: Night Travels in the Histories of Transgression (from Medieval to Modern)*. New York: Monthly Review Press.
- Pettitt, Paul. 2016. "Darkness Visible: Shadows, Art, and the Ritual Experience of Caves in Upper Palaeolithic Europe." In *Darkness: Archaeological, Historical, and Contemporary Perspectives*, ed. Marion Dowd and Robert Hensey, 11–23. Oxford: Oxbow Books.
- Pohl, Mary D. 1977. "Hunting in the Maya Village of San Antonio, Rio Hondo, Orange Walk District, Belize." *Journal of Belizean Affairs* 5: 52–63.
- Pohl, Mary D. 1985. "The Privileges of Maya Elites: Prehistoric Vertebrate Fauna from Seibal." In *Prehistoric Lowland Maya Environment and Subsistence Economy*,

- ed. Mary D. Pohl, 133–145. Papers of the Peabody Museum of Archaeology and Ethnology 77. Cambridge, MA: Peabody Museum, Harvard University.
- Quirarte, Jacinto. 1979. “The Representation of Underworld Processions in Maya Vase Painting: An Iconographic Study.” In *Maya Archaeology and Ethnohistory*, ed. Norman Hammond and Gordon R. Willey, 116–148. Austin: University of Texas Press.
- Ruz Lhuillier, Alberto. 1973. *El Templo de las Inscripciones, Palenque*. Mexico City: Instituto Nacional de Antropología e Historia.
- Ruz Lhuillier, Alberto, and J. Alden Mason. 1953. “The Mystery of the Temple of the Inscriptions.” *Archaeology* 6 (1): 3–11.
- Sari, Nuria. 2016. “The Cultural Landscape of the Sky as Heritage and Development.” In *The Role of Archaeoastronomy in the Maya World: The Case Study of the Island of Cozumel*, 11–19. Paris: United Nations Educational, Scientific, and Cultural Organization.
- Saunders, Nicholas J. 1994. “Predators of Culture: Jaguar Symbolism and Mesoamerican Elites.” *World Archaeology* 26 (1): 104–117.
- Saunders, Nicholas J. 2001. “Jaguars.” In *Archaeology of Ancient Mexico and Central America: An Encyclopedia*, ed. Susan Toby Evans and David L. Webster, 385–386. New York: Garland.
- Schele, Linda. 1987. “Drawing of Inscriptions on Three Sides of Stela: CPN 18.” Black ink on mylar. Schele Drawing Collection. Object no. SD-1012. www.collections.lacma.org.
- Schele, Linda, and Mary Ellen Miller. 1986. *The Blood of Kings: Dynasty and Ritual in Maya Art*. New York: George Braziller.
- Schnepel, Burkhard, and Eyal Ben-Ari. 2005. “Introduction: ‘When Darkness Comes . . .’: Steps Toward an Anthropology of the Night.” *Paidemua: Mitteilungen zur Kulturkunde* Bd. 51: 153–164.
- Segre, Erica, ed. 2020. *México Noir: Rethinking the Dark in Contemporary Writing and Visual Culture*. Bern, Switzerland: Peter Lang.
- Seler, Eduard. 1902–1903. *Codex Vaticanus no. 3773 (Codex Vaticanus B): An Old Mexican Pictorial Manuscript in the Vatican Library, Published at the Expense of His Excellency the Duke of Loubat, Elucidated by Dr. Eduard Seler*. English edition by A. H. Keane. Facsimile. Berlin: T. and A. Constable.
- Seler, Eduard. 1904. “The Bat God of the Maya Race.” *Bureau of American Ethnology, Bulletin* 28: 231–241. Washington, DC.
- Seler, Eduard. 1996. *Eduard Seler: Collected Works in Mesoamerican Linguistics and Archaeology*, vol. 5. Culver City, CA: Labyrinthos.
- Sharpe, Ashley, Kitty F. Emery, Takeshi Inomata, Daniela Triadan, George D. Kamenov, and John Krigbaum. 2018. “Earliest Isotopic Evidence in the Maya

- Region for Animal Management and Long-Distance Trade at the Site of Ceibal, Guatemala." *Proceedings of the National Academy of Sciences* 115 (14): 3605–3610.
- Shaw, Robert. 2015. "Controlling Darkness: Self, Dark, and the Domestic Night." *Cultural Geographies* 22 (4): 585–600.
- Smith, Monica L. 2012. "Seeking Abundance: Consumption as a Motivating Factor in Cities Past and Present." *Research in Economic Anthropology* 32: 27–51.
- Smith, Monica L., ed. 2017a. *Abundance: The Archaeology of Plentitude*. Boulder: University Press of Colorado.
- Smith, Monica L. 2017b. "The Archaeology of Abundance." In *Abundance: The Archaeology of Plentitude*, ed. Monica L. Smith, 3–22. Boulder: University Press of Colorado.
- Spitschan, Manuel, Geoffrey K. Aguirre, David H. Brainard, and Alison M. Sweeney. 2016. "Variation of Outdoor Illumination as a Function of Solar Elevation and Light Pollution." *Scientific Reports* 6: 26756.
- Spitschan, Manuel, Geoffrey K. Aguirre, David H. Brainard, and Alison M. Sweeney. 2017. "Erratum: Variation of Outdoor Illumination as a Function of Solar Elevation and Light Pollution." *Scientific Reports* 6: 26756; doi: 10.1038/srep26756.
- Steger, Brigitte, and Lodewijk Brunt, eds. 2003. *Night-time and Sleep in Asia and the West: Exploring the Dark Side of Life*. London: Routledge.
- Strong, Meghan E. 2018. "A Great Secret of the West: Transformative Aspects of Artificial Light in New Kingdom Egypt." In *Archaeology of the Night: Life after Dark in the Ancient World*, ed. Nancy Gonlin and April Nowell, 249–264. Boulder: University Press of Colorado.
- Strong, Meghan E. 2021. *Sacred Flames: The Power of Artificial Light in Ancient Egypt*. Cairo: American University in Cairo Press.
- Stuart, David. 2003. "On the Paired Variants of TZ'AK." <http://www.mesoweb.com/stuart/notes/tzak.pdf>.
- Stuart, David. 2007. "White Owl Jaguar': A Tikal Royal Ancestor." <https://decipherment.wordpress.com/2007/11/04/white-owl-jaguar-a-tikal-royal-ancestor/>.
- Stuart, David. 2021. "The *Wahys* of Witchcraft: Sorcery and Political Power among the Classic Maya." In *Sorcery in Mesoamerica*, ed. Jeremy D. Coltman and John D. Pohl, 179–205. Louisville: University Press of Colorado.
- Thompson, J. Eric. 1930. *Ethnology of the Mayas of Southern and Central British Honduras*. Field Museum of Natural History, Publication 274, Anthropological Series 17, no. 2. Chicago: Field Museum Press.
- Tiesler, Vera, and Andrea Cucina, eds. 2006. *Janaab' Pakal of Palenque: Reconstructing the Life and Death of a Maya Ruler*. Tucson: University of Arizona Press.
- Time and Date AS. 2018. "Twilight, Dawn, and Dusk." <https://www.timeanddate.com/astronomy/different-types-twilight.html>.

- Tozzer, Alfred M., and Glover M. Allen. 1910. *Animal Figures in the Maya Codices*. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University 4, no. 3. Cambridge: Salem Press.
- Turner, Victor. 1969. *The Ritual Process: Structure and Anti-Structure*. New York: Transaction.
- Vail, Gabrielle, and Christine Hernández. 2013. *Re-Creating Primordial Time: Foundation Rituals and Mythology in the Postclassic Maya Codices*. Boulder: University Press of Colorado.
- Winter, Irene J. 2007. "Representing Abundance: A Visual Dimension of the Agrarian State." In *Settlement and Society: Essays Dedicated to Robert McCormick Adams*, ed. Elizabeth C. Stone, 117–138. Los Angeles: Cotsen Institute of Archaeology.