

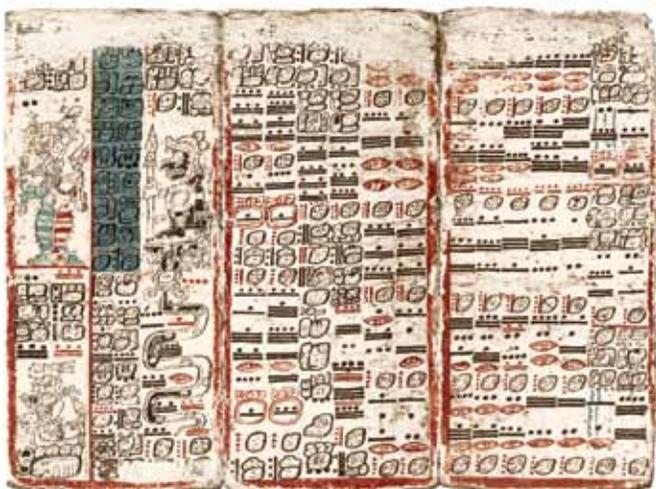


TIME, KINGSHIP, AND THE MAYA UNIVERSE

BY SIMON MARTIN

IN 1832 CONSTANTINE SAMUEL RAFINESQUE—a polymath who made contributions to the fields of botany, zoology, linguistics, meteorology, and geology—wrote to the celebrated decipherer of Egyptian hieroglyphs, Jean-François Champollion. The letter contained, among other things, his conclusion that ancient Maya numerals were formed from dots that represented the number one and bars that represented five. So began the modern world’s fascination with the intellectual achievements of this precocious New World civilization, opening the first window on their arithmetic, calendrics, astronomy, and ultimately their religion and history.

Maya hieroglyphic inscriptions are filled with numbers. The tall stone monuments we call stelae usually begin with a string



Three pages from the Dresden Codex, a Postclassic book probably dating to the 15th century CE, exhibit row upon row of calculations using bar-and-dot numerals.

of figures and many more of them are embedded throughout their texts. Some pages of Postclassic screenfold manuscripts made of bark-paper, such as the Dresden Codex, consist almost entirely of tabulations of bar-and-dot numerals. Almost every such number, it turns out, is devoted to the single purpose of calculating and recording time, which was expressed through an array of different calendars, some pursuing mystical cycles, others the progress of heavenly bodies across the sky. Early investigators realized that the Maya could substitute both their bar-and-dot numerals and calendrical units with portraits of deities and other supernatural beings—suggesting that numbers and time periods were themselves animate and divine. It is no wonder that many of these scholars believed they had found a civilization that worshipped time itself.

It has taken many years to understand the culture that lies behind these fabulous, and sometimes perplexing, records and to gain some sense of an ancient mindset that is both very similar to and very different from our own. The past two decades, in particular, have seen tremendous advances in the decipherment of the Maya script. Today we realize that the Maya did not worship time as such, but did conceive of a cosmos that was intrinsically ordered by numbers and chronology. The lives of both humans and gods were entwined in the same interlocking cycles, differing only in scale: the vast expanse of the divine order contrasted with the minuscule spans of mortals.

The Maya word *k'in* means both “day” and “sun,” and it was the journey of the sun across the sky—its emergence from and descent into the Underworld—that provided the core rhythm of life. Together with the shifting seasons, the waxing and waning of the moon, and the motion of the planets and stars, the sky presents an ever-moving celestial map through



which ancient peoples sought to read the will of their awe-inspiring deities.

The Maya universe was defined by cosmic trees set at its four cardinal points, together with a fifth, an *axis mundi*, placed at the center. While their branches reached up into the heavens, their roots burrowed down into the Underworld. The former was a realm of fragrant flowers and shining jewels, a place in which the exalted could hope to find everlasting life among the sky gods. The latter was a dark, dank cavern ruled by the lords of death. Despite its morbid character, it was the origin of many of the earth's riches, including fresh water, food plants, and even the first humans. For the high-born Maya, it seems to have been the purgatory through which they had to journey and overcome various trials set by infernal deities. Only after passing such tests could they emulate the heroic deities who had preceded them and ascend to the heavens in triumph.

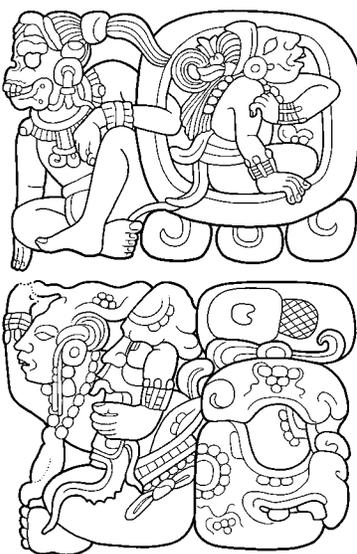
LORDS OF STONE

Conceptual counterparts to the cosmic trees were four old men who held the sky above their heads, preventing it from collapsing onto the earth and crushing the mortal world beneath. These characters were also year-bearers and each in his turn served as a patron of the current year that, like the sky, was perceived as a weighty burden. In images from the Classic period their skin was often emblazoned with motifs identifying them as living rocks, and throughout Maya history, stones had an intimate relationship with units of time. When the Spanish *conquistadores* arrived in the Yucatan peninsula in the 16th century, the word *tun* meant both "stone" and "year."

The setting and binding of stones were the quintessential acts of calendrical ritual for the Maya, and a concept embodied in the



Above, the ancient Maya believed that the center of the world was defined by a cosmic tree. Its upper branches were the heavenly home of the Principal Bird Deity, while its roots sank into a watery Underworld. This illustration by Heather Hurst (2007) depicts a detail from the West Wall of the murals at San Bartolo.



Right, in this Calendar Round date from Copan Stela D, we see numbers, as well as the days and months they refer to, take the forms of gods and fantastic beings. It records the position 10 Ajaw 8 Ch'en, which corresponds to the Long Count date 9.15.5.0.0 that fell on July 22, 736 CE. Far right, this sculpture of an aged sky-bearer supported a throne in the Sepulturas group at Copan. His dotted body-markings identify him as animated stone.





Tak'alik Ab'aj is a large Late Preclassic site in southwest Guatemala. Stela 5 from that site, shown here with archaeologist Miguel Orrego, depicts two rulers separated by a text that includes two early Long Count dates, the latest equivalent to 126 CE.



The stela and altar pairings at El Naranjo, Guatemala, suggest an early origin for the erection of monuments dedicated to 20-year K'atun periods, with this example dating to 800–500 BCE.



This carved peccary skull from Copan, Honduras, shows two lords, one seated on each side of a bound stela, and an anthropomorphic altar stone. The Calendar Round 1 Ajaw 8 Ch'en corresponds to 8.17.0.0.0 or October 20, 376 CE. (A peccary is a member of the pig family found in the Americas.)

stelae and altars they commissioned to mark significant time periods—most often a position in the Long Count calendar called a K'atun that occurred just shy of every 20 years (see page 24). Recent discoveries of uncarved stela and altar pairings at El Naranjo, now a suburb of Guatemala City, show that this tradition first developed between 800 and 500 BCE, in the Middle Preclassic period. Moreover, the archaeologist Barbara Arroyo has suggested that these stones celebrated the same K'atun cycle, therefore positing that a form of the Long Count existed long before any written record of it survives. The earliest contemporary Long Count dates turn up in the following Late Preclassic period, beginning with one from 36 BCE at the site of Chiapa de Corzo, Mexico. This site is slightly outside the Maya area and is associated with a different hieroglyphic script called Isthmian. This may indicate that the Maya adopted the Long Count from their neighbors, but the evidence is still too scanty to be sure. By 37 CE, a stela at El Baúl, Guatemala, carries distinctive Maya features, and, importantly, combines its date with the portrait of a ruler in full ceremonial garb. Earlier plain stones could have been painted with such images, but this is the first firm evidence that the social elite were using calendrical rites to promote their personal power, perhaps co-opting rituals that once had a more communal focus.

Kenneth Garrett (upper left), Barbara Arroyo (upper right), Courtesy of the Peabody Museum of Archaeology and Ethnology, Harvard University, Peabody #60-74-26-80 (bottom left), Barbara Fash (bottom right)



THEN AND NOW: MATCHING MAYA DATES WITH OUR OWN

Producing a direct tie, or correlation, between the Long Count and our own calendar is a tricky undertaking. Since the Long Count had disappeared by the time the Spanish arrived in the Maya area around 1525 CE, the only clues we have come from references to other Maya calendars left by early chroniclers and clerics. These match several Calendar Round dates with counterparts in the European calendar of the time, two of which are additionally tied to positions in the Short Count. The latter are of key importance and should allow us to fix the correlation within repeating cycles of 256 years, at which point radiocarbon dating should indicate the correct solution. The proposed alignment that best fits this evidence—as well as emerging climatological data—is called the GMT correlation. However, there are two versions of it: one in accord with survivals of the Sacred Round in use today and another that tries to take account of certain astronomical data in the inscriptions. This explains the contrasting December 21 and 23 dates given for the 2012 event. Many specialists favor the December 23 position, but since the earlier one falls on a winter solstice those who believe in a cosmic significance to 2012 uniformly prefer that one. Both might yet prove to be wrong, as other evidence points to December 24.

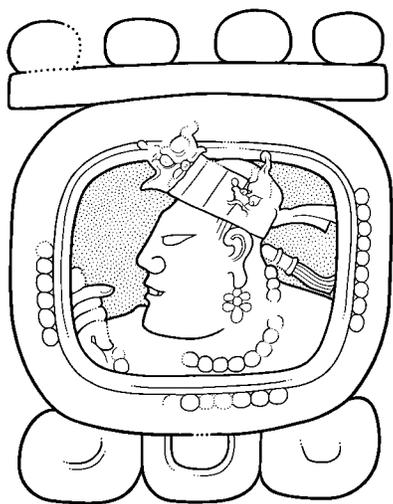
It is in the following Classic period (250–900 CE) that we find the full flowering of this union between the calendar and royal power. Indeed, it was the hundreds of carved monuments embellished with kingly portraits, dates, and all manner of accompanying hieroglyphic text (much of it historical) that first defined this era. Tikal Stela 29, unearthed by the Penn Museum in 1959, marks the inception of this monument tradition in 292 CE in the Maya lowlands, and it endured for the next six centuries, with the last such example produced at the city of Tonina in 909 CE.

The nature of the union between time and kingship was more profound than simple glorification through association.

By at least the Classic period the ideals and performance of rulership were fully integrated within the time-ordered universe. Each major station in the Long Count necessarily falls on the Sacred Round day called Ajaw “Lord,” and rulers could depict themselves within the distinctive roundels of day-signs, making their role in personifying the day explicit. Such ideas survived the fall of the Classic period kingdoms and can be found in Colonial-era documents such as the *Chilam Balam of Chumayel*. This illustrates successive K’atun positions of the Short Count (see pages 24–25), each named by their appropriately numbered Ajaw days, as kings wearing European crowns. Among the traditional diviners who use the Sacred Round today, days are reverently referred to as “sir” and considered to be noble people. Thus, when we see the portrait of a ruler on a stone monument celebrating the end of a major cycle, we are seeing something more than a bombastic and vainglorious monarch, we are seeing the very embodiment of time. Chronology was not something external to rulership; together they served as complementary dimensions of sacred authority.

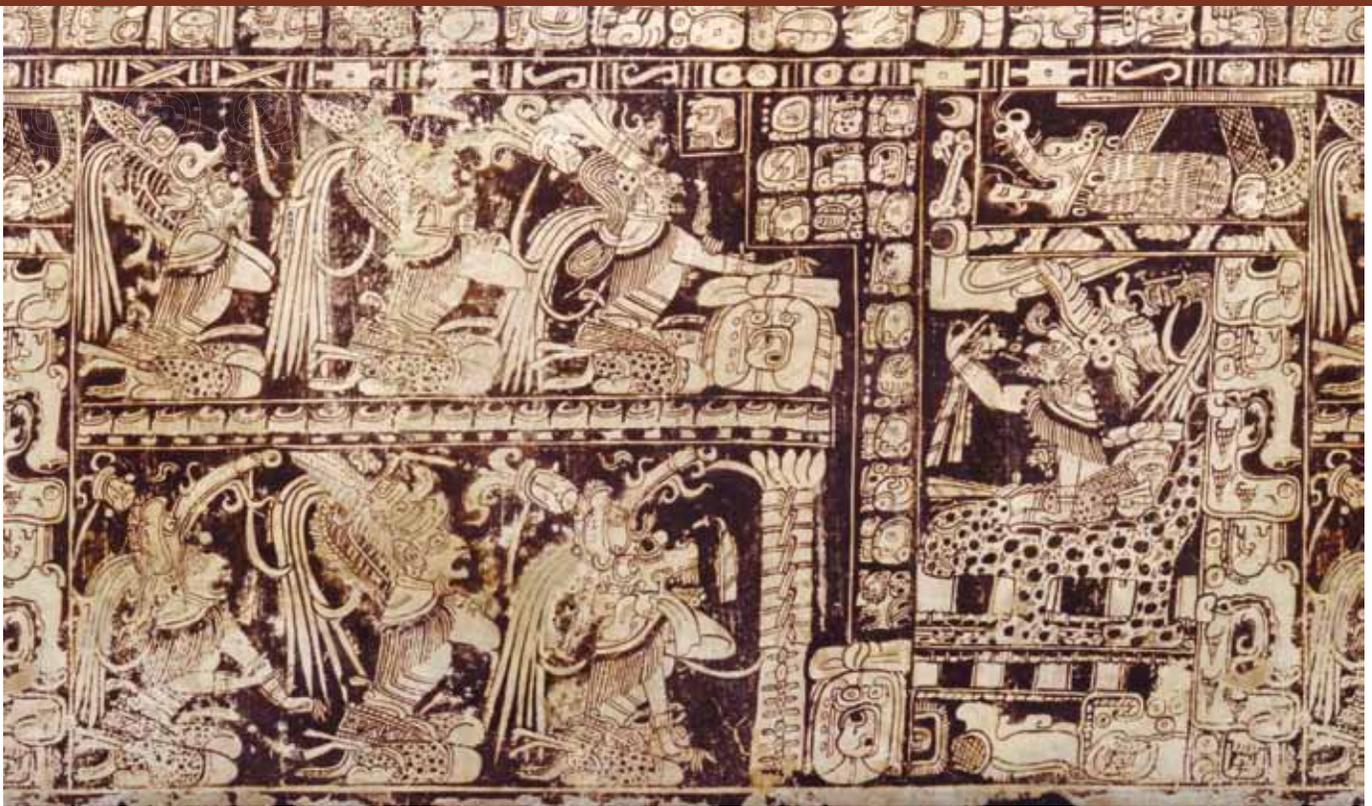
THE MAYA AND 2012

The current fascination with the year 2012 and the various inspirational or doom-mongering predictions it has inspired have given many people their first introduction to the ancient Maya. If we are to understand the origins of this phenomenon and the true relevance of 2012, we must delve deeper into the



The Sacred Round day 9 Ajaw is here shown with a portrait of a ruling Maya king to emphasize his personal embodiment of the day meaning “Lord.”

Simon Martin



This “roll out” photograph of a cylindrical vase shows the enthroned Underworld ruler God L (on the right) engaged in “ordering” a range of infernal deities on 13.0.0.0.0 from 3114 BCE.

mysteries of the Long Count calendar. Our story begins on August 13, 3114 BCE, when the texts describe the “end of the 13th Bak’tun,” a key juncture in the system we notate today as 13.0.0.0.0. This date is recorded retrospectively on a number of Classic monuments and even in the Dresden Codex, the most important document to survive from the Postclassic era. Associated texts help to illuminate its significance, with the fullest account appearing on Quirigua Stela C, erected in 775 CE. This tells us that “three stones are wrapped” and goes on to describe each as if it were a stela, recording its dedication by a particular deity at a particular supernatural location, at least two of which were in the sky. Although the full meaning of these divine performances remains obscure, it is clear that this was a special program of regeneration—primordial acts of foundation that later stone-bindings and monument dedications by kings sought to reproduce. A further take on the events of this day, painted on a pair of vases, is set not in the heavens but in the darkness of the netherworld. There we see the Underworld ruler we know only as “God L” seated on a jaguar throne and facing an array of other deities. The text identifies 13.0.0.0.0 by its Calendar Round date of 4 Ajaw 8 Kumk’u, and says that the

gods are “put in order,” suggesting a reorganization that established a divine hierarchy for the current era.

Now, by the best reckoning available to us, December 23, 2012 CE will see the end of the next 13th Bak’tun cycle, 5,125 years after the one completed in 3114 BCE. Many people believe that this anniversary is of huge cosmic significance and, indeed, that it will mean either the dawn of a new age of enlightenment, or a catastrophic collapse of the world as we know it, or even the end of time itself.

But there are a few things that should make us hesitate before entertaining such ideas. The first is that the ancient Maya made no prediction about what would take place on the next occurrence of 13.0.0.0.0—calamitous or otherwise. The 2012 date is mentioned only once, on a monument fragment from Tortuguero, Mexico, and contrary to some recent analyses is not associated with any description. It is simply used as an anchor date, a common ruse in Maya texts, that links current events—in this case one from 669 CE—to prestigious points in the future. The second and even more important consideration is that we have clear evidence that the current Bak’tun cycle does not conclude at 13, as the last one did, but



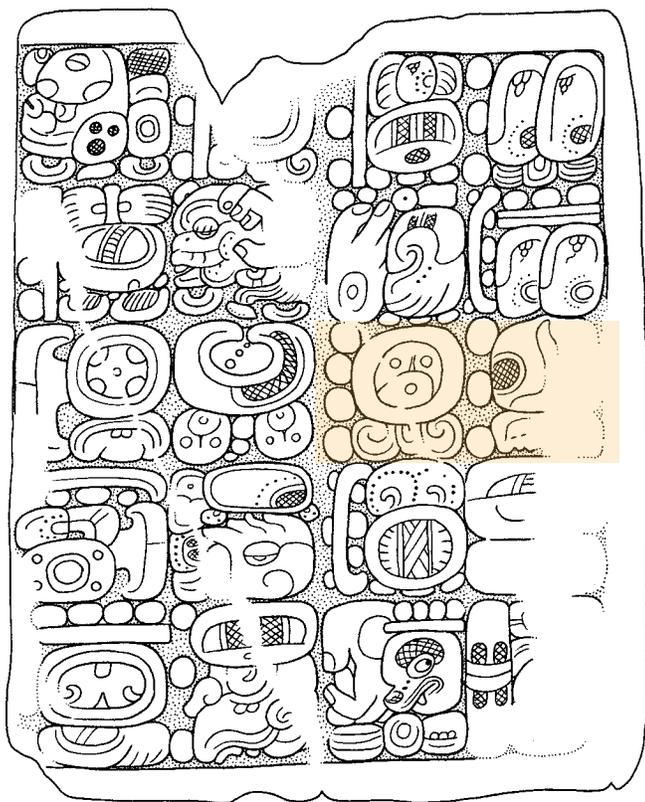
advances to 20. In other words, 13.0.0.0.0 will be followed by 14.0.0.0.0, 15.0.0.0.0, and so on to 19.0.0.0.0. A text at the site of Palenque, Mexico, makes this very plain when it records the completion of 1 Piktun, the next unit above the Bak'tun, in 4772 CE. We do not know why the Maya counted the previous Bak'tun cycle in Base Thirteen and the current one in Base Twenty, but, according to a new idea by David Stuart, all of the higher units of the Long Count calendar cycle first through 13 before resetting to zero and counting a second time all the way to 20. Time, for the Maya, was a magical realm in which conventional arithmetic need not apply—things do not have to “add up” in a religious system.

To explain why the modern world has become so caught up with bizarre ideas about 2012, one has to examine a different Mesoamerican culture: the Aztec of central Mexico. They believed in four previous creations of the world in which each was populated by a race of proto-humans who were destroyed

in a terrible catastrophe. The fifth creation, inhabited by the Aztec, was one in which humans must appease the gods by sacrifice in order to forestall another annihilation. A similar story appears in a Maya epic from highland Guatemala called the *Popol Vuh*, which was written down by a Spanish priest in the 18th century but was based on earlier sources. This so-called Maya Bible contains versions of myths recognizable in art and writing from as much as 2,000 years earlier. It too has a sequence of creations and destructions, although here the focus is on the failure of different versions of humankind—each made from some inadequate material, on one occasion mud, on another wood—to satisfy their divine makers. In the current era humans have been fashioned from the perfect medium, maize dough, and so no further destruction is necessary. The tale could be a core myth that once spanned Mesoamerica, but it is strange that it finds no clear parallel in any of our ancient Maya sources. Indeed, we might wonder if this particular plot-line owes more to the Aztec, who enjoyed great influence over the highland Maya region at the very time the *Popol Vuh* was taking shape.

Those who believe that the *Popol Vuh* cycle of creations and destructions *must* have counterparts in Classic Maya inscriptions have seized upon the pivotal events of 3114 BCE as one of these climactic moments, with the next 13-Bak'tun ending in 2012 taken as a pre-ordained repetition. Although the Maya certainly did have apocalyptic ideas, especially of a world destroyed by a heaven-sent flood, these are not linked to the Long Count calendar and cannot be used to support an “end of time” in 2012. In sum, this date has far more relevance for us than it appears to have had for the ancient Maya—one of many examples of popular mysticism that actually springs from the present rather than the past. The ability of the Maya to develop time-reckonings of such astonishing scale, accuracy, and imaginative power is testament enough to their remarkable intellectual achievements; there is no need to also make them mirrors of our own forebodings or hopes for renewal. If the phenomenon of 2012 brings the true story of the Maya to a wider audience, then all the media hubbub will have at least one significant upside. 🏠

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Tortuguero Monument 6 is the only ancient inscription that refers to the year 2012—here indicated by the Calendar Round 4 Ajaw 3 K'ank'in (highlighted)—but it doesn't mention any prophecy.

David Stuart



MAYA CALENDARS: AN OVERVIEW

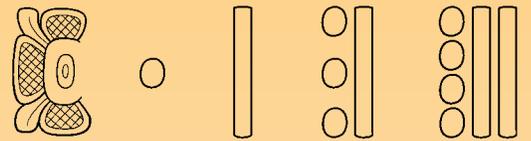
By Simon Martin

To read any Maya date one must first understand their numerical system. Unlike the ten Arabic symbols we use (0, 1, 2, 3, 4, 5, 6, 7, 8, and 9) the Maya employed just three symbols: a dot for one, a bar for five, and one of three different signs for zero. Individual dots were arranged to make the numbers one to four, swapping to a single bar for five. Thereafter dots and bars were combined to represent all the numbers up to 19, which was formed from three bars and four dots (a looped design often fills empty spaces but has no value). The sequence runs from 0 to 19 because the Maya system was vigesimal, which is to say that it worked in Base Twenty rather than the Base Ten of our own decimal system (the Babylonians, by contrast, used Base Sixty). Numbers of 20 and above were created with a place notation system—in much the same way we write “10” by shifting 1 up by an order of magnitude (1 x 10) and following it by zero. To write “20” the Maya would use a dot (1 x 20) followed by a zero sign.

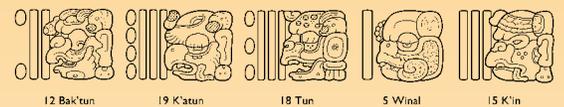
A variant of place notation was used to create the huge numbers recorded in the Maya calendar we call the **Long Count**—the system responsible for all the interest in 2012. The Long Count is a cumulative count of days that ascends in magnitude from single days, to units of 20 days, 360 days, 7,200 days (about 20 years), and 144,000 days (about 400 years). Today we call these units K'in, Winal, Tun, K'atun, and Bak'tun. They all work in Base Twenty except the Winal that, confusingly, works in Base Eighteen (probably in order to approximate the 365.2422 days of the solar year). Each of them has its own hieroglyph that, in another layer of complexity, appears in at least two different forms, sometimes more. Today we represent them in Arabic numerals separated by periods. I am writing this description on April 28, 2011, which is equivalent to the Long Count 12.19.18.5.15 (which is to say, 12 Bak'tun, 19 K'atun, 18 Tun, 5 Winal, 15 K'in). This represents the number of days that have elapsed since August 13, 3114 BCE.

But this is not the beginning of the Long Count, since these five commonly seen place notations are only a tiny fraction of the full system. We have texts that record no less than 19 named positions above that of the Bak'tun. This puts the true starting point of the calendar many trillions of years in the past, making it far, far older than the current universe! There was, nevertheless, a special quality to the 3114 BCE date, since the Bak'tun and all higher positions were set to the magical number “13”—doubtless reflecting the Mayas' belief that they lived in an exceptional era.

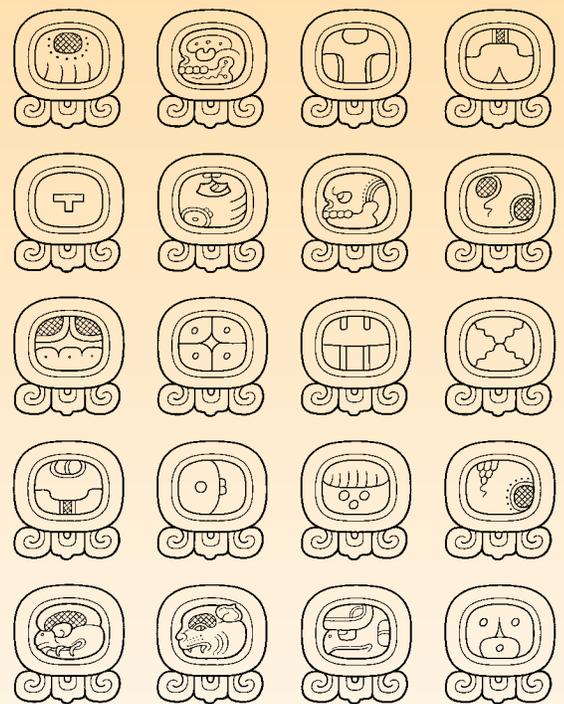
The Long Count was the grandest conception of time used by the Maya, but far from the only one and others rivalled it in importance. The first of these is called the **Sacred Round** (or Tzolk'in), a system that



Numerals: 0, 1, 5, 8, and 14.



Long Count date: 12.19.18.5.15.



Sacred Round day names: Imix, Ik', Ak'bal, K'an, Chikchan, Kimi, Manik', Lamat, Muluk, Ok, Chuwen, Eb, Ben, Ix, Men, Kib, Kaban, Etz'nab, Kawak, Ajaw. The columns read down from top to bottom, left to right.

Simon Martin



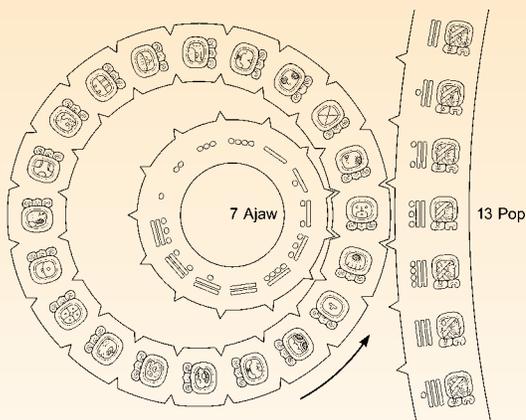
Vague Year month names: Pop, Wo, Sip, Sotz', Sek, Xul, Yaxk'in, Mol, Ch'en, Yax, Sak, Keh, Mak, K'ank'in, Muwan, Pax, K'ayab, Kumk'u, Wayeb. The columns read down from top to bottom, left to right.

combines 20 named days with 13 numbers. As each day in this calendar advances to the next, so does its accompanying number. Thus 1 Imix is followed by 2 Ik', 3 Ak'bal, 4 K'an, and so on until reaching 13 Ben, after which the numbers return to 1 while the day names continue, with 1 Ix, 2 Men, and so forth. It takes 260 days for the days and numbers to come back into alignment and for 1 Imix to repeat itself. This system survives to this day in some isolated parts of the Maya area, where it is used for divination and the timing of certain ceremonies. Another calendar is called the **Vague Year** (or Haab) and is based on the solar year. This system features 18 named months of 20 days each and an additional short month of five days, together totaling 365 days. The Vague Year gets its name because it is .2422 days short of the true solar year and therefore slowly slips against the seasons. The Vague Year begins on 0 Pop and progresses through 1 Pop, 2 Pop, 3 Pop, and so forth through each month in turn, finishing with 4 Wayeb, the last day in the short month at the end of the year.

The Sacred Round and Vague Year are joined to form the **Calendar Round**, in which no combination will repeat for 18,980 days or about 52 solar years. On April 28, 2011, the Sacred Round was 10 Men and the Vague Year 3 Wo—a Calendar Round pairing that will not occur again until April 15, 2063. Although there is no reason to think that the Maya ever assembled a clock-like mechanism to display their calendars, a series of intermeshing cogwheels is a useful way for us to conceive how the system worked.

The Long Count fell into decline after the fall of the great Classic-period kingdoms between 800 and 900 CE, but survived in a pared-down form called the **Short Count**. This identified each successive K'atun by the Sacred Round on which it ended, all automatically falling on the day Ajaw "Lord"—following a fixed sequence of 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2, and finally 13 Ajaw. The total span of the Short Count was 13 K'atun or about 256 solar years, and when added to a Calendar Round date could specify an individual day within that span—adequate for most historical purposes.

We have by no means exhausted the Maya's calendrical ingenuity, since there were a range of lunar reckonings and other notations devoted to more purely mystical cycles. The typical stela inscription opens with large introductory hieroglyph followed by the appropriate Long Count, Sacred Round, and Vague Year, but further fixes the day within six, seven, or more alternative systems of accounting time. For a day to be properly commemorated it was necessary to know its place within multiple dimensions of time and acknowledge all the deities that presided over them.



The interlocking nature of the Calendar Round cycle can be conceived of as a set of meshed cogs.

Simon Martin