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December 22, 2012: It Happened

In November, NASA launched a web site entitled, "Beyond 2012: Why the World Won't End,"¹ to dispel widespread urban legends of an ancient Maya prophecy that the winter solstice of 2012 (December 21, 2012) marks the end of the world. NASA is not alone: the Russian and French governments have also taken action to dismiss end-of-days panic.² So did you lose sleep over the impending end of the world? Planned a blow-out party for that night, which conveniently landed on a Friday? Hopefully you had your painkiller of choice ready for the hangover you suffered on December 22nd. People who actually know something about ancient Maya prophecies—namely archaeologists, art historians, anthropologists, and living Maya people themselves—enjoyed the day, like any other.

Apocalyptic predictions aside, there is actually an interesting and rare event occurring in the ancient Maya calendar on December 21st. It's called a Baktun ending date, a calendrical moment roughly analogous to the beginning of a century in our own calendar. Baktuns, however, end every 394.52 years rather than every 100 years. Given that the last time anyone gave a flying leap about a Baktun ending was A.D. 830, it would probably startle the Maya kings of old to know that their long-dead calendar system has found new life among the foreigners from across the sea.

The December 21, 2012, Baktun ending date wasn't just any Baktun ending date. It *was* special and for this reason has been merged with a modern example of the apocalyptic frenzies that have recurred in Western literature and philosophy since the dawn of Christianity.³ To understand this unlikely convergence of an ancient Native American calendar system with apocalyptic views ultimately derived from Near Eastern religions, it is necessary to delve into the esoteric realms of epigraphy (the study of ancient writing systems), mathematics, and calendrics (the reckoning of time). The fact that urban mythologizers have done exactly that is almost as surprising as the fact that the two traditions have been melded together at all.

The Maya calendar isn't technically Maya. It is more accurately known as the Mesoamerican Long Count Calendar, and it was just one of several calendars used by the Maya and their neighbors in ancient Mexico and Central America. The Long Count was used largely by rulers to record historical and astronomical events, kind of like putting Roman numerals on a building cornerstone. The Long Count operates something like our own annual calendar in that it represents a continual count of days from a fixed point in the past. Our A.D./B.C. system was developed in the A.D. 500's and perpetually counts forward from a hypothetical date for the birth of Jesus Christ: January 1, 1.⁴ The Maya Long Count counts forward from a similarly important moment known to scholars as the Era Day, which falls on August 13, 3114 B.C., in our own system.

On precisely December 21, 2012, a total of 1,872,000 days (5,128.77 years) will have passed since the Era Day: a long time, but it doesn't immediately stand out as unusual until you consider Maya mathematics. The Maya counted in increments of 20 (vigesimal system) rather than our morefamiliar increments of 10 (decimal system). So while we get excited about units of 100 (10 x 10) and 1000 (10 x 100), the Maya thought units of 400 (20 x 20) and 8000 (20 x 400) were pretty neat. The problem we and the Maya both face is that our solar system doesn't operate in increments of either 10 or 20: the earth revolves around the sun in 365.242375 days. That is an inconvenient number for anyone trying to count on 10 fingers and/or 10 toes. Our extraordinarily unwieldy solution merges a 12-month lunar calendar and a repeating count of numbered days that are inconveniently not divisible by 10 and a continuous count of individual 365-day solar years (the A.D. year count). To get to an exact date in our system, you have to know the lunar month and day as well as the individual year.

While the Maya used repeating weeks and months like ours in addition to the Long Count, that information wasn't (continued on page 13)



necessary to get to an exact date. The Long Count is literally a count of days, divided up into units conveniently divisible by 20. There are days (*kin* in Maya), units of 20 days (*uinal*, effectively a "month"), units of 360 days (*tun*, an imperfect but divisible-by-20 "year"), units of 7200 days (*katun*, 360 x 20), and finally units of 144,000 days (*baktun*, 7200 x 20). Anyone who has ever tried to subtract one date from another to figure out how many days have passed will appreciate the elegance of the Maya system.

The Maya wrote their Long Count dates using hieroglyphs that a handful of trained epigraphers can read. To make it easier for the 7 billion people who cannot read Maya hieroglyphs, Long Count dates are written as numbers separated by periods in this order: "baktun.katun.tun.uinal.kin." So the date 9.14.6.7.19 would mean (9x144,00 + 14x7,200 + 6x360 + 7x20 + 19). Do the math and you get 1,399,119 days since the Era Day, or April 9, 718.⁵ The Long Count calendar works like a base-20 odometer. When you reach the number 19 in any slot, that slot flips to 0 and the next slot over goes up one number. So our example date of 9.14.6.7.19 would become 9.14.6.8.0 on April 10, 718. A more extreme example would be the date 9.19.19.19.19, which converts to 10.0.0.0 on the following day. That momentous change, which occurred between March 12 and March 13, 830, exemplifies a Baktun ending date.

Now let's return to December 21, 2012. Between about A.D. 200 and 900, Maya kings used the Long Count widely to record their exploits. The last major Baktun ending date they celebrated was the aforementioned 10.0.0.0 date from A.D. 830. In the subsequent century, their cities were abandoned and reclaimed by the rainforests. There have been two Baktun endings since that time: 11.0.0.0.0 in 1224 and 12.0.0.0 in 1618. December 21, 2012, is 13.0.0.0, the next Baktun ending. Experience would suggest that since the world didn't end in 1224 or 1618 that Baktun endings aren't that important.

The generators of urban legend aren't so easily defeated, however. The 13.0.0.0.0 Baktun ending is unique because the Long Count calendar also *begins* on the date 13.0.0.0.0. That's right: August 13, 3114 B.C., was 13.0.0.0.0 in the Long Count calendar. That coincidence of date has led some scholars, without any other evidence, to suggest that time, for the Maya, could not continue after 13.0.0.0.0. In other words, their calendrical odometer was going to run out and revert back to zero—just like the odometer in that piece of crap car you drove in high school. If such thinkers are correct, December 22, 2012, would have to take the Long Count date of 0.0.0.0.1 rather than 13.0.0.0.1. That is rather apocalypticsounding. Fortunately the future of humanity, the ancient Maya actually wrote down dates in the far distant future. .13.13.13.13.13.13.13.13.13.13.0.0.0.0, which counts a number so high it can only be rendered here as 20²¹ years long—or, far longer than the history of the universe.⁶ It also guite clearly exceeds the 13.0.0.0 date that people are getting so worked up about right now and frankly bodes very well for the future of our species if correct. There are several other future dates available to us from ancient Maya writing that we would have to ignore to assume that there can be no other baktuns after the 13th.

The take-away from all of this: the ancient Maya had plans for the year 20-bijillion. If they were looking past December 21, 2012, so should you. **•OC**

[ed note: Dr. Barber wrote this article for *On Course* and goes to show you, life goes on – even when deadlines aren't met – we enjoyed the history lesson and felt compelled to still publish it for you].

Endnotes

- 1 http://www.nasa.gov/topics/earth/features/2012.html
- 2 http://www.nytimes.com/2012/12/02/world/europe/ mayan-end-of-world-stirs-panic-in-russia-and-elsewhere. html?adxnnl=1&smid=tw-share&adxnnlx= 1354892906-F1X5f+B0X77m4yUGfedLvQ& r=0
- 3 For example, see Dobroruka, "Hesiodic Reminiscences in Zoroastrian-Hellenic Apocalypses," Bulletin of the School of Oriental and African Studies. June 2012.
- 4 Van Stone, "The Maya Long Count Calendar: an Overview," Archaeoastronomy. June 2011.
- 5 Using the very accurate astronomical observations that the Maya made of eclipses and other impressive celestial phenomena, we can correlate Long Count dates with our own calendar to within about 3 days.
- 6 Van Stone, ibid.