

The Maya Long Count Calendar: An Introduction

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Understanding Maya Calendar Cycles— a Comparison between Theirs and Ours

This brief explanation of the Maya calendar is aimed at non-Maya specialists as background for the articles that follow. For a fuller account see Van Stone (2010). The present version was adapted from a presentation at the Ninth “Oxford” International Symposium on Archaeoastronomy (see Ruggles 2011).

The Maya calendar, like the Gregorian calendar, comprises several cycles running concurrently. Both calendars combine elements that originated at different times and in different places and were used for different purposes. To compare, we shall analyze the same date written in both systems.

The Gregorian Calendar

The Gregorian date Monday, December 29, 2008, is the 364th day of the year, three days before New Year’s Day, and it falls under the sign of Capricorn. Its Julian Day Number is 2454830. It records:

- Monday, a day of the week, a never-ending cycle of seven days, named for the seven visible planets: Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn. (Germanic peoples adopted the analogous Norse gods Tew, Woden, Thor, and Freya; Latin speakers replaced the weekend days with Sabbath and Lord’s Day.) This cycle

relates to neither astronomical rhythms nor earthly seasons. It is by far the oldest calendar, dating at least to third-millennium BC Babylonia.

- December, one in a cycle of 12 named months. An ancient lunar cycle, adjusted in classical antiquity to match a solar year. Originally numbered, most of the months were later named to honor gods and men. Four are still merely numbered (Septem, Octo, Novem, and Decem equal 7, 8, 9, and 10).
- 29, a subcycle of the months numbering up to 28, 29, 30, or 31 days. Approximately equals a lunar cycle.
- AD 2008, the count of years since the birth of Christ. The anno Domini count, devised by Dionysius Exiguus in AD 525, miscalculated by a few years (Jesus was actually born between 2 and 6 BC). Not really a cycle, this calendar divides history in two. (Christ’s birthday was moved by third-century Christians to the Roman solstice festival of Saturnalia. His original birth date may have been in spring lambing season, which is when “shepherds watched their flocks by night.” Dionysius fixed the beginning of the anni Domini on January 1, knowing it was a week after Christ’s “actual” birth. Significantly, this eighth day is the traditional date of Christ’s circumcision: our year calendar, in other words, like a Maya ceremony, begins with a penis bloodletting.)

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- 363rd, a solar year cycle numbering 365 days. Barely mentioned before the twentieth century, this cycle appears on many desk calendars today.
- Three days before New Year's Day, the interval or Distance Number between this day and the next significant event.
- Capricorn is from the zodiac, another cycle of 12 named months. Likewise an adjustment of lunar cycles to match a solar year, the zodiac originated in Babylonian Chaldea in the first millennium BC/BCE.
- JDN 2454830, the count of days since the (arbitrarily and) scientifically selected date January 1, 4713 BC (Julian). Its Day One is the last time when the first day of three cycles (the indiction cycle of 15 years, the metonic cycle of 19 years, and the solar cycle of 28 years) coincided. Joseph Scaliger, who

invented the JDN in 1583, chose this concurrence because it far preceded written history.

Note that our "calendar" is actually an interlocking set of seven calendar cycles, each of which was invented independently. The Maya "calendar" almost certainly had equally diverse origins.

The Maya Calendar

The Maya date 12.19.15.17.7 7 Manik 10 K'an' in is 13 days before the end of the sixteenth *tun*. It records:

- 12.19.15.17.7, the Long Count (LC), which is comparable to our JDN and our anno Domini. We write the LC with five vigesimal digits, separated by dots. During the Maya Classic Period, these "digits" were as seen in Figure 1 below.

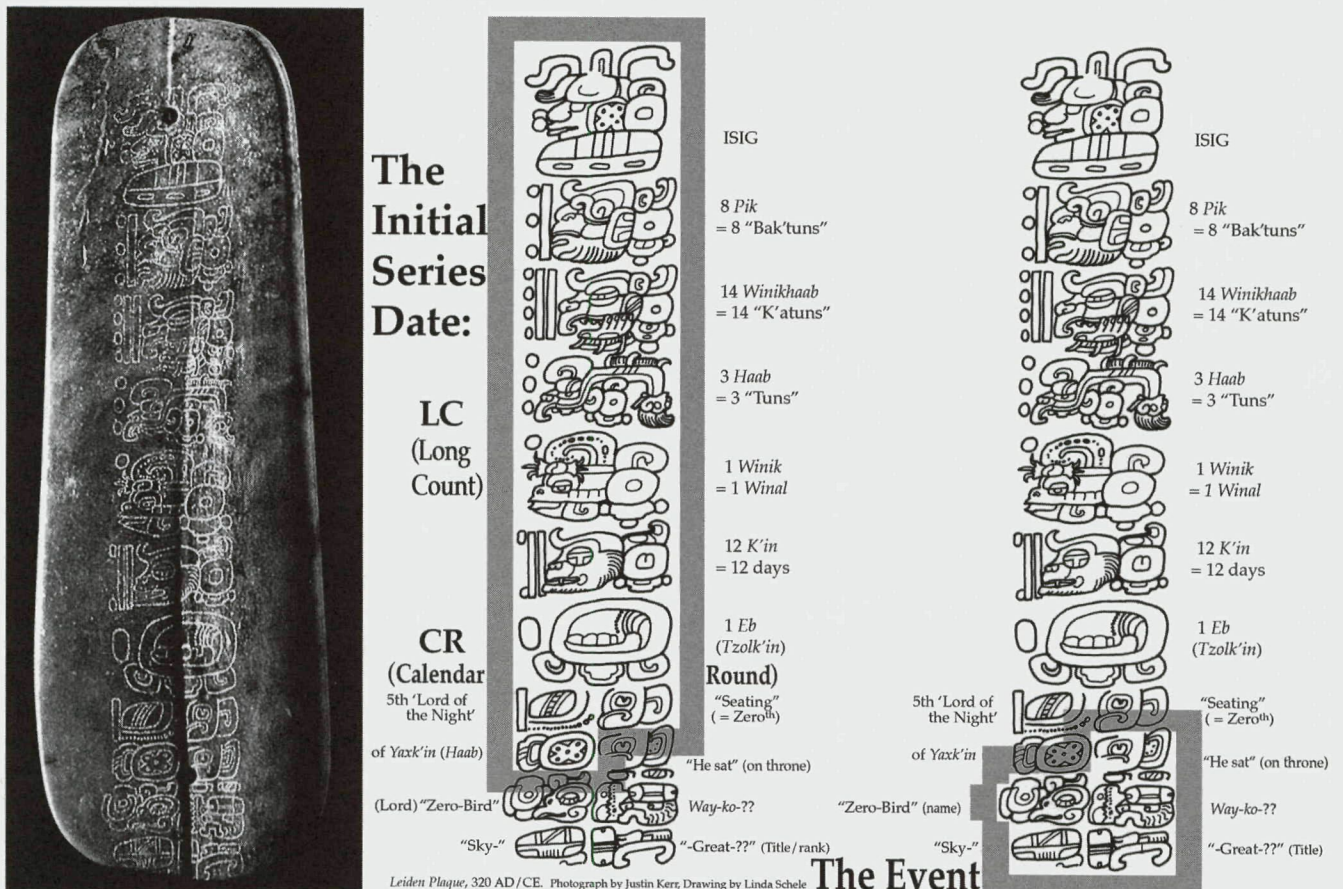


FIGURE 1. Leiden Plaque, jade, ca. AD 320. Photograph by Justin Kerr, drawing by Linda Schele.

This royal belt-adornment (Figure 1) records the accession of a king. Significantly, a great majority of the text records the date of the event: the Long Count date takes up six of the seven large initial glyphs. The seventh is the (260-day) Tzolk'in date, followed by three smaller glyphs recording the (nine-day) Lords of the Night cycle and finally the 365-day Haab date. The coronation itself (outlined) is squeezed into the last five glyphs, less than 15 percent of the total space. This indicates the Maya emphasis on fixing an event in time, much more so than in space or, for that matter, than the event itself, always written as coefficients joined to time-period glyphs (as seen in Figures 1 and 2). That is, this date represents 12 Bak'tuns + 19 K'atuns + 15 Tuns + 17 Winal + 7 K'ins. A K'in is a day, a Winal is a month of 20 days, and a Tun is a year of 18 Winal. K'atun means "20 Tuns," and a Bak'tun is a unit of 20 K'atuns, that is, 400 Tun years (about 394.26 Gregorian years). Instead of years, the Maya counted the days since their creation, the so-called era date, which falls in 3114 BC. The Epi-Olmec Isthmians (or possibly their Maya neighbors) actually invented the Long Count in about 200 BC, setting their start date some three millennia earlier. The Long Count will reach 13.0.0.0.0 in December 2012.

- 7 is one in a numbered cycle of 13 days, interlocked with Manik', which equals one day in a named cycle of 20 days. The 13 x 20 days of the sacred Tzolk'in (order of days) is a never-ending cycle of 260 days. Like our week, it runs independently of any astronomical periods or earthly seasons, though it may relate to the 260-day interval between solar zenith passages at Izapa, the gestation of a baby in the womb, or the length of the maize-planting-to-harvest cycle at some altitudes. In any case, the Tzolk'in's day-names—and numerals—are gods in the Maya pantheon, and, like our week, this calendar is by far the most ancient and widespread calendar cycle, used by all the peoples of Mesoamerica.
- 10 is one in a numbered cycle of 20 days in the month of K'ank'in, which itself is one in a cycle of 19 named months making up the Maya civil calendar, the Haab (year), a never-ending cycle of 365 days. The "10th of K'ank'in" works exactly like our "29th of December," except that the Maya months were numerological, not lunar, in origin: 18 of the months were 20 days long, with a "shriveled" month of five days making up the full 365. This cycle, common among the Maya, was relatively rare elsewhere; it played a minor role among the Late Preclassic Isthmians and

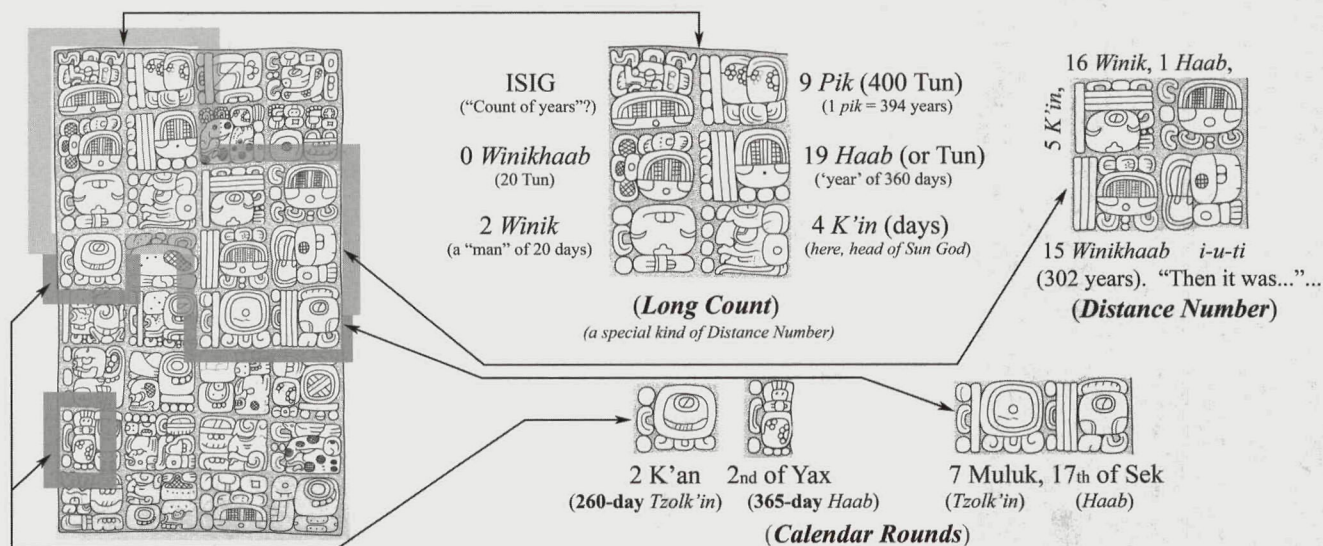


FIGURE 2. Yaxchilán Lintel 21, Initial Series, ca. AD 756. Drawing by Ian Graham, *Corpus of Maya Hieroglyphic Inscriptions*, fascicle 3, Peabody Museum of Archaeology and Ethnology, Harvard University.

the Postclassic Aztecs. Figure 2 shows an Initial Series (IS) date that highlights the three main Maya calendars: the Long Count (the top six glyphs), Tzolk'in (immediately after the LC), and Haab (at the bottom). The LC fixes a specific date in linear time, while the Tzolk'in and Haab together specify a date in the Calendar Round, a 52-year repeating cycle.

- 13 days before the end of the sixteenth Tun equal the interval or Distance Number between this day and the next significant event (LC 12.19.16.0.0). "Round" dates like this one, ending in two or three zeroes, were significant anniversaries to the ancient Maya, just as, for example, Y2K was for us.
- A Maya IS date fixes a monument's commemorations into the fabric of time, sometimes very elaborately. In addition to the usual calendar cycles, an IS cites a nine-day cycle called Lords of the Night, specifies the day of the lunar cycle, and names the Moon in a 3 x 6-moon cycle. We occasionally see other calendars here: a seven-day cycle, an 819-day numerological cycle ($819 = 7 \times 9 \times 13$), and so on. None of these cycles appear outside an IS.

Conclusion

The calendar system used by the Maya was an interlocking system of cycles, analogous to our own

timekeeping in many ways. These cycles comprise (1) the sacred 260-day Tzolk'in, which is rather like a very complex "week"; (2) the 365-day Haab civil calendar, which works almost exactly like, say, our March 21 or November 20 dates; (3) the Long Count of days, comparable to our anno Domini year count; (4) plus some other, more arcane cycles that featured as (un)commonly in Maya thought as our specialized cycles such as the Julian Day Number and the zodiac. The main difference between the Maya calendar system and our own is their heavier reliance on auguries or the religious meanings of each day.

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