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SCIENCE IN ANCIENT ARTWORK

Computational Origin of the Maya Long Count

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Introduction

In this essay, we shall examine some of what we consider to be the computational origins of the maya long count reckoning system. Our analysis is based upon the internal logic of numbers that we have been discerning throughout our studies. All too often, the ancient system of reckoning time has been viewed as being based on empirical knowledge, with little theoretical value. Ancient societies are viewed as having developed manual skills, in stone laying, for example, such as in the building of pyramids, while these same societies are generally denied any contributions to theoretical thinking in science or mathematics.

The knowledge that does exist in different fields of human endeavor is generally thought to have been of a mystical or superstitious nature. Our contemporary concept of ancient societies and their cultures generally denies assigning any concept of scientific endeavor to past knowledge. Some of the more obvious and undeniable contributions are sometimes cited out of surprise, qualifying any recognition by statements like, "imagine them having achieved this without knowing it". Past achievements are thought to have been quirks of the past; meaning that they have no relevancy to present time.

The maya long count system of reckoning time is one of the great contributions to scientific thought, although it is not generally recognized as such. Many scholars look upon it as just one of those surprisingly unique, primitive features of a misunderstood society of the past. The apparent doubling/halving method reflected in the maya long count is seen as a procedure far too simple to grant it any value in today's computerized world of math and geometry.

And, even though the maya long count system expresses time periods stretching across light-year distances, little significance is granted to such characteristics. The fact that a period of 23,040,000,000 days (*alautun*) has been identified by scholars, in the maya system, makes little or no difference. Even such a lengthy concept of time is brushed off generally as a novelty of no import. The reasoning is simple: if we do not count time along such lines, why should they have concerned themselves with a time-period of around 64 million years.

It has been our suspicion, that the historically significant numbers that have been recognized, along with the historical dates deciphered by scholars, should suffice to discern the internal logic of numbers within the ancient reckoning system. We have been researching these numbers by way of reverse engineering. The prevalent idea assumed from the beginning of our studies is that if certain day-counts exist, such as the 260c, 360c, 584c, 819c, etc., within the ancient system, then, we should be able to derive the computational interplay of these numbers. We should be able to devise the parameters and boundaries for working with these numbers, as they relate to one another through the different dates cited in the historical record.

Scholars tell us that the computational math of the ancients is probably forever lost. And, the possibility of relating ancient geometry, therefore, to the ancient math is simply next to impossible, save a monumental find of the notebooks that were kept in olden times. Our research has taught us that one may reconstruct some of the math, and even possibly link the math to the geometry. And, beyond this, it just may be possible to discern how the ancients kept no notebooks. In other words, the ancient system of numbers may be revealing to us the possibility that the computations were effected mentally on the spot, without the need for writing all of the procedures and steps down.

Consider the obvious fact, that with so many monuments, structures, artwork, sculptures and artifacts, surely one significant piece of computational math should have survived. Yet, the absence of computational notebooks (in any form) is quite obvious. There may have been no notebooks. If the system were designed in such a way as to encourage mental computations, then this would explain that absence.

In this essay, we shall explore some of the historically significant numbers and their possible relationship to the ancient system of reckoning time within the maya long count system. The case may be that we may finally come to realize that the computational origins of the maya long count are telling us how to effect the computations without having to write anything down.

Origins of Computational Math in the Maya Long Count

The maya long count consists of the following identified categories:

23,040,000,000 days	*alautun*
1,152,000,000	*kinchiltun*
57,600,000	*calbatun*
2,880,000	*pictun*
144,000	*baktun*
72,000	*katun*
360	*tun*
20	*uinal*
1	*kin*

Maya dates found on monuments in the historical record, generally concern the categories from the kin to the *baktun*, from one day up to multiples of the 144,000 day period. In fact, most concern the multiple of nine *baktuns*, or 1296000 days. This fact is significant, given another fact that the 1296c fractal was an historically significant figure for the ancient kemi system, as we have shown in previous essays. Furthermore, the Great Cycle, or the Platonic Year of the precession, 25920 years, represents double the 1296c fractal number.

Such obvious coincidences within the historical record suggest a common origin of the ancient reckoning system around the world. But, obviously one cannot jump to such a conclusion from just a few examples; significant cases are required, especially when the historical record is silent on the point of shared knowledge.

The previous list of categories immediately illustrates the significance of the ancient method of *duplatio/mediatio*, or doubling and halving numbers ---depending upon the direction taken in the computations. Furthermore, one also notes the concept of multiplication within the system. And, although one suspects the different categories above the *tun* being multiplied by twenty, one can also visualize the simple adding (or subtracting) of a zero as one changes levels. There exists an obvious break in the system between the *uinal* and the *tun*. And, as we shall observe below, other breaks can be visualized in the system as we call other historically significant numbers into the analysis.

The maya long count period concerns that of 1,872,000 days, which has been related as representing a period of 5200 years of the 360c day-count calendar. Within the maya and other Meso-American reckoning systems, the calendar round of 52c years, consisting of 18980c days, defines the system's periods. Besides the 360c day-count of the maya long count, there is another calendar from the area, which is considered to be older, and consists of 260c days. Obviously one can reverse the concepts, given the fact that 26c is half the 52c year number (2 x 26 = 52). Therefore, one may think:

5200 years times 360 days = 1872000 days

or, one may think,

7200 years times 260 days = 1872000 days.

In this sense, one already begins to comprehend that the ancient reckoning system is utilizing the same math for distinct categories. One may begin to visualize, from the previous example, that the concepts of "360 days" and that of "7200 years" are relational; 36 being half of 72 fractal. One only need change the concepts: years/days; days/years.

In this sense, one begins to comprehend the relational sense of the computations, and the possibility that mental effort is a prerequisite of the system. And, the reverse engineering tells us that a day-calendar of 260c days and another one of 360c days shall produce significant factors such as the relationship between these two concepts:

360 / 260 = 1.384615285

260 / 360 = .722222222

Further, we shall understand that the difference between the two day-calends of one hundred (360 – 260 = 100), shall also be computationally determinant in our mind. The system of units for the difference shall be expressed in units of one hundred.

And, even more complex and intriguing numbers, such as the maya companion numbers (1366560 and 1385540), as well as the less comprehended numbers such as the k'awil (819c day-count), shall be relational within the system. In other words, no matter which number one may choose to analyze, the system reaffirms its own logic and lays bare its method of computation. Even an odd number such as that of 13c shall reveal its interrelated nature to all the other numbers. The system is designed for the ease of computation, so much so, that we suspect that computations were simply effected mentally, without the aid of writing instruments.

We have noted the number nine may have been of utmost significance, inasmuch as it can be observed present in most dates, in the form of nine

baktuns (1,296,000 days). The sacred nine is also known throughout many other cultures. Further, the sacred seven is another historically significant number. In the computations below, we shall see that the maya long count system privileges these numbers as well.

The Baseline of the Maya Long-Count System

The maya companion number, 1366560, has been cited as representing a "super" number; mainly because this particular number can be related to so many day-counts related to Earth and other planets. One of those related numbers concerns that of 151840 days. This last number is easily derived from the sacred nine:

1366560 / 9 = 151840 days

This number has always intrigued us, and we have been searching for its significance within the ancient system. The case may be that the number has been staring at us all of this time, without being able to detect its origin. Consider the following sum of the different levels of the maya long-count system.

144,000	*baktun*
72,000	*katun*
360	*tun*
20	*uinal*
1	*kin*
151,581	**days**

Further, 151840 - 151581 = 259

The simple addition of the general levels of the maya long-count yield a number (151581) that is extremely similar to this historically significant number (151840). In fact, the difference is nearly that of the 260c day-count, missing it by only one day. The choice of 151840 as being historically significant cannot be simply coincidental to the general nature of the system; rather the opposite is suggested. The general system determines the historically significant period.

An adjustment can be easily made by adding up the following levels:

144,000	*baktun*
72,000	*katun*
360	*tun*
20	*uinal*
_____	
151 580	**days**

In this manner, the difference between the terms becomes more significant:

151840 - 151580 = 260c

With this adjustment, the general categories now shown a difference with the chosen historically significant number of 260c days, an historically significant number in itself. As we have been stating throughout our work: the differences between historically significant numbers and their fractal expressions reveal the internal logic of the method of computation of the ancient reckoning system. At least, that is one way to begin to consider the computations and their origins.

Now, with this adjustment, we begin to realize that the design of the maya long-count, and the apparent break between the uinal and the tun obeys a conscious design. The multiple from the kin to uinal is twenty (20); as is the multiple between all of the levels from the tun to the alautun. But, the multiple between the uinal and the tun is that of eighteen (18). The logic of the system portrays a significance for adding together the baktun, the katun and the tun (all based on doubling/halving) with the uinal, which refers to the number of days in one month (twenty days). Four cycles of time have been added together: the month (uinal), the year (tun), and two much longer cycles (katun, baktun).

An historically significant chosen category of 151840 days is separated by one calendar year of 260c days: 151840 – 151580. Surely, one must recognize this relationship as one resulting from a conscious decision on the part of the designer of the system. Now, consider the sacred nine:

9 x 151581 = 1364229 days

The ancients are said to have avoided the fractions, and to have worked with whole numbers. Any number ending in a none would surely produce problems in the computations. Whereas the following result would be less of a problem, since it ends in a zero.

9 x 151580 = 1364220 days

Consider now the relationship of this baseline number to the maya companion number:

1364220 - 1366560 = 2340 days difference

With that computation, we observe the appearance of another historically significant number/fractal: 234, 468, 936, **1872**c. In other words, a multiple of the maya long-count period separates the companion number (1366560) from the baseline figure (1364220). Again, coincidences never seem to cease.

1872000 / 2340 = 800

The difference (2340) is exactly 1/800th of the maya long-count period (1872000). The maya avoided the fractions, whereas, the 2331 difference (1366560 – 1364229) would produce a fractional expression:

1872000 / 2331 = 803.0888031

The calendar round appears as significant between the companion numbers:

1385540 – 1366560 = 18980

9 x 18980 = 170820

Again, it is not coincidental that the 1872c now makes its appearance in a distinct arrangement in this expression: 1872c as of 170820c.

Now, let us observe what might be the difference between the baseline 151580 and the chosen companion multiple, 151840.

151580 / 260c = 583 days [ca. Synodic orbit of the planet Venus]

151840 / 260c = 584 days [synodic orbit of Venus]

By adding on 260 days to the baseline count, the system is brought up to the average meantime for the orbit of the planet Venus. Had the alternate count been maintained, an average closer to that cited today (583.92) would be obtained:

151581 / 260c = 583.0038462 days

Other computational factors may be easily derived. Consider the established relationship of the baktun with the companion multiple:

151840 / 144000 = 1.0544444 x 360 = 379.6 days

which is a fractal expression twice the calendar round.

The baseline number, 1364220 represents nine ideal maya long-count periods (151580), plus nine 260c year-counts. In total, the baseline number represents 5247 of the 260c day-count calendar years. In later essays, we shall illustrate the significance of the 5247c in relation to such historically significant counts as the 3168c.

5247 - 3168 = 2079 (divided by 3 = 693c)

For now, we must concentrate on the analysis at hand. For example, consider the baseline multiple with other historically significant numbers/fractals, like that of Nineveh (1959552c):

1959552 - 151580 = 1807972

where we observe the 1872c series in relation to the sacred seven and the sacred nine. It may be difficult to consider such relationships as being the product of a conceptual design, but as we have ventured into the logic of

numbers within the ancient reckoning system, our impression is that nothing is left to chance.

1364220 / 1872000 = .72875

1366560 / 1872000 = .73

The second relation is more manageable than the first in the above computations. The first baseline number functions at one level; the second, companion number functions at another level. Both are the result of designed choices in computation. This is only confirmed by the second maya companion number (1385540):

1385540 / 1872000 = .74013888889
.74013888889 - .73 = .1013888889

18720 x 1.013888889 = 18980c [the calendar round]

The 1364220 : 1366560 relation suggests a Venus factor:

1366560 / 1364220 = 1.001715266

Consider the 585c day-count of the Venus synodic period divided by this factor: 585 / 1.01715266 = 583.9982876, which is extremely close to the contemporary average cited at 583.92 days.

Also, consider the relationship with the second maya long-count companion number (1385540):

1385540 / 1364220 = 1.015627978

585c / 1.015627978 = 575.998311, which is indicative of the maya long-count number/fractal 576c calbatun level. Scholars are constantly emphasizing that the ancients avoided the fractions, as though their math was of a lesser quality. But, one should rather emphasize that their avoiding the fractions meant that they *knew* the fractions. The numbers they chose reflect such a statement.

Therefore, one may consider the 1364220 number to represent the baseline of the maya long-count system:

144000	7200	360	20	
1	1	1	1	= 151580 days
...				
9	9	9	9	= 1364220 days

In current nomenclature, this date would be presented as 9.9.9.9.0, since the day-count level (kin) is left blank. We prefer to look at it as simply 9.9.9.9.0; four nines, which also suggest mentally the 36c, the very basis of the maya long-count system itself. One of the most cited historically significant maya dates concerns that of 1404000 days (9.15.0.0.0). However, we obtain the impression that all other dates may have been viewed as additions/subtractions from the 9.9.9.9.0 date (1364220).

The maya companion numbers may be viewed in this light.

1366560 = 9.9.15.18.0

1385540 = 9.12.8.13.0

How intriguing that the 1366560 number reflects in the maya count expression itself that of the baseline. Consider conceptualizing the number, 9.9.15.18.0 as:

99 x 15180 = 1502820 or, better yet:

99 x 151840 = 15032160 - 13665600 = 1366560

Super numbers seem to be able to perform super feats. Maybe these relationships were viewed as magical coincidences of the numbers themselves:

9 x 9 15 x 18 = 21870

where we once again see the 1872c series makes its appearance.

The Maya and Kemi Ancient Reckoning System

Throughout our essays, we have been comparing the maya reckoning system to that of the ancient Egyptians, the kemi system. Both the ancient maya and the ancient kemi had a calendar of 360c days, with five days added at the end of a year. To think that both of these formidable cultures erred in the same manner, by choosing a 360c day-count, is difficult to accept. It is more likely that had they erred, each would have chosen a distinct day-count; not the very same one as the other.

The previous analysis would appear to bolster this view, and suggest the possibility that these two distinct systems were one and the same. It would appear that they shared the baseline number (1364220). In order to understand such a possibility, let us first look at the nine numbers that make up the baseline number itself:

151580	(1)
303160	(2)
454740	(3)
606320	(4)
757900	**(5)**
909480	(6)
1061060	(7)
1212640	(8)
1364220	**(9)**

Our attention is immediately drawn to the level five and the corresponding number of 757900 days. We immediately think of the side measurement of the baseline for the Great Pyramid, that of 756 feet. Let us take the four sides, and use the floating decimal place for the maya number, and thereby obtain the results below:

$$756 \times 4 = 3024$$

$$757.9 \times 4 = 3031.6$$

Now, let us suppose that the kemi expression of 1512 (double the 756c) relates to the maya baseline number.

151580 - 151200 = 380

151200 x 9 = 1360800 kemi baseline

Further consider then:

1360800 - 1366560 = 3420 days

Now, let us recall the maya companion difference with the maya baseline number:

1366560 - 1364220 = 2340

We find this to be extremely difficult to attribute to mere happenstance of numbers and coincidences. It would appear that the maya system and the kemi system occupy specific relationships with regard to the maya baseline number:

1366560

2340 days difference [234, 468, 936, 1872]

1364220

3420 days difference [342, 684, 1368, 2736c]

1360800

It is difficult to think that one might find a coincidental relationship based on the Sothic cycle between these two differences:

3420 / 2340 = 1.461538462 [Sothic 1460c : 1461c]

3420 - 2340 = 1080 [kemi count: 27, 54, 108c fractal]

Further, a relationship to the 260c count exists as well:

2340 / 3420 = .6842105263

260 / .6842105263 = **380c** [Recall the 380c above]

So, the 1360800 kemi number relates as well to the 25920c Platonic Cycle of the precession.

1360800 / 25920 = 52.5 [one calendar round fractal plus one-half]

52.5 x 360 = 18900

Remember the 52c calendar round of the maya:

365c x 52 = 18980 days.
18980c maya - 18900c kemi = 80 days difference

1366560 / 25920 = 52.72222222 x **360c** = 18980 [rounded off]

Adjustments may be made in the system no doubt:

18980 x 4 = 75920

18900 x 4 = 75600 [baseline fractal of Great Pyramid]

Now, let us suppose that we employ the 189.8 fractal measurement for the baseline of the Great Pyramid instead of its perceived 189c; given that 4 x 189 = 756c. One would have four sides of the pyramid with four 189c measurements within each side; therefore we would use the number sixteen in this computation:

189 x 16 = 3024 189.8 x 16 = 3036.8

3036.8 - 3024 = 12.8 [constant series: 1,2,4,8,16,32,64,128...]

In a sense, the Great Pyramid's baseline perimeter would be representing symbolically sixteen calendar rounds (16 x 18980 = 30680 days). Further, one obtains the impression that these could possibly be adjustments for computing the precession:

19595520 / 756 = 25920 [fractals]

19595520 / 759.2 = **25810**.74816 [closer to current 25800 number]

Observations

A critical reader mentioned to me that our writing is based upon a great deal of speculation. All analytical knowledge that human beings have produced is based upon speculation; there seems to be no other way in apprehending and comprehending reality. When an archaeologist digs up a potsherd from twenty feet under the ground, and then speculates as to its original past meaning, the only method available is analytical speculation. Such discouraging comments are rationalizations regarding inaction and desisting from analyzing our past. When we find the same numbers in a distinct order in three different cultures, then one must speculate as to their possible origin and the possibility of a shared reason for their existence. The 756c kemi count; the 576c maya count; and the 567c Nineveh count would all suggest a common source of knowledge at least. One could speculate that Nature would impose upon the process of knowledge these particular day-counts. On the other hand, one could speculate that ancient human beings reasoned in a similar manner, or even that these systems of analysis shared a common goal. They may even have been complementary to one another.

1959552 / 567 = 3456 [the Pythagorean theorem numbers]

1959552 / 576 = 3402 [Recall the 3420 difference above]

1959552 / 756 = 2592 [Platonic Cycle fractal]

Three distinct and apparently unrelated cultures devised these historically significant numbers, some of which purportedly exist in Nature. One can only speculate, at this time, that these numerical relationships reflect a computational design that was shared in its origin by these cultures.

He maya long-count system reveals the baseline number, 1364220 days, that may be weighed against, not only the numbers coming out of the maya system, but those coming out of other systems as well. To speculate that such relationships are irrelevant, or are simply due to happenstance, goes against all betting odds of speculating the opposite. To have unrelated

numbers from different systems with no mathematical and computational relationships possible, would be better odds for another kind of numbers game.

It seems more likely that, with all of the historically significant numbers fitting together in a logical whole, one might consider a shared computational origin of those distinct reckoning systems. To affirm that all of these ancient cultures made the exact same error in their computations would appear to be a rather daring speculative idea. They all chose the same numbers because all of them were correct in their computations. The maya baseline number (system) allows us to visualize their correctness.

Further speculation might assist us in attempting to discern which culture preceded the other. But, such considerations would require a more extensive essay. From this essay, it would appear that one requires the maya system in order to develop the kemi system; and even further, that one requires the Nineveh system to be before all of the other systems. But, we shall not speculate as yet regarding this particular point of historical chronology. Let us save this point for further analytical speculation.

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