A DISCUSSION OF THE 13-BAKTUN ERA VERSUS THE 20-BAKTUN ERA - Geoff Stray (UPDATED 9 Jan 2017)



Fig.1 : East side of Quirigua Stela C

N.B. In this essay, Cumku = Cumhu; cycle = baktun; great cycle = grand cycle

In 1990, Linda Schele and David Freidel published *A Forest of Kings*. Here, they suggest (p.82 and p.430), that the era that started in 3114 BC consists of 20 baktuns rather than 13. They say that when the baktuns were due to reach a count of 13, in December 2012, that they would go on increasing rather than re-start as understood in recent years by a consensus of Maya scholars, ¹ and that this would not be the end of the contemporary Creation and start of the next, but that the contemporary era would continue until 4772 AD.

The statement seems to have been made to try and counteract the rumours of doom or a New Age reputedly due in 2011/2012 that had started in 1966 with Michael Coe's book, *The Maya*, and had, via Tony Shearer, Frank Waters, Terence and Dennis McKenna, William Irwin Thompson, Peter Balin, Robert Sharer, Larry Tyler, and Jose Arguelles² by 1987 culminated in a world-wide movement called the Harmonic Convergence, and implied that the Maya had foreseen an imminent event that might be equivalent to the Biblical prophecies of the end of the world, and /or the return of Christ. This was obviously a controversy into which the academics would rather not be dragged. By 2009, with the imminent approach of the year 2012 and the release of the Hollywood 2012 catastrophe film, in which the Yellowstone volcano erupts, the poles shift, and flooding destroys most of the inhabitants of the planet, the efforts of the Mayanists to distance themselves from all the hype had become more urgent, and many have since reiterated Schele and Freidel's statements about the era famously ending in 2012, not actually ending any time in the next two millennia.

As understandable as this position may be, the fact is that the statements were made without consideration of the half-century of advances in understanding about the longer cycles of the Long Count. This understanding reached its height with the work of J. Eric S. Thompson, who died in 1975, whose masterpiece, *Maya Hieroglyphic Writing, an Introduction* was published in 1950. An updated edition just called *Maya Hieroglyphic Writing* was published in 1960 and 1971, and it is still the main source book on Maya calendrics.

As understanding increased over the first half of the twentieth century, and more Maya date inscriptions were discovered and/or became readable, it was apparent that some dates implied a 13-baktun era and others implied a 20-baktun era. The pros and cons of each approach were considered and reconsidered, and it will be most instructive if we backtrack over these developing arguments.

1897 and GOODMAN'S GREAT CYCLE

The first jumps in understanding were made by a librarian, Ernst Forstemann from 1880 onwards, who worked on the Dresden Codex. In 1897, Joseph T. Goodman, a journalist and newspaper owner/editor published *The Archaic Maya Inscriptions* as an "appendix" to Alfred Maudslay's *Biologia Centrali-Americana*, which was a high quality set of photographs and drawings of the inscriptions.

Goodman explains that 20 days are one 'chuen' (now called a uinal); 18 chuens equal one 'ahau' (now called a tun); 20 ahaus equal one katun; and 20 katuns equal one 'cycle' (now known as a baktun). He calls the 260-day Tzolkin the 'burner', and the 365-day haab, the 'year'.



Fig.2: Quirigua Stela C, East side: The first of the "Creation monuments" to be discovered. The date reads 13.0.0.0.0 4 Ahau 8 Cumhu.

Picture credit: Mike Finley

Goodman had considered the inscription on Stela C at Quirigua, which shows the date 13.0.0.0 4 Ahau 8 Cumku, and concluded that it marks the end of 13 cycles

(baktuns) and forms the base date from which all historical dates are counted. He called this period of 13 cycles a 'great cycle', and figured that the first cycle of the then-current great cycle that started on 13.0.0.0.0 4 Ahau 8 Cumku was numbered 13 throughout. This was followed by cycles 1, 2, 3....and so on up to 12.



Goodman proposed that since it takes 73 of the great cycles before the calendar round position comes back to its starting point with the cycles of the Long Count, that this period represents the completion of the Maya chronological scheme, and he called this 73 x 13-baktun period a 'grand era'. This is equivalent to 374,400 haabs. The base date on Quirigua stela C represented the beginning of the 54th great cycle in the grand era according to Goodman's hypothesis.

In *The Archaic Maya Inscriptions*, (p.132) Goodman recognises that the inscription on Copan Stela N³ (see Fig.7) records a period of 14.17.19.10.0.0 and seems to represent an interval to be subtracted to arrive at a date in the past – 1 Ahau 8 Chen. He realizes that something is wrong, though, since the calculation does not work out to the given calendar round date, and the fifth column depicts 17 baktuns, which is well above the 13, after which the great cycle supposedly re-started. Goodman would have calculated the sixth column as 14 great cycles of 13 baktuns each. He concluded that the 14 and 17 were superfluous, as the calculation then seemed to work. The mystery of this stela had to wait over 50 years until Thompson finally solved it, but at this stage, Copan N was the only stela that had been decoded showing more than 13 baktuns in the fifth column or place and more cycles in a sixth place, so was easy to write off as an anomaly.

1910 – BOWDITCH REALIZES THE PARADOX

III-134 Palenque, Mexico, Sanctuary tablet in the Temple of the Sun, ded.* 9.13.0.0.0 (692). Drawing. From Maudslay, 1889–1902.



Fig.4: Maudslay's drawing of the inscribed panel in the Temple of the Sun at Palenque, which includes a Creation text.

Fig.5: A facsimile of the inscribed panel in the Temple of the Sun at Palenque, showing the 4 Ahau 8 Cumku glyphs just behind the headgear of Kan B'ahlam (it is now thought this is not Lord Pacal, his father, but Kan B'ahlam as youth and adult).

Thirteen years later, Charles P. Bowditch published *The Numeration, Calendar Systems and Astronomical Knowledge of the Mayas,* and at the back of the book, there is an appendix titled *The Number of Cycles in a Grand Cycle*^{4 see note for online book excerpt} in which Bowditch spends three pages discussing this problem (note that he calls the great cycle the grand cycle). He cites Quirigua Stela C and three other inscriptions ⁵ that record the 4 Ahau 8 Cumhu base date or "zero point of the long count" as he calls it (see Fig 4). He says that, since the four cases cited give the zero date as 4 Ahau 8 Cumhu – most of them along with glyphs signifying the end of the 13th baktun – we are led to the conclusion that 4 Ahau 8 Cumhu should be repeated after another 13 cycles (baktuns) when 13.0.0.0 occurs again, but this date turns out to be 4 Ahau 3 Kankin (which we now know correlates to a day in December 2012).





"The next supposition would naturally be that 4 Ahau 8 Cumhu is the zero date itself, and that here it is declared to be 13 cycles from some other date, which in this case would be 4 Ahau 8 Zotz, the ending date of a previous grand cycle. This is, in my opinion, the correct solution, and this view is confirmed by the four cases where this date is declared to be the end of 13 cycles."

Bowditch gives only one example apart from the four examples of 13.0.0.0.0 4 Ahau 8 Cumku dates, which is counted from the previous start point (4 Ahau 8 Zotz). This

is the date 12.19.13.4.0 8 Ahau 18 Tzec, inscribed on the central panel of the Temple of the Cross at Palenque (see Fig.6, blue & red highlighted dates).



He goes on to point out that this seems to contradict the Dresden Codex, where "20 cycles are needed to fill up a grand cycle" but that if that were the case, and there were 20 cycles to a grand cycle then the grand cycle would have turned over 7 cycles after 13.0.0.0.0, (in the year recorded as 7.0.0.0.0) and all the classic era inscriptions recorded 2 cycles later in cycle 9 should have occurred in cycle 2 of the new grand cycle. However, this is not the case.

Fig.7: Copan Stela N: 1 Ahau 8 Chen are the bottom 2 glyphs; the next one may be a Venus glyph, then we have – unusually - the Long Count date going upwards instead of downwards: 14.17.19.10.0.0 Thompson solves this 35 years in the future (see below)

Drawing: S.G. Morley

As more evidence for 20 cycles to a grand cycle, Bowditch points out that on the Temple of Inscriptions at Palenque, (J11)⁶ 14 cycles seem to be shown, implying they do not restart when they reach 13, but continue to 20 (see Figs 9 &10). He also cites Copan Stela N (as cited by Goodman above – see Fig.7) and comes to the same conclusion as Goodman – that

the fifth and sixth places should be ignored, though he explains it in more detail. On p.325, Bowditch shows that although he favours the 13-cycle version, he is still not sure if it is 13 or 20. He repeats Goodman's suggestion that when grand cycles reach 73, the calendar round returns to its original position in the "grand cycle" but says there is no evidence that the grand cycle would then go back to zero or 1 as suggested by Goodman.

1915- MORLEY TAKES IT FURTHER

In 1915, Sylvanus Griswold Morley published *An Introduction to the Study of Maya Hieroglyphs*, and the book is still in print and is still one of the source books on Maya calendars. Early in the book, on p.62 the reader will find Table VIII, which lists 'The Maya Time-Periods' and is a list of the long count time periods.

Here, after listing 20 katuns to 1 cycle, Morley lists 20 cycles to one great cycle, (NB he also refers to it as a grand cycle in places, e.g. p.113), and includes a note for the reader to see pp.107 *et seq*, where we find a section called, *Number of Cycles in a Great Cycle*. The discussion is over twice as long as that in Bowditch's book, which is then followed by a related discussion of inscriptions showing larger time periods. Together, these discussions last about 20 pages.

Morley starts by pointing out that in the Dresden Codex, all dates (some of which are recorded in six columns or places), keep to the vigesimal, or base 20 counting system, where the unit of increase is 20, except for the second place, where it is 18. Then Morley quotes Goodman and Bowditch's conclusions that the inscriptions show

"there is some ground for believing that only 13 units of the 5th order (cycles), not 20, were required to make one unit of the sixth order, or 1 great cycle" and he then repeats the main points of Bowditch's argument.

Morley then mentions (as did Bowditch) that as well as the mention of 17 baktuns on Copan Stela N, there is also a recording of 14 baktuns on the Temple of Inscriptions at Palenque, which seems to add more weight to the 20-cycle great cycle being valid for the inscriptions as well as the Dresden Codex.

Morley comes to the conclusion that, "…not until these contradictions have been cleared away, can it be established that the great cycle in the inscriptions was of the same length as the great cycle in the codices". (p.110)

Then, Morley goes on to give his own 'contradiction-clearing' suggestion, which allows acceptance of 20 cycles to the great cycle. He includes the point (p.111-112) that in naming the days of the year, the coefficient of the Tzolkin goes 1-13, while that of the haab month goes from 0-19:

"In other words, two different sets of numerals were used in describing the Maya days: (1) the numerals 1 to 13 inclusive, the coefficients of the days, and an integral part of their names; and (2) The numerals 0 to 19 inclusive, showing the positions of these days in the positions of the year...It is clear from

Fig.8: Dresden codex p.62: On pages 61-62 of the Dresden Codex there are eight distance numbers that read vertically downwards, following the red and black colour schemes, between the coils of the snakes. They all have the same point of departure 9 Kan 12 Kayab, and all consist of 4 pictuns, 6 baktuns and an odd number of katuns, tuns, uinals and kins. On the left snake in red, we have the distance number 4.6.11.10.7.2 Thompson solves this 35 years later – see below.

the foregoing, moreover, that the number of possible day coefficients (13) has nothing whatever to do in determining the number of days in the period next higher. That is, although the coefficients of the days are numbered from 1 to 13 inclusive, it does not necessarily follow that the next higher period (the

uinal) contained only 13 days. Similarly, the writer believes that while the cycles were undoubtedly numbered – that is, named – from 1 to 13 inclusive, like the coefficients of the days, it took 20 of them to make a great cycle, just as it took 20 kins to make a uinal. The two cases appear to be parallel"(Morley 1915 p.112) Morley also compares the concurrent use of periods of 13 and 20 units to the sequence of the 13-katun count (short count or u kahlay katunob), saying that although the sequence started with Katun 2 Ahau, "13" signified "end"; in other words, the periods (katuns) were named independently of their position in the larger period (cycles or baktuns). We will have more to say about this subject later, since conclusions about start-points of the short count developed with time.

"Applying the foregoing explanation to those passages in the inscriptions which show that the enumeration of the cycles was from 1 to 13, inclusive, we may interpret them as follows: When we find the date 4 Ahau 8 Cumhu in the inscriptions, accompanied by an "ending sign" and a Cycle 13, that "Cycle 13," even granting that it stands at the end of some great cycle, does not signify that there were only 13 cycles in the great cycle of which it was a part. On the contrary, it records only the end of a particular Cycle 13, being a Period-ending date pure and simple. Such passages no more fix the length of the great cycle as containing 13 cycles than does the coefficient 13 of the day 13 Ix....limit the number of days in a uinal to 13, or, again, the 13 of the katun name 13 Ahau....limit the number of katuns in a cycle to 13. This explanation not only accounts for the use of the 14 cycles or 17 cycles...but also satisfactorily provides for the enumeration of the cycles from 1 to 13 inclusive." (Morley 1915 p.112-113)

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Fig 9: Part of the West Panel of the Temple of Inscriptions at Palenque. The red square marks the position of a glyph showing 14 cycles (or baktuns), to which Morley is referring above. The other reference, to a glyph showing 17 cycles or baktuns refers to the glyph shown in Fig 7, five glyphs up from the bottom. Drawing by Linda Schele



Fig.10: A close-up of the 14-cycle glyph whose position is shown in Fig.9, on the West Panel of the Temple of Inscriptions Drawing by Linda Schele

Here, Morley was very close to cracking the problem, establishing that there are 20 cycles to the great cycle, and yet that 13.0.0.0.0 was at the end of a great cycle. It sounds like a paradox, but rest assured, there is a solution. He goes on to conclude that the great cycle that ended on 4 Ahau 8 Cumku consisted of 20 cycles, and the last cycle was called 'cycle 13,' even though it was the 20^{th} of the series. * This seemed to solve the contradiction, and answered the conundrum of the only inscription then recognised, (apart from the 4 Ahau 8 Cumku "current era base date" inscriptions), that recorded a date counted from another base date – 4 Ahau 8 Zotz.

*The actual sentence is somewhat confusing (p.113): "On the contrary, the material given here tends to show that although the cycle which ended on the day 4 Ahau 8 Zotz was also named Cycle 13, it was the 8th division of the grand cycle which ended on the day 4 Ahau 8 Cumhu, the starting point of Maya chronology, and not the closing division of the preceding cycle." But 13 + 8 = 21, not 20. However, if the 8th cycle in a larger set of 20 is also the 13th in another scheme – a set of 13, then the formula is 8 + 12 = 20. Then there is another problem. The 13th and last of the set of 13 named eras only gains its name "Cycle 13" on the last day of the 144,000-day cycle, when the 13 cycles are complete. This is just like the situation with our centuries. On December 31st 2000, we completed our twentieth century. The next day, and for the next 100 years (36524 days), we are in the 21st century, but the dates all start with 20, e.g. 2010, which is the 10th year of the 21st century since 2000 was the last year of the 20th century. No wonder people get so confused with calendar studies!

The inscription in this case is the Tablet from Temple of the Cross at Palenque, which describes the birth of First Mother on 12.19.13.4.0 8 Ahau 18 Tzec (see Fig.6) – equivalent to Dec 5, 3121 BC, which is 6 tuns and 14 uinals before the Creation date in 3114 BC.⁷

This inscription implies that previous to the then-current 13-baktun era that started in 3114 BC, there was another 13-baktun era that ran from 4 Ahau 8 Zotz, which is April 1, 8239 BC, and that this is why the 4 Ahau 8 Cumku (3114 BC) base date inscriptions correspond to 13.0.0.0, or 13 baktuns having passed since 4 Ahau 8 Zotz. Since Morley's book, we now know of more of these pre-"current-era" dates, such as the birth of First Father, which is implied by the distance date on the panel of the Temple of the Cross (see Fig. 6, orange highlighted date). It is 12.19.11.13.0 1 Ahau 8 Muan (June 14, 3122 BC). A second example comes from the same panel - the 819-day station 1 Ahau 18 Zotz (see Fig.6, purple highlighted date). Another example is 1 Ahau 3 Kankin on a Classic period vase showing the fall of Seven Macaw, which is thought by some Mayanists to refer to 12.18.4.5.0 - May 26, 3149 BC – (see Fig.11).



Fig.11: The scene on a Classic period vase showing the fall of Seven Macaw showing the date 1 Ahau 3 Kankin – you can see these glyphs just under the blowgun - some Mayanists claim this may be a date in the previous 13-baktun era - May 26, 3149 BC. John Major Jenkins shows that this depicts the fall of the ruler of a previous world age, in preparation for the reinstatement of One Hunahpu, the solar deity who is reborn from the Dark Rift (Xibalba be) around the end of the 13-baktun era that occurred in 2012. Drawing: David Freidel and Linda Schele "Maya Cosmos" (1993)



Morley then goes on to discuss the expression of the higher numbers – numbers in excess of 13 baktuns. To recap, Goodman had decided that the one incidence of this then discovered, (Copan stela N), was explained by superfluous numbers in the fifth and six places. Bowditch agreed, but found another example (TI Palengue), showing 14 cycles, making him undecided about whether there were 13 or 20 cycles in a great cycle. Morley added two more of these awkward inscriptions to the list – Stela 10 from Tikal, which seemed to give a date of 1.11.19.9.3.11.2.? (the final glyph was missing), and another example from the Temple of Inscriptions, showing a number composed of seven periods. Morley points out that Copan N and his TI date are not "initial series" dates -i.e., they are "secondary series" dates - now better understood and called distance number dates, these are counts of days to be added or subtracted to a historical date (or "initial series" date), to arrive at another, sometimes far distant date. However, the Tikal example, says Morley, is an initial series date, and, he says, "the eight or nine periods of which it is composed may fix the initial date of Maya chronology (4 Ahau 8 Cumhu) in a much grander chronological scheme, as will appear presently." (p.114)

Fig.12: Tikal Stela 10: The bottom glyph visible in this picture is 3 katuns; above that is 9 "cycles" (baktuns); above that is 19 pictuns; above that is 11 calabtuns; and above that is 1 kinchiltun. Thompson solved this date in 1950 (see below), but the solution requires that the scribe made an error and "11 calabtuns" should have been "12 calabtuns". See also Fig.16. Picture: public domain

Morley demonstrates that Goodman's reading of 19.10.0.0 for Copan N, should have been 14.17.19.10.0.0, showing more than 13 baktuns per great cycle, and in this and his other 2 examples shows not only that there were 20 baktuns in the great cycle, but also 20 great cycles in a great-great cycle, and 20 great-great cycles in a great-great-great cycle. (p.123)

Based on a 10-page analysis (p.114-124) of the date inscription on Tikal stela 10, Morley equates 13.0.0.0 4 Ahau 8 Cumku with an equivalent date in the "much grander chronological scheme", and that date is 1.11.19.0.0.0.0 4 Ahau 8 Cumhu. So, Morley like Bowditch, concludes that 3 stelae recording the start of the thencurrent era, plus the date 8 Ahau 18 Tzec on the Temple of the Cross at Palenque (recording the birth of First Mother) were all counted from a previous base date – 13.0.0.0 4 Ahau 8 Zotz (1/April/8239 BC).

The implication is that dates were usually recorded using only the last five places – "cycles" (now called baktuns), katuns, tuns, uinals, and kins or days since "the cycle was the greatest period with which the Maya could have had actual experience" (p.126), whereas the "great cycle" (now called a pictun) lasted over 8,000 solar years. Although there were 20 cycles (baktuns) in a great cycle (pictun), the cycles were named 1-13, and these "names" were used for most inscriptions – the ones that used only five places. The name of the cycle in which most Maya dates are recorded is cycle 9, and in the grand scheme, its position would also be 9, since the set of 13 started on 13.0.0.0.0 4 Ahau 8 Cumhu which was the time the "great cycle" (pictun) re-started. The previous set of 13 cycles started on 13.0.0.0.0 4 Ahau 8 Zotz, which was not the start of a "great cycle" (pictun), since the equivalent date in the grand scheme was 1.11.18.7.0.0.0.0 4 Ahau 8 Zotz.



Fig.13: 4 Ahau 8 Cumku in the Dresden Codex p.61

Morley was just a hairs breadth away from summarising the situation in the following terms: "The dates counted from 4 Ahau 8 Zotz are "pre-historic" dates, from the previous era of 13 baktuns, and all the other recorded dates are "historic" dates of the era between 3114 BC and 2012. But dates from both these 13-cycle (13-baktun) eras can all be expressed in terms of a larger scheme, which we could call "Metahistoric". In the Metahistoric scheme, the cycles or baktuns are numbered as part of a set of 20, rather than 13, and the 4 Ahau 8 Zotz base date would have been expressed as 1.11.18.7.0.0.0.0 4 Ahau 8 Zotz. When 13 baktuns are added to it we arrive at 1.11.19.0.0.0.0 4 Ahau 8 Cumhu, the current base date."

Morley's discussion of the 13-katun count is even more relevant than he realizes, when he points out that the katuns were named independently of their position in the cycle, but that 13 signified 'end'. In 1915, Morley thought that the 13-katun sequence started with Katun 2 Ahau, but by the time he wrote *The Ancient Maya* in 1946 (p.294), he had concluded that the sequence started with Katun 8 Ahau. However, in Thompson's *Maya Hieroglyphic Writing* ⁸ Thompson establishes that the 13-katun sequence ended on Katun 13 Ahau (named after the final day), and started on Katun

11 Ahau, as stated in the Chilam Balams and as shown on Bishop Landa's Katun wheel (see Fig.14).



Fig.14: The Katun wheel, as drawn by Diego de Landa (slightly retouched) shows a series of 13 katuns that start on katun 11 Ahau (under the cross at the top) and finish on Katun 13 Ahau (to the left of Katun 11 Ahau). The wheel would thus turn anticlockwise, the second katun being Katun 9 Ahau. Picture: Mike Finley

1921 - WILLIAM GATES PROVIDES NEW NOMENCLATURE

In 1921, William Gates, a student of Maya linguistics, suggested to Morley that the Yucatec Maya word *tzolkin* should be used in place of the Nahuatl word, *tonalamatl* used by the Aztecs to describe the 260-day sacred calendar. At the same time, he suggested:

"...the change in our terminology of these higher time periods – the Tikal stela providing the needed basis. We found there the **cauac** as incorporated throughout; we already knew that it stood for a **tun**, and knew the other values above noted. We also had the Maya words **tun** and **katun** authoritatively; it only needed to regard **katun** as a shortening of **kaltun**, 20-**tun**, to go on and adopt all the other numbers from **bak** to **alau**, in order to give us, at the least, satisfactory Maya terms, and get away from the cumbersome Cycle, Great Cycle, Grand Era, etc." (Gates, 1931 p.76)

The following year, 1922, in the second, revised edition of Herbert J Spinden's book, *Ancient Civilizations of Mexico and Central America*⁹ Spinden put the idea into print, and added the suggestion that 20 alau = 1 hablat.

"Twenty tuns made a kaltun or katun and above this period the numeral system proceeded as before and in the ascending values the names already given were merely combined with tun, if Gates is right in his clever suggestion. For years it has been customary to speak of the fifth period as cycle for want of a native term: this will now be called baktun. One hablatun, the highest period with a name, has the astonishing value of 460,800,000,000 days. However, the highest number which has come down to us records only 1,841,639,800 days, or about five million years. Needless to say it is not historical."



Fig.15: Two examples of the pictun glyph in the Dresden Codex (p.61)

1946 – MORLEY REDEFINES PERIOD NAMES

In Morley's 1946 book *The Ancient Maya*, a very popular book that has been in print continuously from that date, he clearly describes the now obvious vigesimal system of all the cycles with the exception of second position – uinals, which comprise only 18 to make one period of the third order – the tun: 10

kins = 1 uinal or 20 days uinals = 1 tun or 360 days tuns = 1 katun or 7,200 days katuns = 1 baktun or 144,000 days baktuns = 1 pictun or 2,880,000 days pictuns = 1 calabtun or 57,600,000 days calabtuns = 1 kinchiltun or 1,152,000,000 days kinchiltuns = 1 alautun or 23,040,000,000 days

In this book, Morley plays it safe and states that that 4 Ahau 8 Cumhu is "the zero date of the Maya chronological era", but makes no further mention of higher cycles above the baktun, or any inscriptions that don't fit into the "Maya chronological era". He suggests the possibility that the Maya chronology may, like Greek and Jewish chronologies, have "commenced with a suppositious event like the creation of the world".

The list of cycle names up to alautun is repeated in recent re-edited versions of Morley's book, (**Sharer**, 5th edn, 1994, p. 560-561) but Sharer says (p.568):

"The ancient Maya may have believed that the world came to an end, and was recreated afresh, at the close of each great cycle of thirteen baktuns, a period of approximately 5,128 solar years, [NB this is an error – 5,128 haabs, but should be 5125 solar years] and they reckoned the chronology of their current world from a fixed point corresponding to the end of the preceding great cycle. The beginning of the current great cycle, 13.0.0.0.0 4 Ahau 8 Cumku (corresponding to a day in 3114 BC), evidently refers to the creation of the current world in the Maya cosmology, but may represent some other important event in the past. That date, in any case precedes the earliest Maya-area Long Count date (on Stela 2 at Chiapa de Corzo...) by over 3,000 years. According to the generally accepted calendar correlation... the current great cycle – and our current world – will end on December 21, 2012..." So, we can see by the time of Sharer's 1994 edition of Morley's *The Ancient Maya*, it was evident that the two concepts of a 20-baktun period, or pictun, and the 13-baktun period that Sharer and others still refer to as a "Great Cycle", are not seen as mutually exclusive. Recently, it has become common practice to drop the term "Great Cycle" altogether, as suggested by Gates back in 1921, since it had earlier associations with the 20-baktun cycle, now called a pictun (but as evidenced by Sharer, this is taking a long time to catch on). The "13-baktun era" is now unambiguously termed simply as that, or as the "13-baktun cycle". However, we are getting ahead of ourselves here, since between the first 1946 edition of *The Ancient Maya* and the latest editions of it, J. Eric S. Thompson, the pre-eminent Maya scholar and arguably the last of the "generalist" archaeologists in the Maya field, had finally solved the problem.

1950 – THOMPSON CLEARS THE CONTRADICTIONS



Thompson's masterpiece, *Maya Hieroglyphic Writing* (1960 and 1971), which is an update of the original 1950 edition, *Maya Hieroglyphic Writing, an Introduction* reiterates the new terminology for the higher cycles, drawn from Yucatec roots, and he discusses the use of these terms on p. 147-148, where he gives the equivalents in tuns rather than days, as Morley had:

20 katuns = 1 baktun (400 tuns) 20 baktuns = 1 pictun (8,000 tuns) 20 pictuns = 1 calabtun (160,000 tuns) 20 calabtuns = 1 kinchiltun (3,200,000 tuns) 20 kinchiltuns = 1 alautun (64,000,000 tuns)

In addition to the one example of Goodman, showing a period in excess of 13 baktuns, the second example of Bowditch and the third and fourth examples of Morley, Thompson gave another five examples of inscriptions and other date recordings showing longer cycles. These five and the previous four examples all had to be reconciled into a "Metahistoric" dating scheme, as I have termed it. Before discussing the higher periods, Thompson gives his overview of the longer cycles, which is worth quoting in full (LC refers to the long count):

Fig.16: Tikal Stela 10 (see Fig.12) Drawing: S.G. Morley

"For the sake of convenience, the Maya chose the point 4 Ahau 8 Cumku, [as a] *completion of 13 baktuns, from which ordinarily to*

reckon the LC. Our typical date 9.15.10.0.0 was therefore 9 baktuns, 15 katuns, and 10 tuns after this point of departure for the reckoning. It is not improbable, though the matter is not susceptible of proof, that 13.0.0.0.0 4 Ahau 8 Cumku was regarded as the date on which the world was recreated, perhaps for the fifth and last time. The LC was presumably invented in baktun 7 or 8 of the current count, and an interval of that number of baktuns, and perhaps some katuns as well, was set aside to mark the time which was imagined to have elapsed since an event, which, if my supposition is correct, was regarded as the last creation of the world. Groups of 13 baktuns preceding that base would, perhaps, have been allowed for the earlier "suns" (p.10).

"When the LC was born, the highest period seems to have been the baktun. Baktuns were grouped in re-entering cycles of 13, after which a baktun would end with the same day Ahau; these cycles probably had no starting point, a Baktun 1 following a Baktun 13 in endless succession. Later, with progress in astronomy and growing skill in computation, the Maya priests burst the bounds of the baktun, and roamed farther into the past: they probed with their calculations outermost time, as modern astronomers with giant telescopes penetrate to the recesses of the universe. The reentering cycles of 13 baktuns were unsuitable for such calculations, for they could be distinguished from one another only by a cumbersome system of nomenclature. The remedy was simple: baktuns were grouped in 20's to form a higher unit in the vigesimal count, the pictun; and the baktun 13 of 4 Ahau 8 Cumku became Baktun 0 for purposes of calculation, although the old designation of Baktun 13 was retained for everyday useage.

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Fig.17: Tablet of Inscriptions", Palenque, - Temple of Inscriptions, West Panel: Formula 1 below: pink: 5 Lamat 1 Mol; purple: 7.18.2.9.2.12.1 (read upwards); green: 1 Manik 10 Tzec. Formula 2 below: red: 8 Ahau 13 Pop; orange: 1.0.0.0.0 10 Ahau 13 Yaxkin; blue: 1.0.0.0.0.8 5 Lamat 1 Mol

"Perhaps at the same time, perhaps later, periods higher than the pictun were invented, and the calabtun, kinchiltun and alautun came into existence, each with its distinguishing glyphs. The date when the count was extended backward is not known; the earliest record of it is on Tikal 10, erected some time before 9.10.0.0.0. Around 9.13.0.0.0 the Maya priests were much interested in the backward projection of time, and not a few calculations millions of years into the past were made. These are discussed at length in Appendix IV. Suffice it here to say that there are good grounds for believing that in the extended LC our typical date 9.15.10.0.0, held the position 1.13.0.9.15.10.0.0 3 Ahau 3 Mol. That is to say, there elapsed 1 kinchiltun, 13 calabtuns, 0 pictuns, 9 baktuns, 15 katuns, 10 tuns, and no extra uinals or kins from the extended point of reckoning. This, however, was not the true zero date, for calculations at Quirigua carry the count very much farther into the past, and to reiterate, there almost certainly was no such thing as a zero date."¹¹ In Appendix IV of *Maya Hieroglyphic Writing* (p.314), titled *Maya Calculations Far into the Past and the Future*, ^{12 see note for link} Thompson investigates nine examples of date inscriptions with more than five places. I summarise them below:

1. Tablet of Inscriptions, Palenque (past) distance no. 7.18.2.9.2.12.1 7 places
2. Tablet of Inscriptions, Palenque (future) 1.0.0.0.0 and 1.0.0.0.86 places
3. Copan N distance number (modified from fig given by Goodman, Bowditch and
Morley 14.17.7.10.0.0
changed to 7 katuns)
4. Tikal 10 distance number (enabled Thompson to work out 2 highest coefficients
1.13.0.) 1.12.19.9.3.11.2.13
5. Stone of Chiapa distance number 13.13.13.1.0.11.4
6. Dresden 61, 62 distance numbers (see Fig.8)
4.6.11.10.7.2
7. Copan Clonger cycles implied by calculations, but none shown
8. Quirigua Fdistance number1.8.13.0.9.16.10.0.0
the result is 13 kinchiltuns –over 90 million years (91,683, 930 tuns):
(18.)13.0.0.0.0.0.0
9. Quirigua Ddistance number6.8.13.0.9.16.15.0.09 places and the
result is (13.)13.0.0.0.0.0.0 – 5 alautuns before stela F date
places400 million years into past!



Fig.18: More detail on the Temple of Inscriptions West Panel: Note the date 7.18.2.9.2.12.1 is read upwards (purple). Note also the future date 1.0.0.0.0 10 Ahau 13 Yaxkin (4772 AD) (orange)

For an example of Thompson's reconstruction, here is the end of the current pictun:

8 Ahau 13 Pop
Add
5 Lamat 1 Mol
Subtract
10 Ahau 13 Yaxkin

Thompson also mentions other long dates on Quirigua F and A but he was unable to solve them, so there is still room for more work here.

The result of all this analysis is that Thompson was able to improve on Morley's calculation of the "Metahistoric" date equivalent for the base date of the contemporary 13-baktun era. In the "Prehistoric" era, where only five places are used, and all dates are counted from 4 Ahau 8 Zotz, the date recorded as 13.0.0.0.0 4 Ahau 8 Cumhu is the final date of that era, and also the base date for the next 13-baktun era – the "Historic" era. In the Metahistoric system, which was developed for recording dates outside the 13-baktun era – dates in 'deep time", far into the past and future – Morley had calculated that the 4 Ahau 8 Cumhu date would be expressed as 1.11.19.0.0.0.0 4 Ahau 8 Cumhu. Thompson's study enabled this Metahistoric date to be improved upon so it could be used to solve more inscriptions. Thompson's reconstruction suggested the 4 Ahau 8 Cumhu date would be 0.1.13.0.0.0.0.0 4 Ahau 8 Cumhu, which would imply that the 13-baktun era base-date in 3114 BC was actually the end of a 20-baktun cycle, or pictun, but also the end of 13 calabtuns, making it a very significant 13-baktun era start point. Thompson died in 1975.



Fig.19: L-R Two variations of glyphs for the pictun and two variations of glyphs used for the calabtun. Drawings: S.G. Morley

COE PREDICTS THE END OF THE WORLD

In 1966, Michael Coe published the first edition of *The Maya* – another popular book that is still in print in an updated edition. In the original edition, Coe is still speaking in terms of the "Great Cycle", and says that Long Count dates are a count of the days elapsed "*since the end of the last Great Cycle, a period of 13 baktuns whose ending fell on the date 4 Ahau 8 Cumku*" (p.58). On the following page he reveals that the full date of the "base" was written 13.0.0.0 4 Ahau 8 Cumku (p.59). On p.149, Coe says:

"The idea of cyclical creations and destructions is a typical feature of Mesoamerican religions, as it is of Oriental. The Aztec, for instance, thought that the universe had passed through four such ages, and that we were now in the fifth, to be destroyed by earthquakes. The Maya thought along the same lines, in terms of eras of great length, like the Hindu kalpas. There is a suggestion that each of these measured 13 baktuns, or something less than 5,200 years, and that Armageddon would overtake the degenerate peoples of the world and all creation on the final day of the thirteenth. Thus, following the Thompson correlation, our present universe would have been created in 3113 BC, to be annihilated on December 24, 2011, when the Great Cycle of the Long Count reaches completion."

I include this, not to suggest I agree, but on the contrary, to illustrate that this book, which has probably sold more copies than any other book about the Maya, and has

influenced many people, is the origin of proposed "end-of the world" theories associated with 13.0.0.0 and confused dating and nomenclature. Later editions had corrections. The second edition gave a 2013 end-date, and later editions gave a 2012 end-date, for example.

In 1992, Coe published Breaking the Maya Code in which he states,

"Unlike days in the Calendar Round, which are fixed only within a never-ending cycle of 52 years, Long Count dates are given in a day-to-day count, which began in the year 3114 BC, and will end (perhaps with a bang!) in the year AD 2012"(p.62).

In the 2000 postscript, he calls the base date the Maya Creation and equates it to 13 August 3114 BC. This is the correlation now known as the Lounsbury correlation after its most recent proponent, Floyd Lounsbury, or as the 584285 correlation, which refers to the Julian day number corresponding to the base date 13.0.0.0 4 Ahau 8 Cumhu. It is 2 days later than the one that Thompson and most Mayanists today prefer, the 584283. Linda Schele, who was a close friend of Lounsbury, also preferred his correlation.

The epilogue at the back of the book rounds the book off by giving another forecast of doom for the end of the "Great Cycle" in December 2012. This prophecy of the forthcoming end of the world, says Coe, had been predicted by today's "Maya wise men all across Yucatan", to be due in year 2000 *y pico* – "and a little", and he then ties it to a prophecy from the Chilam Balam of Tizimin that predicts flooding at the end of a katun.



So, the conclusions of our calendar authors have slowly been developing as they found more examples to reconcile into their explanations. To recap, their conclusions about the 13-baktun and 20-baktun cycles will be summarised below (using the modern nomenclature where possible):

- 1. Goodman, 1897: The Great Cycle consists of 13 baktuns. The one that ended in 2012 is the 54th of a series of 73 and started on 4 Ahau 8 Cumhu. ¹³
- 2. Bowditch, 1910: The Great Cycle consists of 13 baktuns, (like the Round of Katuns, consists of 13 katuns), but sometimes it seems to consist of 20.
- 3. Morley, 1915: The Great Cycle consists of 20 baktuns, so each is assigned one of 20 number coefficients, but they each also have a title, which is a number between 1 and 13. The date 4 Ahau 8 Zotz was the end of "Cycle 13", and also the 8th baktun in a "Great Cycle" of 20 baktuns, now called a pictun (in a scheme using a place numeration system in excess of 5). This

pictun ended concurrently with the end of the next "Cycle 13" on 4 Ahau 8 Cumhu – a date we now know as 11 August 3114 BC. So there was a set of 13 baktuns before 3114 BC, evidenced by a few inscriptions displayed in a 5place numeration system, counted from the date 4 Ahau 8 Zotz.

- 4. Gates, 1921: The terms Cycle, Great Cycle, Great Great Cycle are now defunct. The pictun is the term for a 20-baktun cycle; 20 pictuns are a calabtun; 20 calabtuns are a kinchiltun, etc.
- 5. Thompson, 1950: The Long Count calendar was originally a count of 13-baktun cycles, with baktun 1 following baktun 13. Later, to deal with longer periods, baktuns were grouped in 20's (as part of a vigesimal system of larger cycles) and baktun 13 of the then-current era became baktun zero in cases where these longer cycles were used. Dates in the recent 13-baktun era are counted from 4 Ahau 8 Cumhu, which is itself the end of a previous 13-baktun era counted from 4 Ahau 8 Zotz. However, for dealing with "deep time", longer vigesimal cycles were developed. Thompson thought the then-current 13-baktun era is the last of a set of five eras, the previous ones being 13 baktuns in length; the one that started in 3114 BC being endless. Following the 1950s, the specialised calendrical scholarship that, over the first 50 years of the 20th century, had led progressively to this increased understanding, began to wane.
- 6. Coe, 1966: Coe still used the confusing "Great Cycle" term, 45 years after it had been superseded, and miscalculated the "end date" as 2011. He didn't mention the higher cycles, but thought the then-current 13-baktun cycle was the last of five eras and the world would end when the 13-baktun era was due for completion in 2012.
- 7. In Sharer's updated version of Morley's The Ancient Maya, from 1983 through the 1994 edition, the term "great cycle" is still used, thus prolonging the confusion about how many cycles there are in a great cycle a question that, as we have seen, had finally been settled by 1950. The solution is that there is a 13-baktun era and a 20-baktun cycle that were each used for a different purpose. Though in a way mutually exclusive, we don't have to presume one is true and the other false; each operates in a separate system. As we shall see, it is possible to demonstrate diagrammatically how these systems were interconnected.
- 8. By 1990, Schele and Freidel's book, *A Forest of Kings*, in a reaction to the "many" who suggested that 2012 would be the end/start of a new Creation, cited three inscriptions as evidence that the era would not end on 13.0.0.0 because the 13-baktun cycle does not exist. Instead, they suggest that the baktuns will keep being counted up until the end of the 20th baktun, which is the start of the next pictun in 4772 AD. They imply that this will not be the start of a new Creation either. In order to come to this conclusion, the authors have ignored all the other inscriptions that have been progressively reconciled with each other as they were discovered, by generations of Mayanists, to arrive at an advanced understanding. In effect, this is a backward step to 1915. We shall look at this in more detail below.

COGWHEELS THROUGH THE AGES

Popular books often use diagrams depicting Maya calendars as interlocking cogs, in order to help explain the inter-relationships of calendrical cycles to the modern mind. Some presume that this is a New Age fad, but it is a method employed by the main

academic writers on Maya calendar systems. In fact, Bowditch employed the idea in 1910, where he gives evidence that the Maya themselves depicted some of their calendar cycles as cogwheels.

Bowditch supplies an appendix titled "*Continuous Series. Wheels*", (sic) in which he refers to De Landa's diagram of the 13-katun cycle – the U Kahlay Katunob – that is now usually called the Short Count (see Fig.14). This picture first appeared in De Landa's book, *Relación de las cosas de Yucatán* in 1566. There is a similar diagram in a manuscript in the Brinton collection at the University of Pennsylvania, called Chilan Balam II (Fig.21) – probably from the late nineteenth century.



Fig.21: The Katun Wheel from Chilam Balam II. One Ahau is at the top and there is no cross in this version. Brasseur de Bourbourg is quoted at the centre as translating Ualazon katun as "the war of the katuns", but others have translated it as "the revolution of the wheel of the katun".

The Chilam Balam (or chilan Balam) books are variations on an original that is now lost, named after the Jaguar Prophet, who lived in the late 15th or early 16th century, but the nine existing versions, written in Yucatec Maya language and Latin alphabet, date from the 18th and 19th centuries.

Fig.22: Wheel diagram from the Chilan Balam of Ixil – shows rotation of yearbearers



The Chilan Balam of Ixil contains another wheel diagram, but with 12 sections. It shows the sequence of year-bearers for the first 13 haabs of the 52-year Calendar Round. 13 and 1 are in the same section – Kan – indicating where the cycle starts to repeat.



Fig.23: The Katun Wheel from the Chilan Balam of Chumayel

The Chilan Balam of Chumayel has a calendar wheel displaying 14 sections, which is an alternative version of the 13-katun wheel, in which the extra section (between the last katun, 13 Ahau, and the first katun of the series, 11 Ahau), shows the re-start of the cycle. It also shows the cardinal points (see Figs 23 & 24).



In the Chilan Balam of Kaua, a wheel diagram shows the Earth at the centre; it also shows a combination of the 13-katun wheel and year-bearer wheel, and includes the cardinal points.

Fig.25: Chilan Balam of Kaua Katun Wheel.



In the Chilan Balam of Ixil, there is a diagram called Buk Xoc that takes the concept further and shows two interlocking wheels with cogs (see Fig.26). The smaller one shows the 4 year-bearers and cardinal points and has 52 teeth. The larger wheel is similar to the 12-fold wheel from the Chilam Balan of Ixil, but there are 137 teeth that surround it.



An alternative from the Chilan Balan of Mani (or Chilam Balan) has 46 and 66 teeth respectively (see fig.27). There are 52 years to the Calendar Round, but the reasons behind the numbering of the other teeth are unclear.



Morley shows 3 cog diagrams in his 1915 book: the first is the "tonalamatl" (this is the Aztec term – it is now usually called tzolkin on a 260-tooth cogwheel; the second is a diagram of a portion of the 260-tooth tzolkin cog against a portion of a 365-tooth haab wheel, to produce the 52-year Calendar Round, (see Fig.28), and the third is a portion of a cog with 18,980 teeth, where each one represents one day of the Calendar Round. The second diagram (left) was also repeated in Morley's 1946 book, The Ancient Maya.

Fig.28. Morley's Calendar Round cog diagram, shown in the 1915 and 1946 books.

In 1954, Thompson himself supplied a cog diagram, but this time, it went beyond the 2 wheels of the tzolkin and the haab combining to make the Calendar Round. It showed the edge of a fourth wheel representing a uinal. Here is what Thompson said about it:

"At the top left a large sprocket moves the 20-day month wheel one position every time the day-name wheel completes a revolution. Similarly, at every complete revolution of the month wheel, a tun (360-day) wheel (not shown) would be moved one position, and so on up the scale of Maya time periods until after 8,000 of their years of 360 days, the pictun wheel would move one cog."



Fig.29: Eric Thompson's cog diagram, showing the 13 numbers as a cog, interlocking with the 20-unit day-sign wheel, together interacting with a haab wheel (note, the haab wheel would in reality be much larger than this, but this suffices to explain). This part of the diagram has been much repeated. Morley's *The Ancient Maya*, re-edited by Sharer has a version of these three cogs. However, this diagram is unique in showing another cog – the "20-day month" or uinal. See below for the latest iteration of the idea. I have added 2 labels to clarify.

He goes on to point out,

"A Maya would not approve of this illustration, for to him it is not a matter of a complex machine, but a series of gods who take it in turn to rule the world."

Other bestselling books -*The Maya*, by Michael Coe; Sharer's re-write of Morley's *The Ancient Maya*; and even Schele and Freidel's *A Forest of Kings* also use cogging diagrams, but only using 2 or 3 wheels to illustrate the interaction of cycles of 13 and 20 in the tzolkin, and the consequent haab-wheel interaction to produce the 52-haab calendar round. Nobody took Thompson's remark further and produced a diagram with more than three wheels, until *The Mayan and Other Ancient Calendars* was published in 2007 (I am not pretending to be an academic Mayanist; however, it is a fact that many breakthroughs in understanding in Maya studies have come from outside academia).

In preparing this essay, I realized that my own cog diagram, even though it showed ten cogs, could be modified to further clarify the points being discussed here. The resulting diagram consists of 21 cogs and I present it below, with colour coding, to demonstrate the calendar systems. (NB I have combined the day-sign and 20-day uinal wheel into one wheel).

It is unnecessary to postulate that the Maya had a device like this. As traditionally shown in books written by the most respected of Maya scholars, the primary purpose of the cog diagrams is to ease the reader's understanding. However, we can take into account that De Landa's diagram from the 1500s, and the Chilam Balam illustrations from the 1700s, show that wheels and even toothed cogs were not as inimical to Maya thinking as we might imagine.

SCHELE AND FREIDEL: STOPPING THE END OF THE WORLD

Schele and Freidel refer to 13.0.0.0.0 4 Ahau 8 Cumku as the base date, the zero day, or the start of the fourth Creation (pp.81-83; pp. 429-430). Their interpretation of the Popul Vuh implies that, since repeated attempts to create sentient beings who would recognise their creators was successful in this fourth Creation, that this one will continue without interruption. They point out that there is an inscription at Palenque, that records the future calendar round anniversary of Pacal's accession to the throne, 8 days after the start of the next pictun in 4772 AD. They present this as evidence that there is no such thing as a 13-baktun cycle, beyond a recognition that the count of 13.0.0.0 is "a return to the symmetry of the beginning". Since the inscription counts forward to 1.0.0.0.0 and the calendar round date shows this corresponds to the start of the next pictun in 4772 AD, this implies that not only will 13.0.0.0 be followed the next day by 13.0.0.1 but that this "baktun 13" will be followed, not by baktun 1 (as happened 400 tuns after the last Creation), but by baktun 14.



To those who had not read the earlier work of Morley, Thompson and the rest, this conclusion sounded entirely reasonable, and also satisfying, since it immediately disposed of the awkward and embarrassing end-of-the-world hysteria that was developing, (albeit embryonically) following the bestselling Arguelles book, The Mayan Factor. Thompson had, however, already provided an explanation for this inscription, in a Metahistoric dating scheme that used 6 or more places for describing dates outside the then-current 13baktun era.

As further evidence that the Maya did not consider 2012 to be the start of a new Creation, two anomalous inscriptions are cited – the date on stela 1 at Coba, (see Fig.30) and the date on the hieroglyphic stairway of Temple 33 at Yaxchilan (see Fig.31, 32). The first of these shows the familiar Creation date of 13.0.0.0.0

Fig.30: Stela 1 at Coba, showing the date
13.13.13.13.13.13.13.13.13.13.13.13.13.1
0.0.0.0 4 Ahau 8 Cumku
Drawing after Elizabeth Wagner

4 Ahau 8 Cumku, but with higher cycles. This is the Coba date inscription:

This inscription shows 20 units above the 4th place of the katun, and they are all set at 13. It is immediately obvious that this inscription does not tally with Thompson's reconstruction of the Metahistoric dating scheme. In 1997, Ian Graham provided a drawing of another stela from Coba – Stela 5, that also shows the Creation date in 3114 BC in the same format. Dave Stuart has recently redrawn it, ¹⁴ to avoid confusion

http://decipherment.wordpress.com/2010/04/23/the-era-date-on-coba-stela-5/ and he points out that there is a third stela from Coba – stela 27, that again repeats this date.



Fig.31: The hieroglyphic stairway at Yaxchilan. See Fig. 32 for a close-up Picure: public domain

The date inscription on the hieroglyphic stairway at Yaxchilan is as follows:

13.13.13.13.13.13.13.13.9.15.13.6.9 3 Mulue 17 Mac



Fig.32: The text on the hieroglyphic stairway at Yaxchilan. The date shows 13.13.13.13.13.13.13.13.13.13.13.6.9 3 Mulue 17 Mac. This is 19 October 744 AD. (Gregorian) Picture: public domain

In this case, the date shows the Historic date 9.15.13.6.9 3 Muluc 17 Mac, which corresponds (in the 584283 correlation) to 19 October 744 AD. However, there are 8 places above the baktun that are all set at 13.

Schele and Freidel conclude that at the start of the then-current Creation, "a huge odometer of time" started:

"These thirteens are the starting points of a huge odometer of time: each unit clicks over from thirteen to one when twenty of the next unit accumulate. The baktun clicked from thirteen to one four hundred years after the creation date. The Olmec lived during the fifth 400-year cycle; the earliest dates in Mesoamerica fall into the seventh 400-year cycle; and Classic history took place in the last quarter of the eighth and all of the ninth 400-year cycle. The last Long Count date known is 10.4.0.0.0 at Toniná. Since dates rarely required that numbers higher than the baktun be written, the Maya regularly excluded them from their dates."

As an aside, it is interesting to note the metaphor of an odometer clicking away, in reference to the toothed cog diagrams we have discussed, but the main point here is that the authors have concluded from these inscriptions that all higher cycles were set at 13 at the start of the then-current Creation. This neatly explains why Creation started at a count of 13 baktuns, and was not due to end when it again reached 13 baktuns, saving us from any discussion of the world ending. However, no attempt is made to explain all the other inscriptions with more than 5 places, that don't fit into this hypothesis (the "Metahistoric" dates), which have been painstakingly reconstructed by Thompson. Nor does it mention the dates counted from the previous base date of 4 Ahau 8 Zotz (the "Prehistoric" dates)

This "hypothesis" of Schele and Freidel has been repeatedly quoted recently, in the aftermath of the Roland Emmerich film, 2012, about the forthcoming end of the world as supposedly predicted by the Maya. While I sympathise with the motives for defusing this Maya -Armageddon scenario, instead of trying to find an explanation that explains all the date inscriptions, this supposed explanation ignores the 9 or so inscriptions explained by Thompson in favour of the 4 inscriptions from Coba and Yaxchilan.

PROPOSED CALENDRICAL MEGATHESIS

In an attempt to simplify understanding of Maya calendrics, I followed Thompson's prompt and designed a diagram that continued upwards to include cogs for uinals, tuns, katuns, baktuns and pictuns (see Fig.33). To explain how the 13-baktun cycle and the 20-baktun cycle or pictun are not mutually exclusive, at the level of the "baktun wheel" (H), where we have a 20-tooth wheel on which each tooth is a katun, notice that there are two longer teeth – one above and one below the rest of the teeth. The one raised above (in a 3d plane) the other teeth will turn another 20-tooth wheel vertically above (north of) the baktun wheel. At every turn of the baktun wheel, this "pictun wheel" (K), will click round by one baktun. There are 20 teeth on it, so it will complete one revolution every 20 baktuns, and in turn, click another wheel - the calabtun wheel, (M) round by one tooth, and so on. This vertical series of wheels shows the vigesimal (20-base) system of the Metahistoric scheme (with the usual exception of the uinal – represented by the 18-tooth uinal wheel). But going back to the baktun wheel (H), the other longer tooth, or spoke, which is below (in a 3d plane) the other teeth, activates a 13-tooth wheel to the left. This is the 13-baktun wheel (I), since every revolution of the baktun wheel (H) turns the 13-baktun wheel (I) by one tooth. When the 13-baktun wheel (I) has turned one revolution, a longer tooth on it will turn another 5-tooth wheel round one click. This is the 5-era wheel (J), consisting of the five eras suggested by Thompson, Coe and Sharer - a revolution would take 5 turns of the 13-baktun wheel, and each 13-baktun cycle consists of 5,200 tuns, so one revolution of the 5-era wheel would then take 26,000 tuns.



Fig.33: The ultimate cog diagram. Refer to text for an explanation: Proposed Calendrical Megathesis. NB The bottom wheel, 'Z', is implied by logic, but the use of this theoretical cycle is unknown. Drawing: adapted from The Mayan and Other Ancient Calendars See very large version: http://tinyurl.com/jxkk7cn

The next realization was that the 13-katun cycle (G) or Short Count could be operated in just the same way, beside the Katun wheel (F), and south of that, a 13-tun wheel (E) would reflect a cycle that appears in the Dresden and Paris Codices. Then, south of that, a 13-uinal cycle (C) would represent the most sacred cycle of all, the tzolkin.

In the completing of the diagram it becomes evident that it can reconcile all the inscriptions, including Thompson's Metahistoric dating scheme, the Historic dates, the short count dates, the period-ending dates, and even the strange stelae of Coba and Yaxchilan with their 13fold cycles, which I will call the "Parahistoric" dating scheme. It would also display the "Prehistoric" dates counted from 4 Ahau 8 Zotz, and any "Posthistoric" dates, which theoretically count from the next Creation, on 13.0.0.0.0 4 Ahau 3 Kankin, using only five places, even though none have yet been discovered.

Thompson explained that the "Historic", 5-place system was developed first, (7.16.3.2.13 - 36 BC - is the oldest recorded Long Count date, from outside the Maya area at Chiapa de Corzo). This method, combining 5 places plus calendar round allowed a date to be ascertained in a time window of 374,151 years (374,400 haabs). The "Metahistoric" system, using 6 or more places, for recording dates in "deep time", or dates outside the 13-baktun cycle, probably originated around 9.10.0.0.0 – circa 633 AD, according to Thompson, and allows a time window longer than the age of the universe. By the middle of the Late Classic era, circa

750 AD, the Long Count sometimes was abbreviated to a system using just the katun number and the calendar round date of the final day in the katun. These are called Period-Ending dates. Although this saved space, it limited the size of the time window in which dates could be located (it specified a particular katun in a 1200-year time window)¹⁵ and would just specify which katun the event occurred in – plus the calendar-round date within the katun to locate it to the day. By the time of the Late Post-Classic era (1200 AD to 1519), dates were recorded in the 13-katun cycle, or Short Count, which gave a time window of 260 katuns (256 solar years).

The Chilam Balams reveal that the 13-katun cycle was a prophetic cycle, in which events that occur in a named katun are expected to repeat 13 katuns later, when the named katun repeats. This implies that the 13-katun cycle was used before the Late Post-Classic era, for prophetic purposes, as suggested by Michael Coe (1966, p.117) and Susan Milbrath (1999 p.6). In this way, the 13-katun cycle is similar to the 13-uinal cycle – the tzolkin – that was and still is used as an almanac.

Between the 13-uinal wheel (C) and the 13-katun wheel is the 13-tun wheel (E), and below, at the base of the structure, is the 13-day wheel (A) – one of the 2 wheels that combine to form the tzolkin. Thus, we have a series of 13-tooth wheels alongside the vigesimal series. A continuation of the 13-tooth wheels northwards suddenly provided an explanation for the Coba and Yaxchilan inscriptions. So the 13-day cycle is important in calculating divinations; the 13-uinal cycle of the tzolkin gives repeating predictions, and so does the 13-katun cycle, as we know from the Chilam Balams. These facts indicate that the cycles of 13 have a prophetic function. This is underlined by the recently decoded Monument 6 from Tortuguero, that Sven Gronemeyer and Barbara MacLeod have written about in Wayeb Notes No. 34. ¹⁶ http://www.wayeb.org/notes/wayeb_notes0034.pdf

They conclude that the monument looks forward to the end of the baktun 13, when a special ceremony is to take place that is very similar to the one that used to happen at the end and start of the haab, in the wayeb days, but now happens at Easter in Santiago Atitlan. The god Mam, or Maximon (the "ancient one") is adorned and receives offerings for a few days. He is bundled up like the bundle of sticks that represent a time period, and is said to represent "the renewal of the world". The effigy is also hung and dismembered.

The ritual is reminiscent of the Green Man festivals of Europe, in which an effigy like a giant leafy man –Jack-in-the Green – is paraded round the town on May Day and then torn to pieces, to "release the spirit of summer". It is the renewal of a cycle and the birth of a new season. In the case of the Monument 6 at Tortuguero, it will be

the god-group Bolon Yokte who are/is the subject of the proposed ritual, and Bolon Yokte is recorded on Creation monuments as being present at the Creation of the recent era. If my reconstruction is correct, then the five-place dates of the 13-baktun cycle, function to pinpoint any date within the recent era, or the previous or the following era, but the 13-baktun period is also part of a 13-fold prophetic series and will re-commence when it reaches 13.0.0.0, but the 13-baktun period is also part of a 13-fold prophetic series.



Fig.34: Quirigua, Stela E. This shows the date 9.17.0.0.0 13 Ahau 18 Cumhu – the same date as that shown in the ultimate cogging diagram (Fig.33). Drawing: from *The Mayan and Other Ancient Calendars*, adapted from Morley

In the diagram, red represents the Metahistoric series; blue represents the Parahistoric (prophetic) series, yellow represents the Parahistoric (prophetic) series, yellow represents the period-ending dating; green represents the Short Count dating; orange represents the Historic dating method (recent 13-baktun cycle). Orange would also represent Prehistoric and Posthistoric dating methods.

The wheels show the Historic date 9.17.0.0.0 13 Ahau 18 Cumku (but I have not included the huge 365-tooth haab cog), which is the date displayed on Stela E at Quirigua (see Fig.34).

A study of the diagram will be instructive. The wheels are shaped like suns with numbered rays, since the word "kin" means "day", or "sun", and one solar day is the driving force of the calendar and this wheel system. In addition, the Popol Vuh implies that the Sun is reborn at the new Creation. It will be noticed that in most cases, when the vigesimal wheels of the metahistotic scheme (red) show zero, the 13-fold wheels of the Parahistoric scheme (below and to the left, or southwest of the former wheel) will show 13 (there is no zero in the 13fold cycles). The units shown on the 13-fold wheels correspond to the units on the vigesimal wheels to the northeast of them, as explained above. For example, if we look at the 20-tooth "calabtun wheel" (M), we can see that it shows zero pictuns, but the 13-pictun wheel (L) to the southwest of it, shows 13 pictuns. Note also that as you ascend the columns, the cycle numbers alternate in their position due to the alternating direction of revolution of the wheels.

Each of the 13-fold wheels of the Parahistoric scheme can be mapped on a 13-20-unit grid, since they each consist of 260 units. There are 2 exceptions however:

the day wheel (A) at the bottom, because there are no smaller units, and the tun wheel (E), because this consists of 13×18 units due to there being 18 uinals to the tun. A tzolkin is 260 days, the 13-katun cycle consists of 260 tuns; the 13-baktun

cycle consists of 260 katuns; the 13-pictun cycle consists of 260 baktuns, and so on, so all these 13-fold cycles have the same 13 x 20 structure as the tzolkin, with its link to human (and maize) gestation.

Here is the date in the various dating systems or schemes that you can follow by colour coding:

ORANGE: Historic scheme*: 9.17.0.0.0 13 Ahau 18 Cumku RED: Metahistoric scheme: 0.1.13.0.9.17.0.0.0 13 Ahau 18 Cumku BLUE: Parahistoric (prophetic) scheme: 13.13.13.13.13.9.17.0.0.0 13 Ahau 18 Cumku YELLOW: Period-Ending date: Katun 17; 13 Ahau 18 Cumku (NB See Fig. 6 (blue) and Figs 17 & 18 (orange) for examples of a Period-Ending date; also Tortuguero Monument 6: 13-baktun end-point.) GREEN: Short Count: Katun 11 Ahau; 13 Ahau 18 Cumku GREGORIAN DATE: 22 January 771 AD

*also Prehistoric and Posthistoric dates

The confusing one here is the Short Count date, since in all the other dating schemes each place displays the number of completed cycles, even though the next one is being counted off (like the way our year 2013 occurs in the 21st century), but in the case of the Short Count, the cycle is named after the last tzolkin day in the cycle. Here, we have reached the last day in katun 13 Ahau, after which the whole katun or 20-tun (approximately 20-year) period was named. As the previous day ends, it changes from 9.16.19.17.19 12 Cauac (17 Cumku) to 9.17.0.00 13 Ahau (18 Cumku) and all the relevant dials change, but in the case of the 13-katun wheel, it changes a day early, since 13 Ahau is the last day of the 13-katun cycle called Katun 13 Ahau, but it changes a day early to Katun 11 Ahau – the name of the next katun that ends on 11 Ahau.

CONCLUSION

The argument as to whether the Maya had a 13-baktun era or a 20-baktun one can now be seen in a wider context. For every cycle there was a 20-fold version (excepting the uinal) and a 13-fold version. It is a desire to over-simplify explanations, especially where arithmetic is involved, that leads to misunderstandings, and sometimes there is no option but to persevere with the complexity. If the hypothesis presented here is not the final solution, it at least answers this question, and several others. Questions that have been raised on the Aztlan discussion group, such as "Was the first baktun of this era numbered zero or 13?" and "Was zero mathematically equivalent to 13?" can now be easily answered, just by studying the Long Count Mechanism diagram. ¹⁷ In addition, the enigma of the Coba and Yaxchilan inscriptions can finally be explained.

Schele and Freidel suggested, "On the day of creation, all the cycles above the katun were set on 13". However, as we have seen, that leaves unexplained many more inscribed dates that are consistent with each other. Thompson has shown from these inscriptions, that the equivalent date (to 13.0.0.0.0 4 Ahau 8 Cumhu) in a larger scheme (that I have termed the Metahistoric scheme) was 0.1.13.0.0.0.0.0 4 Ahau 8 Cumhu. We have seen that there are also some dates counted from 4 Ahau 8 Zotz, which is the previous Creation, and these also fail to fit into the Schele and Freidel

explanation, since the baktuns are numbered below 13 but the date is clearly from an earlier 13-baktun era – the calendar round date confirms it beyond doubt. I have termed this scheme the Prehistoric scheme.

The Parahistoric scheme, found at Coba and Yaxchilan is like a combination of the Historic and Metahistoric schemes, since it will give the same pictun and calabtun numbers throughout the current calabtun (remembering that 13 in the Parahistoric scheme represents 13 or zero in the Metahistoric scheme). See the next section for more on this.

Use of the term "great cycle" is now defunct, since it encompasses all the ambiguities involved in the controversy of whether or not it consisted of 13 or 20 "cycles. We now call the 2 distinct time periods that have emerged from the discussion, the 13-baktun cycle and the pictun (20 baktuns). The terms are not mutually exclusive, in the same way that we use both a 12-hour clock and a 24-hour clock in different contexts. How absurd would it be if future archaeologists argued over that point!

The pictun is part of a vigesimal system for measuring "deep time" outside the limits of a Creation era of 13 baktuns. There was a previous Creation before 3114 BC – the Prehistoric, and there is no real reason to suppose that the recent era was expected to be the final Creation.

THE PARAHISTORIC SCHEME

(skip to the final section if you are tired of the Parahistoric)

The Parahistoric or prophetic scheme shows a parallel dating scheme, in which the sacred cycles of 13 can be displayed, but only those above the katun. The last day of the previous Creation would have been expressed as 12.19.19.17.19 3 Cauac 7 Cumku in the Historic scheme (equivalent to August 10th 3114 BC in the back-dated Gregorian and 584283 or GMT 3 correlation), which is counted from the base date 4 Ahau 8 Zotz. In the Metahistoric scheme, the same day would have been expressed as 0.1.12.19.19.19.17.19 3 Cauac 7 Cumku and in the Parahistoric scheme it would have been expressed as 13.13.13.13.13.12.19.19.17.19 3 Cauac 7 Cumku. So we can see that at the last Creation, not only was it a new 13-baktun cycle, and change from the Prehistoric era to the Historic era; in the Metahistoric scheme, it was the start of a new pictun, and calabtun 13 (= the 14th calabtun). In the Parahistoric scheme, it was the start of the 13th baktun of the 13th pictun of the 13th calabtun of the 13th kinchiltun of the 13th alautun of the 13th hablatun, and so on ad infinitum. However, in the Parahistoric scheme, dating does not work in a linear fashion, because the cogs are not directly connected to each other.

The best way to understand the Parahistoric is to compare dates in the Gregorian (G); Historic (and Prehistoric and Posthistoric and Post-posthistoric etc) (H); the Metahistoric (M); and the Parahistoric (P). We will start at the beginning of the previous Creation (8239 BC) and look at future 13-baktun endings and pictun endings in all four calendars.

Gregorian: 20 November 13,365 BC

Historic: (**Pre-Prehistoric**) 13.0.0.0.0 4 Ahau 13 Mol (end of 2nd previous 13-baktun cycle). Here shows a "Prehistoric" date – previous to the Historic era (though only examples counted from 4 Ahau 8 Zotz, the next 13-baktun cycle completion date, have been found).

+13 baktuns...

G: 1 April 8239 BC

H (**Prehistoric**): 13.0.0.0.4 Ahau 8 Zotz (end of previous 13-baktun cycle). Here shows a "Prehistoric" date – previous to the Historic era.

M: 0.1.12.19.7.0.0.0.0 4 Ahau 8 Zotz (end of 7 baktuns in the 20th pictun - pictun 19 - of the 13th calabtun - calabtun 12)

+13 baktuns...

G: 11 August 3114 BC; the Base Date - Creation.

H: 13.0.0.0.0 4 Ahau 8 Cumku (end of 13-baktun cycle)

+7 baktuns...

G: 3 June 354 BC H: 7.0.0.0.0 10 Ahau 18 Zac (end of 7 baktuns) M: 0.1.13.0.7.0.0.0.0 10 Ahau 18 Zac (end of 7 baktuns in the first pictun - pictun zero - of calabtun 13)

+ 6 baktuns...

G: 21 December 2012 AD

+ 7 baktuns...

+ 6 baktuns...

+ 7 baktuns...

 +6 baktuns...

+ 1 baktun...

+18 pictuns...

+6 calabtuns

Because each cog is activated after 20 smaller units, but only shows 13 units per dial, some dates get repeated. The Parahistoric date for the Creation of the recent era is the same as that of the next Creation in 2012 (although the difference between the similar Parahistoric dates is obvious by the different calendar round combination), but by the Creation after that, in 7138 AD, the 13-pictun wheel has gone up by a pictun.

What the Parahistoric scheme does is combine elements of the historic and Metahistoric schemes; or perhaps it would be more accurate to say the historic combines elements of the Parahistoric and Metahistoric schemes.

Recreating The World

So, it seems that at the Creation of the recent era – the end of the 13th calabtun in the Metahistoric scheme – the Parahistoric was all re-set to 13, above the level of katuns (4th place). It implies that before 13.0.0.0 4 Ahau 8 Cumhu, 3114 BC, there was no time when all the Parahistoric dials all read 13 above katun level. They all read 13 throughout the first baktun of the recent era and will again throughout the first baktun of the Posthistoric era (post 2012). After that they will never all say 13 again. It is as if the influence of 13 is being shown to culminate in this time, at the completion of 13 calabtuns in the Metahistoric scheme.

The implication of all this is that the recent 13-baktun cycle was a very significant one. Coe and Thompson thought it was the last of a set of five eras. Coe thought it was the last of a set of five 13-baktun eras and signified catastrophe; Thompson said he thought that on 4 Ahau 8 Cumku "the world was recreated, perhaps for the fifth and last time." Thompson also explains that he thinks there was "no initial point of departure for the Maya calendar, but, rather, time was conceived of as without

beginning or end, and therefore one could project one's calculations further and further into the past without ever reaching a starting point" (p.149). So, Thompson was suggesting that, rather than this being the last era, which would end in destruction, it would simply go on forever. Surprisingly, Schele and Freidel were in agreement with Thompson on this point.

On the other hand, Thompson admitted that there was no proof for this idea. In effect, it presumes that Humankind has reached perfection (being able to recognise and worship their gods), since that was the reason for new Creations, according to the Popol Vuh.

Following this in-depth study of the Long Count, we can see that in December 2012 we began the 14th baktun (baktun 13) of the first pictun (pictun 0) of the 14th calabtun (calabtun 13) in the Metahistoric scheme, while at the same moment, the Posthistoric 13-baktun cycle started. Concurrently with this, the date in the Parahistoric scheme shows a repetition of the format for the start of the 13-baktun cycle in 3114 BC in which all places above katun level read "13" and that this is the last time this will ever happen, and that it only happened twice - in 3114 BC and in 2012 AD.

So we can conclude that the 13-baktun cycle is actually part of a much larger prophetic scheme (the Parahistoric) and it will continue to re-start at 13.0.0.0.0 every 5,200 tuns ad infinitum. In a similar way, the 20-baktun cycle or pictun is part of a much larger scheme (the Metahistoric) and will continue to re-start every 8,000 tuns following the next turn-over in 4772 AD.

We can see that the conclusions of the Mayanists above can be re-assessed now that we are in possession of a bigger picture. What this means in terms of how near Humankind is to fulfilling the evolutionary potential implied by the Popol Vuh is a question that would fire a heated debate, but in 2013, most would agree, we certainly haven't arrived there yet.

G.S.

Appendix 1: How to Calculate the Gregorian Date and Calendar Round

The easiest way to determine the Gregorian date and Calendar Round dates for a date that lies beyond the recent Historic Era (3114 BC - 2012 AD) is to use the calculator that can be downloaded at Mayadate.org:

http://www.mayadate.org/index.htm¹⁸

This calculator is designed for a PC – Windows 7, so you may have to get hold of an old PC or laptop if it won't run on the latest Windows, (or if you have an Apple Mac you can do it through Boot Camp which comes with every Mac). The calculator can calculate 10 columns – from kin up to hablatun. It doesn't use Thompson's formula for the Metahistoric scheme, (in which the base date in 3114 BC is 0.1.13.0.0.0.0.0 4 Ahau 8 Cumku), but instead uses

0.0.0.0.0.0.0.0.0 4 Ahau 8 Cumku. You simply add the amount of kins, uinals, tuns, katuns, baktuns, pictuns, etc to the zero base and then read off the Gregorian date and Calendar Round date. The Metahistoric date can be calculated by then adding Thompson's base date to the figures already entered in the columns.

Example:

(As in the final date example above); What is the Metahistoric date (including calendar round date), and the Gregorian date for the day exactly 7 calabtuns after the base date in 3114 BC?

BASE DATE:

Historic scheme: 13.0.0.0.0 4 Ahau 8 Cumku Metahistoric scheme: 0.1.13.0.0.0.0.0.0 4 Ahau 8 Cumku

CALCULATION (Calendar Round and Gregorian date):

Add 7 calabtuns; 0.0.0.7.0.0.0.0.0 Result: 0.0.0.7.0.0.0.0.0 12 Ahau 18 Chen; 19 Sep, 1.100,811 (AD)

To get the Metahistoric NOT INCLUDING calendar round date:

Add 0.0.1.13.0.0.0.0.0 (by clicking the "Kalabtun" column 13 times, and the "Kinchiltun" column once)

Result: 0.0.2.0.0.0.0.0.0.0

So the Metahistoric date combines with the calendar round and Gregorian date already calculated: 0.0.2.0.0.0.0.0.0 12 Ahau 18 Chen; 19 Sep, 1,100,811 (AD).

Appendix 2: How to Calculate the Parahistoric

To calculate a Parahistoric date, here is one possible method (and the first part of this is also the method of calculating the Historic date equivalent, which only uses the last 5 columns):

Example: for the final date example given above, the completion of kinchiltun 2 of the Metahistoric scheme, corresponding to a date around 1 million, 100 thousand years in the future (1,100,811 AD), we take the Metahistoric date as calculated above:

0.2.0.0.0.0.0.0.0 12 Ahau 18 Chen

Then we calculate how many baktuns have to be added to the 3114 BC base date (NB for dates before the 3114 BC base date, the baktuns will have to be subtracted). This is the base date (3114 BC) in the Metahistoric scheme:

0.1.13.0.0.0.0.0 4 Ahau 8 Cumku Between this and the completion of kinchiltun 2 is a period of 7 calabtuns.

This is the calculation:

	0.2.0.0.0.0.0.0.0
Subtract	- 0. 1. 13. 0. 0. 0. 0. 0. 0
	$0.0.\ 7.0.0.0.0.0.0$

Next, we convert the interim period -7 calabtuns - to baktuns. 7 calabtuns equals 2,800 baktuns (20 x 20 x 7 = 2,800). This is the amount of times that the 20-katun wheel (H) will rotate during the passage of 7 calabtuns.

The final four columns (day, uinal, tun and katun) plus the calendar round date remain the same $(0.0.0.0\ 12\ Ahau\ 18\ Chen)$. To determine the fifth column, we divide 2,800 by 13 to see how many times the 13-baktun wheel (I) will rotate... the remainder indicates the number of baktuns added to the previous display. 2800/13 = 215, remainder 5.

Next, for the sixth column, we divide 2800 by 20. This gives the number of rotations of the 20-baktun wheel (K) during 7 calabtuns – 140. We divide 140 by 13 to see how many times the 13-pictun wheel

(L) rotates; the remainder indicates the number of pictuns added to it. 140/13 = 10, remainder 10.

Next, for the seventh column, we divide 2800 by 400 (or 140 by 20) to find the number of rotations of the 20-pictun wheel (M) – 7 rotations is the answer. To find the number of rotations of the 13-calabtun wheel (N), we divide 7 by 13 and use the remainder to show the number of calabtuns added. 7/13 = 0, remainder 7.

For the eighth column, we would divide 2800 by 8,000 but this equates to less than 1; in other words, less than 1 rotation, so the number remains unchanged in this column.

Now, we take the Parahistoric date for the base date in 3114 BC, as displayed on stela 1 at Coba, and add the remainders calculated above to the relevant columns, remembering that the maximum figure is 13, which is followed by 1, and that, unlike adding in the Metahistoric scheme, each column is treated individually (not cumulatively), with no carrying forward to the next column.

13. 13. 13. 13. 13. 0. 0. 0. 0 + 7. 10. 5. 0. 0. 0. 0 13. 13. 7. 10. 5. 0. 0. 0. 0

This method of course also works for calculating the Yaxchilan stairway date:

13. 13. 13. 13. 13. 0. 0. 0. 0 + 9. 15. 13. 6. 9 13. 13. 13. 13. 9. 15. 13. 6. 9

13.13.13.13.9.15.13.6.9 3 Muluc 17 Mac (19 October 744 AD).

NOTES

1. For example, Morley, Thompson, Sharer, Coe, Portilla, Rice, Adamson, Gallencamp, Brotherston:

Morley, Sylvanus G. (1946, 1947, pp 284-285; "*Therefore it seems much more likely that Maya chronology began with some hypothetical event, rather than with an actual historical occurrence. Possibly it may have commenced with a suppositious event like the creation of the world, from which the chronologies used in the Greek and Jewish Churches, as well as the old family Bible, are reckoned.*" The implication of Morley's study is that the recent era was preceded by another era of 13 baktuns, which he sees as 'names" of the numbered 20-baktun cycles that we now call pictuns...so logically, he would have assumed, if asked, that after arrival at 13.0.0.0.0 at the end of the then-current baktun, the next one will be "called" 13 all the way through, (though it will be the 14th baktun) and then be followed by a baktun "called" 1 (though it will be the 15th baktun. However, this is just one step away from Thompson's more inclusive explanation.

Thompson, J. Eric S. (1952 – 1971 edn. P.10); "*It is not improbable, though the matter is not susceptible of proof, that 13.0.0.0.0 4 Ahau 8 Cumku was regarded*

as the date on which the world was recreated, perhaps for the fifth and last time." Sharer (p.568 in the 5th edition) "The ancient Maya may have believed that the world came to an end and was recreated afresh at the close of each great cycle of thirteen baktuns....According to the generally accepted calendrical correlation...the current great cycle – and our current world – will end on December 21, 2012"

Sharer, Robert J. (p.568 in the 5th edition); "*The ancient Maya may have believed that the world came to an end and was recreated afresh at the close of each great cycle of thirteen baktuns….According to the generally accepted calendrical correlation…the current great cycle – and our current world – will end on December 21, 2012*".

Coe, Michael D. (1966 hardback edn p.58; 1971 Pelican edn, p.67;1993 edn p.50): "...since the end of the last Great Cycle, a period of 13 baktuns whose ending fell on the date 4 Ahau 8 Cumku." David Adamson (who is a journalist rather than a Maya scholar proper, but this popular book comes over as an academic work), in his 1975 book, The Ruins of Time p.223: "The Maya began their count from a date which in our chronology would be 10 August 3113 BC, which was probably the beginning of a huge cycle of time consisting of thirteen bakhtuns (sic), 1,872,000 days – a cycle in which incidentally, we are still living now and which will end if the Maya priests are correct, with the destruction of the world on 24 December 2011."

León-Portilla, Miguel – *Time and Reality in the Thought of the Maya*, 1968, 1988 edn p.4; speaking of "3133 BC", which is obviously a typo, as shown by note 4 that gets it right – should be 3113 BC, which we now refer to as 3114 BC.... "But rather than restrict their concept of time without limits, this date seems to refer to an especially significant event in their past. This, as Thompson (1960:149) has indicated, could supposedly be "regarded as the last creation of the world.""

Rice, Prudence M. in the Foreword to Aveni's *The End of Time - The Maya Mystery of 2012* p.xvii; "So on December 21, AD 2012, as the old Maya calendar cycle ends, a new one will start all over again. The archaeologists' notation 13.0.0.0 – the day of completion of thirteen Maya 400-year baktuns – is also 0.0.0.0, the first day of the new baktun."

Gallencamp, Charles in Maya – The Riddle and Rediscovery of a Lost Civilisation: 3rd Revised edition, 1985: "Morely suggested that the Maya might have considered 13.0.0.0.0 4 Ahau 8 Cumku the day of the world's creation, or its origin may be rooted in some mythological event."

Brotherston, Prof. Gordon – Book of the Fourth World, 1992, p.115-116: "By its very structure, this lowland tun calendar generates an Era span of thirteen baktuns, prompting some scholars to announce and end-date in A.D.2012." He then goes on to demonstrate how this is encoded on the Aztec Sunstone: "...that, ranged on the back of the Sunstone's encircling celestial dragon, allot 5,200 years (10 x 10 x 52) to this Era, the fifth in the scheme of Suns and a fifth of the precessional cycle of 26,000 years." He then goes on to back this up from various texts.

2. Forest of Kings p.82: "In the near future Maya time also approaches one of its great benchmarks December 23, 2012, will be 13.0.0.0.0 4 Ahau 3 Kankin, the day when the 13 baktuns will end and the Long Count cycles return to the symmetry of the beginning. The Maya, however, did not conceive of this to be the end of this creation, as many have suggested."

The same thing (except "beginning" instead of "end" of Creation) is reiterated in note 39, p.430; "*From the ancient inscriptions, we know that the Maya did not consider it to be the beginning of a new creation as has been suggested.*" It was 1990...who were the "many" who had suggested it was the end of an old Creation and beginning of a new Creation?

1966: Michael Coe, The Maya (December 24, 2011).

1975: **Terence and Dennis McKenna**, *The Invisible Landscape* (they didn't suggest anything about the Maya Creation mythology, since their conclusions came exclusively from the Chinese I Ching); Jose Arguelles, *The Transformative Vision* (just one brief mention in a footnote - 2012 as the end of a cosmic cyle); Frank Waters, *Mexico Mystique* (gives Coe's December 24th 2011 date)

1977: William Irwin Thompson: on page 125 of his book, Darkness and Scattered Light : "The Maya with their sacred calendar calculated the positions of the stars back in time for millions of years They had learned to live with such an extended sense of meaning that time for them wasn't simply the next meal, but the next concert of the stars and the planets For the Long Count of the Maya, human time expresses itself in a 5,124-year cycle; there are 5,124 years of savagery, then 5,124 years of civilization. The period of civilization began for them in 3113 B.C. and will end at midnight on December 24. A.D. 2011. From 1987 to 2011 is the hell period of the calendar, in which earthquakes are prophesied to tear the civilization to pieces."

Ref: http://www.motherearthnews.com/Nature-Community/1980-05-01/Economic-Outlook.aspx

1978: **Peter Balin** in The Flight of the Feathered Serpent: "The ancient Mayas thought that the earth had its beginning in the year 3113 BC, and that this creation of movement will have its ending on the 21st December 2011 AD amid terrible earthquakes, movement of the poles, volcanic activity,, great tidal waves and terrible winds. This will bring the fifth sun, the sun of man, to an end. The Mayas believed that most of the destruction will take place between December 21st 2011, and June 6th 2012....."

1983: **Robert J. Sharer**, *The Ancient Maya*, p.568 *"According to the generally accepted calendar correlation (see below), the current great cycle and our current world will end on December 21, 2012."* In the appendix, katun and half-katun endings are given for all katuns between 8.0.0.0.0 and 13.0.0.0 4 Ahau 3 Kankin.

1987: Larry Tyler in Mayan Cycleology. Here is an excerpt of my review of the book:

"This book was written in 1986 and published in 1987 - the same time as Arguelles' The Mayan Factor. It also announced the forthcoming Return of Quetzalcoatl on 16th August 1987, as miscalculated by Tony Shearer and repeated by Jose Arguelles. The book follows the error of Frank Waters, ' book, Mexico Mystique (see below) and places the end of the 13-baktun cycle on 24th December 2011.... this was an error that originated with Michael Coe's earlier editions of The Maya (later editions were corrected). It attempts to make one absurd point repeatedly: that the Maya deliberately abandoned their cities to live a simpler, more basic lifestyle in order to save their descendants from the "2011 cataclysm", since the Atlanteans supposedly perished due to their decadent culture."

Finally, Jose Arguelles made many references to 2012 in The Mayan Factor, published in 1987.

So, up to 1990, the nine authors above had mentioned 2011/2012 as an end of a cycle/creation/the world. If Schele and Freidel were not responding to New Age sources such as Arguelles, then perhaps they were responding to Coe and Sharer...but 2 people do not constitute "many". Therefore, they may have been influenced by the New Age hype, and the most prominent by 1990 was Arguelles. In 1999, Susan Milbrath, (Affiliate Professor of Anthropology at the University of Florida), in *Star Gods of the Maya*, says *"Furthermore, the Long Count seems to be keyed to an "end" date (13.0.0.0.0 4 Ahau 3 Kankin) on the winter solstice, December 21, 2012 A.D., when the "odometer" turns over and a new cycle begins (Edmonson 1988: 119)"*

3. See Maudslay vol.1 & II plate 79.

4. If you doubt my conclusions about Bowditch, then read the whole section online here: <u>http://www.archive.org/stream/cu31924020429340#page/n343</u>

5. Palenque's Temple of the Cross D3-C5 (see Fig.6 above, and Piedras Negras altar 1 Maudslay vol II & IV plates 73-75); Piedras Negras - the round altar or altar 1; and Palenque's Temple of the Sun O2-N3 (see Maudslay vol III & IV plates 87-89).

6. See Maudslay plate 59.

7. See Morley 1915, p.204 et seq.

8. 1950 – see pp.181-184 in 1971 edn.

9. Spinden, 1922, pp104-106 http://www.archive.org/stream/cu31924020375782/cu31924020375782_djvu.txt 10. Morley The Ancient Maya, 1946, 1947 p. 276-277.

11. Thompson 1950 (1971/1978 edn) p.149 Thompson also reiterates the most pertinent ideas on p.316: "I have throughout assumed that the baktuns were grouped, not in 13's but 20's, for the evidence supporting a vigesimal count of baktuns in Dresden and at Palenque and Copan is too strong to be overridden. I assume that at an early date, when the LC was first invented, the highest period was the baktun and that baktuns were arranged in re-entering series of 13, but that a subsequent desire to extend the range of time led to the invention of the pictun and still greater periods. With that expansion of time, it was essential to fit the baktuns into a vigesimal count. Consequently, 20 baktuns were made the equivalent of one pictun, but by then, 4 Ahau 8 Cumku was so strongly established as the cyclic ending of a round of 13 baktuns that it continued to be given that designation, although reckoned as the end of a cycle of 20 baktuns for the purposes of calculation. Should my reconstruction of the higher periods be correct, 4 Ahau 8 Cumku then became the end of 13 calabtuns, with the theoretical LC position 1.13.0.0.0.0.0 4 Ahau 8 Cumku."

12. http://www.sacred-texts.com/nam/maya/mhw/mhwap4.htm

13. Goodman (1897) p.25: under the heading "GREAT CYCLE", it says, "*The great cycle is composed of thirteen cycles, or 1,872,000 days. As seventy-three great cycles constitute the grand era, and as that number is indivisible, the great cycles must have been numbered to conform to the numeration of the cycles – 73, 1,2,3,4, and so on in regular arithmetical progression up to 72." So, Goodman saw a series of 73 Great Cycles, each consisting of 13 baktuns. In an appendix, The Archaic Chronological Calendar - he shows 4 Ahau 3 Kankin as the first day of the 55th Great Cycle. He actually lists every start day of every tun in each katun of the 53rd, 54th and 55th 13-baktun cycles ("Great Cycles"). There is no doubt that he meant each of the 73 "Great Cycles" consisted of 13 baktuns each.*

14. http://decipherment.wordpress.com/2010/04/23/the-era-date-on-coba-stela-5/

- **15.** Sharer claims this period is 19,000 years, but I checked it using the MayaDate calculator and doublechecked it with the Mayacal calculator. With both calculators we can jump multiples of the calendar round, and we find that the period that separates repetitions of the combined katun number and calendar round of Period-Ending dates is always either 15 or 23 Calendar Rounds. This equates to periods of 780 or 1196 haabs - far less than Sharer's figure. See note 18 for various calculator qualities and availability.
- 16. http://www.wayeb.org/notes/wayeb_notes0034.pdf
- 17. The answers are 13, and yes in the Parahistoric scheme.
- **18.** Go to this page for a summary and comparisons of the qualities and variations of several free Maya date calculators: <u>http://www.diagnosis2012.co.uk/conv.htm</u>

The only ones that count pictuns and higher cycles are Maya Calendar Program and MayaDate. The former is faulty for dates before 1/1/4801 BC. It caters for pictuns, calabtuns and kinchiltuns. It is easy to use and has some nice features, like Julian days, nightlords and a wide choice of correlations plus buttons for multiple Short Count and Calendar Round jumps; also deals with the 819-day cycle, Eclipse Station, Solar Abnodal, and Moon Age date systems. Free trial version here: http://www.xoc.net/maya/. The most useful calculator for doing multiple Long Count calculations is MayaDate which can be downloaded free here: http://www.mayadate.org/index.htm . Features include all the higher cycles from pictuns to hablatuns; it will do multiple Calendar Round jumps and multiples of any chosen distance number. Also shows 819-day cycle, nightlords, Julian or Gregorian option and any chosen correlation apart from the 2 pre-set GMT (Goodman-Martinez-Thompson) correlations. For reviews of many more calculators, including AppleMac compatible ones, see this page: http://www.diagnosis2012.co.uk/mlink.htm

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