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ANNUAL CRUISE REPORT CELESTIAL ORIGIN OF MAYA MYTH

# ARCHAEOLOGY

JULY/AUGUST 1993

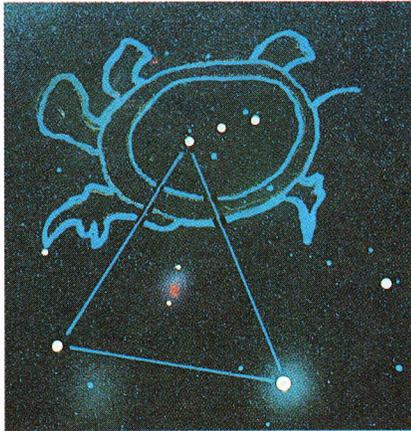
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## ALASKA

*Digging the  
Last Frontier*



# ARCHAEOLOGY OF MIND



*Detail from painting on pages 26–27 depicts the celestial tortoise shell from which the Maya maize god was born and the three stones of creation.*

Ever since the early pioneers of Maya research first set foot in the jungles of Central America, scholars have been eagerly exploring the origin and development of a truly brilliant people. In time, as strange glyphs were decoded and ancient codices translated, the world of the Maya began to emerge from prehistory into history. Now there have been important new breakthroughs in our ability to comprehend how they viewed the universe and their own place in it.

Our report on the celestial origin of the Maya creation myth, beginning on page 26, represents a collective effort to

come to terms with the cosmological mindset of this ancient people. Our principal guide was epigrapher Linda Schele, who alerted us early on that acts critical to the world's creation in Maya mythology were elaborately played out in the movements of the Milky Way and a host of constellations. To get a better grip on this complex subject, we sent contributing editor Richard A. Wertime to the Maya Meetings in Austin, Texas, where epigraphers, archaeologists, and archaeoastronomers were coming to terms with the implications of the new discoveries. We asked associate editor Angela Schuster to work with Barbara and Dennis Tedlock on a companion piece dealing with the relationship of ancient Maya texts and the traditions of the present-day Quiché Maya to the movements of the stars.

To dress up our report, we assigned illustrator Brian Sullivan of the American Museum of Natural History's Hayden Planetarium to re-create the sky as it would have appeared on Maya creation night August 13, 3114 B.C., as recorded on a stela at the site of Quirigua in Guatemala. Photographer Justin Kerr graciously provided some of his now-famous roll-out transparencies of Maya vases to illustrate the connections between Maya cosmology and art. Lastly, we invited archaeoastronomer Anthony Aveni of Colgate University to contribute a few words on a people who, in his view, "talked to the stars, listened to the planets...[and] saw themselves as mediators in a universal discourse."

Comprehending the perceptions of an ancient people—archaeology of mind, as it were—is no easy matter. Schele and other scholars, having finally deciphered so many of the ancient Maya glyphs and the mythological tales that they told, looked for clues in the movements of the stars. And, suddenly, she recalls, "It was like being able to read Genesis in the heavens."

Peter A. Young  
Editor-in-Chief

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BRIAN SULLIVAN

# WRITTEN *in the* STARS

## *Celestial Origin of Maya Creation Myth*

BY RICHARD A. WERTIME  
AND ANGELA M.H. SCHUSTER

*The three hearthstones of the Maya creation story are found in the constellation Orion, according to the Quiché Maya of highland Guatemala. They are Alnitak (the southernmost star in Orion's belt), Saiph, and Rigel. At the center of the triangle formed by these celestial bodies is the Orion nebula, the mythical hearthfire. According to the myth, First Father, the maize god, was born from the cracked shell of a tortoise, perhaps a Maya constellation within Orion. The two piglike peccaries in the eastern part of Leo are a Maya constellation and figure prominently in the creation story. The glyph for star, shown three times, often accompanies depictions of the peccaries in Maya artwork.*



OVER THE COURSE OF COUNTLESS NIGHTS ANCIENT Maya astronomers considered long and hard the movement of the stars and planets. Living in a world without light pollution, these gifted observers beheld a sky that was as limpid as a mountain stream. The nearness and the brightness of the celestial bodies led them to read in their movements significant elements of human history, including the miracle of creation itself.

Scholars have had only a fragmentary understanding of these matters in the past. Now, for the first time, they are beginning to comprehend the intricate connection between Maya creation myth and the movements of the stars. It is a remarkable story being pieced together by a cluster of scholars who have patiently decoded a complex legacy of Maya writings and artworks.

The interconnections between the observable sky and Maya creation myth find expression in surviving Maya codices, in important sacred texts such as the *Popol Vuh*, in hieroglyphic inscriptions, and in a vast range of artworks—carved bone, ceramics, murals, and sculpture. Says epigrapher Linda Schele, “We used to view Maya iconography as a collection of discrete units. Now there’s a whole pattern to it; all of the parts are related to phenomena that can be observed in the sky by anybody who lives away from the light of the modern world.”

What makes these interconnections particularly exciting is that they are supported by ritual practices and religious beliefs of the modern Maya. There is compelling evidence for strong cultural continuity between the Maya and their modern descendants. Mayan artisans, like their ancient counterparts, express their cosmic vision through almost every conceivable medium: in the patterns of fabrics, in the hearthstones of the traditional household, in the temporary shrines built to invoke the rain gods—shrines whose form mimics the cosmos.

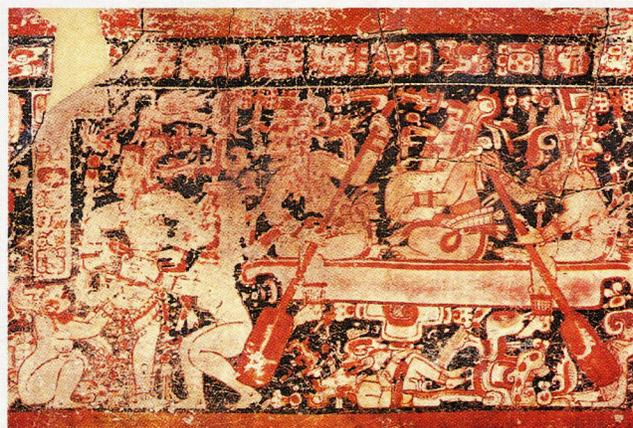
Some of the early pioneers in Maya studies had intimations of what is now being forcefully argued. Herbert Spinden and Sylvanus G. Morley—early students of Maya art, writing, and calendrics—suggested that the Maya creation myth was linked in deep ways to Maya astronomy. In time, however, there was a reaction against such cosmological interpretations. “Astronomy was banned,” recalls Dennis Tedlock, an ethnologist and translator of the *Popol Vuh*. By the 1950s and 1960s ethnology was also discounted as a reliable source of data. But all this began to change in the 1980s when archaeoastronomy emerged as a new subfield in archaeological studies. “In the New World,” says Anthony Aveni, an archaeoastronomer at Colgate University, “we seem to be developing an anthropology of astronomy rather than a history of astronomy. It deals with the complex relationship between astronomy and politics, economics, and cultural history.”

This past year has seen major breakthroughs in the

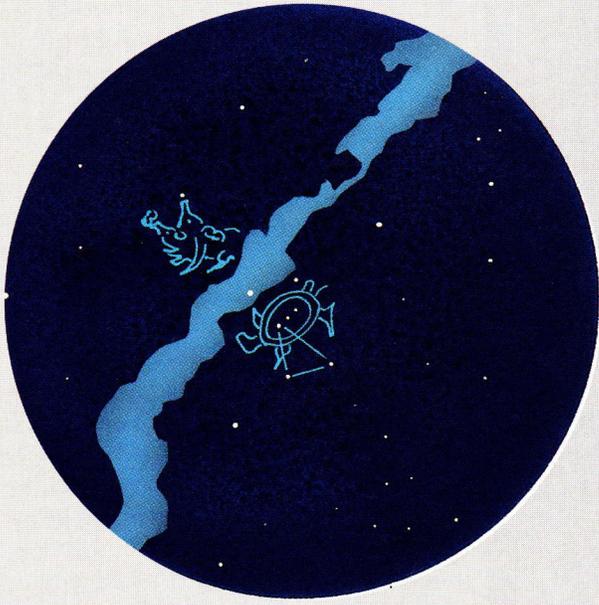


BRIAN SULLIVAN

*Just after sunset on August 12, creation eve, the Milky Way stretches from east to west across the night sky. To the Maya this position of the galaxy represented a great canoe paddled by gods who take First Father, the maize god, to the place of creation where he is reborn from the cracked shell of a tortoise. The piglike peccaries located in the eastern part of Leo are an important Maya constellation. A late seventh-century vase from the Petén region of Guatemala, below, depicts the paddler gods and First Father after their arrival at the place of creation. Two attendants prepare First Father for his rebirth.*



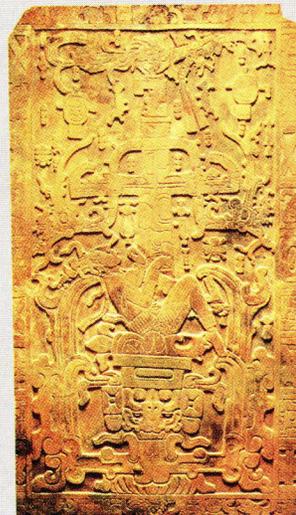
© JUSTIN KERR



*By dawn on August 13 the western portion of the Milky Way drops below the southern horizon. The three hearthstones and the tortoise shell from which First Father is reborn appear just east of zenith. According to Maya myth, the canoe bearing the paddler gods (the Milky Way) sinks after delivering First Father to the place of creation. The constellation of the two peccaries appears just west of the Milky Way. First Father's rebirth from the cracked shell of a tortoise is depicted below on a Classic-period ceramic plate from the northern Petén.*



*At dawn on February 5 the Milky Way—the Maya World Tree—arches from north to south across the sky. The ecliptic, or path of the sun, moon, planets, and constellations of the zodiac, lies perpendicular to it. According to the Maya creation story, First Father raised the heavens on February 5, 542 days after his rebirth. With this act, he linked Earth to both heaven and the underworld (Xibalba) by erecting a World Tree, whose roots lay deep in the southern sky. A representation of the World Tree appears on the sarcophagus lid of the Emperor Pacal of Palenque, below. In this rendering, the roots of the World Tree are shown as the jaws of a crocodile while the ecliptic is depicted as a double-headed serpent bar crossing the World Tree at right angles.*



MERLE GREENE ROBERTSON



*A deity paddling a canoe sits atop an Early Classic tripod vessel (ca. A.D. 300) from the Petén region of Guatemala. In Maya mythology paddler gods transport First Father, the maize god, to the place of creation.*

drawing together of Maya creation myth and astronomy, and in the linking of the work done by epigraphers, art historians, ethnologists, archaeologists, and archaeoastronomers. At the annual Maya Meetings at the University of Texas, Schele proposed a major new synthesis, one that links critical passages from the creation myth of the Popol Vuh to artistic, hieroglyphic, and ethnographic information contributed by a host of colleagues in the field. She argues that the story of Maya creation was mapped in the night sky, that acts critical to the world's creation in Maya mythology were all elaborately played out in the movements of the Milky Way and a host of constellations including the Big Dipper, Scorpius, Orion, and Gemini.

The Maya story of creation, as written on a stela at the site of Quirigua in highland Guatemala, begins, "On the night of 4 Ahaw 8 Kumk'u [August 13]...they, the paddler gods, made the image of the three [hearth]stones appear..." According to this account, as interpreted by Schele, with the lighting of the hearth First Father comes into the world, reborn from the shell of a tortoise. Exactly 542 days later [February 5] he raises the sky and creates the World Tree, which takes the form of a vast crocodile at the center of the cosmos. With this act First Father divides earth and sky into eight partitions, sets time in motion by turning the heavens about a central point, and links the earth to both the heavens and the underworld (*Xibalba*) with the World Tree, whose roots lay deep in the southern sky. The World Tree, according to Schele and others, takes its form as the Milky Way. As a canoe bearing the paddler gods, it transports First Father to his birthplace. As the road to *Xibalba*, it conveys the dead to the underworld.

The night of creation begins with the Milky Way/canoe stretching from east to west across the night sky. By dawn on this night, explains Schele, the three hearthstones are at zenith within the constellation Orion and are represented by the stars Alnitak (the southernmost in Orion's belt), Rigel, and Saiph. At the center of the triangle formed by these three celestial bodies is the Orion nebula, alight with the glow of newborn stars—the hearth fire. The

hearthstones are once again at zenith at dusk on February 5. During this night, the hearthstones sink toward the west, preceded by the Pleiades, a star cluster in the constellation Taurus that represented to the Maya a handful of maize seeds to be planted in the earth. Around midnight, the seeds bear fruit and the World Tree—the Milky Way—rises in the night sky.

Themes in Maya art no doubt originated from celestial observations of this sort. Scholars like Schele note that the ecliptic—the path of the sun, moon, planets, and the constellations of the zodiac—is represented in Maya vase paintings by a double-headed serpent that crosses the World Tree at right angles on

# Mediators in a Universal Discourse

BY ANTHONY F. AVENI

**A**NCIENT MAYA NOTIONS ABOUT THE COSMOS WERE quite different from those to which we subscribe today. They rested on a broader kind of faith; that the everyday human world was intimately related to the natural world and that these two worlds functioned in harmony. The universe was a distinct whole, with all parts intricately laced together, each aspect influencing the others. Nature and culture were one. Sky myths explained the unfolding of history, politics, social relations, and ideas about creation and life after death. The Maya forged links between the sky and just about every phase and component of human activity—what we call astrology. And they celebrated this knowledge not only in texts but also in art, architecture, and sculpture. Their universe was animate—breathing, teeming, vibrant, and interactive. The Maya talked to the stars, listened to the planets. They commanded and evoked, restrained and constrained, made incantations, pressed their ears to the oracle. They saw themselves as mediators in a great universal discourse. At stake was the battle between fate and free will, between body and soul.

The Maya were motivated not by a desire to express the workings of nature in terms of inert mathematical equations, but rather by the need to know how to mediate an alliance between the inherent power within the universe and their own direct physical well-being, between knowledge and human action. Today we might attribute a planet's change of color to an atmospheric effect, a shift in position to a dynamic effect, an alteration in brightness to a distance effect. The Maya would carefully watch the color, brightness, position, and movement of the planets because they believed all of these properties considered together were indices of the power of the gods, whom they hoped to influence through dialogue. Maya cosmic myths like the Popol Vuh may strike us as amusing stories, but behind the planetary, solar, and lunar alliances lie real people asking the kinds of questions we no longer ask of the sky: What is the origin of gender and sex? Where does

fertility—or for that matter any power—come from? Where do we go when we die? How can we know the future? Answers to many of their inquiries were framed in the metaphor of visible planetary characteristics and changes: descent and resurrection (particularly for Mercury and Venus), dyadic and triadic bonds (sun, moon, and Venus). No wonder all these concepts were so prevalent in the early sky mythologies that grew up in both Old and New World civilizations, for the planets look the same the world over.

Which came first, the myth or the sky observation? No one can really say, but I think watching the movement of lights in the sky surely must have served as a very early practical time-keeping device, at least for those cultures like the Maya who invested a great deal of effort in looking upward. Naming the phases of the moon for human activities that accompanied them, or associating the course of the sun across the zodiac or the orientation of the Milky Way with seasonal activities—these habits date back into history farther than any document can reach. Marrying

the act of telling stories about everyday affairs to witnessing changes in the world of nature would be a logical way both to embellish life and to lend a meaningful structure to time. With the process of storytelling came the expansion into more fundamental and speculative questions: Where did we come from? What will happen to us in the future? In some instances, especially in highly structured societies like the Maya, the relationship between people and the sky became formalized through the ruling class. Cosmic myths expanded to extraordinary proportions and so did the temporal cycles that framed them. Scholars may debate where myth and history intersect in the writing they decipher on the Maya stelae, but we can be sure the rhyme and meter of these texts have their origin in the cosmos. ■

*At stake for the  
Maya was the battle  
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ANTHONY F. AVENI is Russell B. Colgate Professor of Astronomy and Anthropology at Colgate University. The above text is adapted from *Conversing with the Planets* (New York: Times Books, 1992).

the night of creation. When the Milky Way lies in a north-south orientation on creation night, the ecliptic intersects it at similarly precise right angles. The double-headed serpent probably reflects the Maya observation that certain constellations like the zodiac undulate throughout the year, imitating the movement of a serpent.

"It's like being able to read Genesis in the heavens," says Schele, "Astronomers use mathematical formulas to describe the movement of the cosmos...the Maya used mythology. The texts carved on Maya vases are not just quaint stories told by an ancient people but rather precise descriptions of how the heavens changed throughout the year." Some advocates of the new thinking like Barbara and Dennis Tedlock caution against excessive enthusiasm. Says Dennis Tedlock, "When the smoke clears, we're going to find that some of the astronomy got pushed a bit too far." He thinks Schele's interpretation of the Milky Way as the World Tree is very much on target, as is her suggestion that the double-headed serpent depicted in Maya art represents the celestial path of the sun, moon, Venus, and the constellations of the zodiac. But Tedlock remains unconvinced that the Milky Way so clearly doubles as a celestial crocodile (a configuration for which, according to Schele, there are ample Aztec sources) and the canoe that carries the Maize God to the place of creation. Schele's arguments do confirm what Barbara Tedlock has been suggesting for some time: that the Maya weren't limited to "horizon-based astronomy"—calculations of celestial motions dependent on the horizon—but had fully mastered star-to-star astronomy, or "relational astronomy" as it is technically known.

Schele and others are also beginning to pay more attention to ethnography. "I think there is a tremendous amount of this ancient heritage that still survives," she says. "The way in which the modern Maya organize their world is not some hybrid overview inherited from the Spanish; it comes from a very ancient stratum of indigenous thought. The Maya understanding of how the world works has millennia behind it. That may not seem a miracle to us, but for people who have had their history appropriated by others, who have been told that they exist only as a by-product of what the Spanish made

them after the Conquest, that's a bloody miracle!"

One thing is certain. Maya calculations were extremely accurate. In their fables they plotted the stations of Venus over periods of 104 years or longer. Their almanacs indicated planetary cycles, lunar phases and eclipses, solstices and equinoxes, and a host of celestial motions by which they regulated their lives. Unfortunately, the burning of quantities of Maya literature in 1562 by the Spanish missionary Fray Diego de Landa leaves many questions about the nature and practice of Maya astronomy unanswered—like how many and which gods were associated with the stars and constellations and how the various planets such as Jupiter, Saturn, and Mars were tracked.

Perhaps even more important than the recent discoveries is the larger frame of reference that archaeoastronomy is beginning to unfold. Says Schele, "It seems that the interaction of astronomy and mythology was common in other cultures as well. Scholars working in South America have found similar kinds of systems in the Amazon. There may be something like it in Pawnee lore, and perhaps the Hopi have something resembling it. The Maya may have been using a way of thinking about the sky and using it in their mythology that was very ancient indeed. I'm even prepared to accept that much of the cosmology/mythology came straight across the Bering Strait, and that it may be 10,000 or 15,000 years old; it may be 20,000 years old. I think it may be possible that we have tapped

into a very ancient stratum of human thought. If it did come across with the first Americans, then we may be in touch with one of the two or three great human intellectual traditions that we as a species have ever evolved, part of the fundamental 'software' that all of the peoples of the Americas and Asia have utilized." Schele cautions that proving such an hypothesis will be difficult, maybe impossible. Nonetheless, studies are under way.

The new thinking will no doubt spawn heated debate among archaeologists for years to come. For Mayanist Peter Mathews, the connections now being made between Maya myth and cosmology "open up a whole new world of discovery. We stand on the threshold of something truly new." ■

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# A MAYAN READING *of the* STORY *of the* STARS

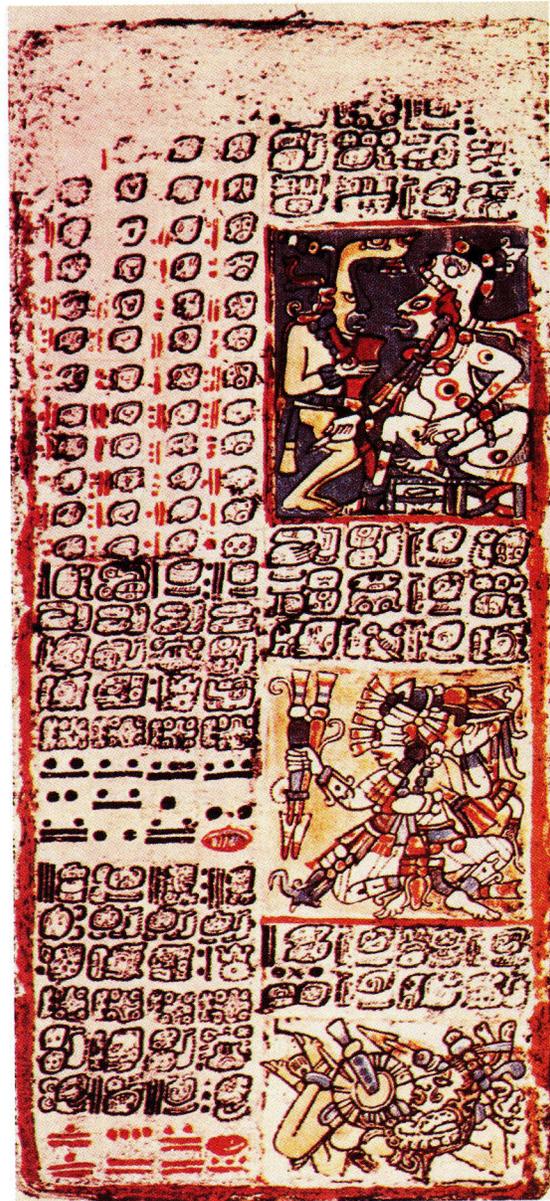
BY DENNIS AND  
BARBARA TEDLOCK

**B**EFORE EYEGASSES OR TELESCOPES EVER CAME TO THE highlands of Guatemala, the Quiché Maya already had objects they called *ilb'al*, or “instruments for seeing.” They used crystals to divine the outcome of future events and bowls of liquid to observe the reflections of solar eclipses. But their most important instrument was the Popol Vuh, an allegorical text consulted by kings and their councils of lords. The ancient Popol Vuh no doubt resembled the Dresden Codex, a Maya hieroglyphic text from the Yucatán, but the only version that has come down to us was written, just after the Spanish conquest of Guatemala, in Quiché using the Roman alphabet.

The Dresden Codex and Popol Vuh chronicle the movement of the cosmos as it is measured by the 260-day Maya divinatory calendar. The Popol Vuh opens by

positing a world that is nothing more than a calm sea under an empty sky, where time is measured by the same 260-day cycle that appears at the beginning of the Dresden Codex. In both books this calendar is followed by sections on the cycles of Venus, the timing of lunar and solar eclipses, and the dawning of the solar year. They concur on the rising of Venus, noting its first morning appearance on a day named *Junajpu* in Quiché, and *Ahaw* in Yucatec, and its first evening appearance on the day named *Kame* or *Kimi* in the same two languages.

The books differ in that the Dresden Codex is principally a tabulation of calendrical and astronomical data, while the Popol Vuh tells the story of the hero twins Junajpu and Xbalanque and their triumph over the flamboyant and egocentric Seven Macaw, his two



*A page from the Dresden Codex, a Maya hieroglyphic book from the Yucatán, details the movement of Venus. The figure at top right is Junajpu, one of the hero twins.*

sons, and the Lords of the Underworld (*Xibalba*), which made the world safe for the coming of humanity. The adventures of the hero twins coincide with the movement of Venus as it progresses along the ecliptic (the celestial path of the sun, moon, and planets).

Recently there has been major progress in reconstructing the roles played by fixed stars and the Milky Way in ancient Maya astronomy, progress that would not have been possible without research among contemporary speakers of Mayan languages. In our own fieldwork with the Quiché, we learned just how closely events mentioned in the Popul Vuh followed the movements of the night sky. For example, we found out from a calendar

a scorpion, as we do. In the Popol Vuh, the twins encounter scorpions just before they come to the intersection. These events take place in late December, when Sagittarius is on the eastern horizon at dawn.

Near the point where the ecliptic crosses the White Road half of the Milky Way are the Pleiades, a star cluster whose Quiché name is *motz*, meaning “fistful,” as in a fistful of seeds, or the number 400. For the modern Maya, the western setting of these stars in March is a signal that planting time has come. In the Popol Vuh, their setting marks the death of 400 boys, who were flattened when Zipacna, one of the sons of Seven Macaw, brought their house down on top of them. The most no-



BRIAN SULLIVAN



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*According to the Popol Vuh, one of the hero twins (Venus) shoots Seven Macaw (the Big Dipper) while he is feeding high in a nance tree. Until recently, the presence of a scorpion in a Classic Maya vase painting depicting the shooting of Seven Macaw was not understood. By placing the event in December, however, the image makes perfect sense. When Venus appears as the morning star at this time the Big Dipper is at its highest point while Scorpius rises above the horizon.*

keeper that the dense whitish half of the Milky Way is called *Saq B'e* or “White Road,” while the half that has a dark cleft running through it has a pair of names: *Q'eka B'e*, “Black Road,” and *Ub'e Xib'alb'a*, “Road of the Underworld.” In the Popol Vuh, the hero twins come to a road with the same pair of names, which intersects the ecliptic at the edge of the earth. Choosing to follow the Road of the Underworld, the twins vanish. The arrival of the twins at the intersection represents Venus’ last appearance in the east before it falls below the horizon, having followed the ecliptic to where it crosses the rifted half of the Milky Way. Prior to its arrival at the intersection, which lies in the constellation Sagittarius, Venus passes through Scorpius, a constellation the Maya saw as

table feature of the house is its main crossbeam, an enormous tree trunk. In Classic Maya sources, as interpreted by Linda Schele, the Milky Way (or portions of it) was sometimes viewed as a tree or tree trunk. Following this lead, Matthew Looer, a graduate student at the University of Texas, noticed that when the Pleiades set in the west they precede the Milky Way, whose movement resembles a falling tree or crossbeam.

There are still further connections between the Popol Vuh and the movements of the stars. In the story, the north is ruled by Seven Macaw, or *Wuqub' Kaqix*, represented in the night sky by the seven stars of the Big Dipper. Seven Macaw appears early on in the story, just after creation but before the appearance of the sun and