

Fifth Stone of the Sun and the Qi Men Dun Jia Model



By John Frederick Sweeney

Abstract

The Fifth Stone of the Sun, or the Aztec Calendar, bears similarities to the Qi Men Dun Jia Cosmic Board. In addition, the stone contains the natural logarithm e or Euler logarithm, as well as a series of related logarithms. The author has noted that matter begins with the natural logarithm e in a previous paper. The similarities and the high level mathematics lead towards the Clifford Algebra $Cl(8)$ and the Exceptional Lie Algebra E_8 , which imply that Meso American civilization enjoyed high - level mathematics.

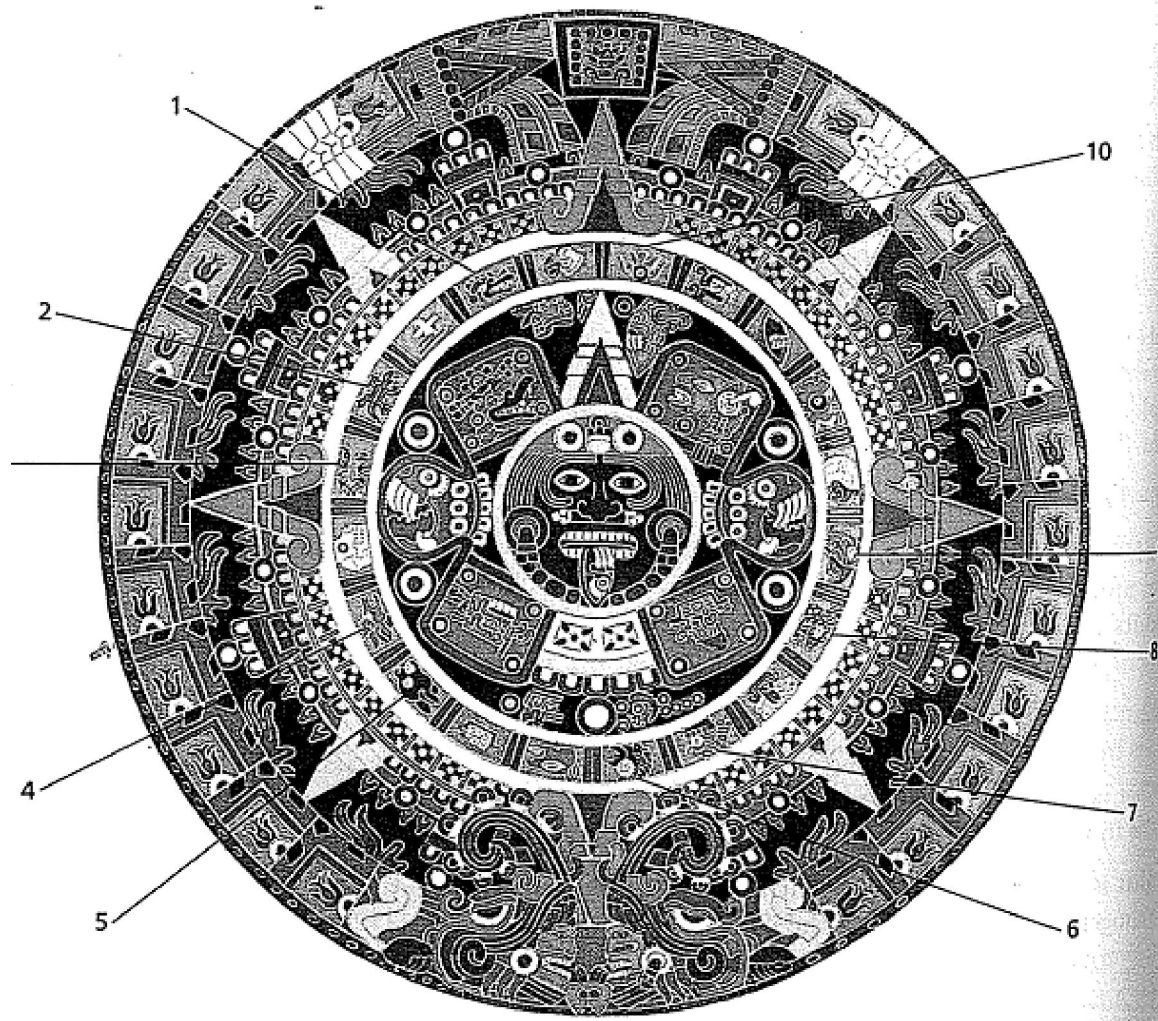
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Introduction



5. *Deer*: $d(x) = 1 + \frac{1}{1 + e^{3x}} \approx 1.002$, 4th

7. *Flower*: $f(x) = 6^x \cdot 6^4 \approx 46,656$, 10th

3. *Jaguar*: $j(x) = (5e^{-2x})^{-1} \approx 10.920$, 8th

1. *Monkey*: $m(x) = e^{-4x} \cdot e^9 \approx 2.718$, 6th

3. *Serpent*: $s(x) = \log_4 3x - \log_4(x + 2)$

86. *Eagle*: $e(x) = \frac{e^x}{12e^{-2x}} \approx 33.619$, 9th

88. *Grass*: $g(x) = \frac{3}{1 + e^{-2x}} \approx 2.946$, 7th

90. *Lizard*: $l(x) = \ln 4 - 2 \ln x \approx 0$, 2nd

92. *Rabbit*: $r(x) = \log_5 5 + \log_5 3x$

94. *Wind*: $w(x) = 2 \log_2 x - \log_2 8$

92. ≈ 2.113 , 5th 93. ≈ 0.292 , 3rd 94. -1 , 1st

In Algebra 2, an Integrated Approach, Larson, Kanold and Stiff assign the above logarithmic values to ten of the 20 animal names of the Stone of the Fifth Sun, which is otherwise known as the Aztec calendar. In this paper we shall discuss two of these values: the natural logarithm e , which is associated with Monkey on the stone, and the value of 46,656 for Flower.

In an earlier paper, the author stated that the natural logarithm e forms the basis for the creation of matter in the universe. That is to say that in the substratum, which consists of what contemporary science understands as "black hole" material, matter begins at the natural logarithm e and develops along a spectrum which terminates in a circle, much like the Clifford Clock and its counterpart, the Clock of Complex Spaces.

That the Aztecs included this figure of the monkey with its association to the natural logarithm e stands as more than mere coincidence and suggests that the ancestors of the Aztecs enjoyed advanced mathematics. The Aztecs and their ancestors must have understood an advanced type of physics which is similar to Vedic Physics, and perhaps global in nature in the ancient world. The Chinese use the monkey in their calendrics, as the monkey corresponds to one of twelve Earth Branches in the Base 60 system used there.

The multiple uses of the natural logarithm e and its appearance in many aspects of nature is well - known, and must have been known to the Aztecs. Since the natural logarithm e stands as but one number in a group of functions, then it is likely that the other numbers associated with the Fifth Stone of the Sun have associations with advanced mathematics and physics as well.

With the symbol for Flower in the Fifth Stone of the Sun, we find this to be the case: 44,656 is the product of six to the sixth power in a series. The online encyclopedia of integers provides the following entry for the series:

<http://oeis.org/A089072>

A089072	<p>Triangle read by rows: $T(n,k) = k^n, n \geq 1, 1 \leq k \leq n.$</p> <p>1, 1, 4, 1, 8, 27, 1, 16, 81, 256, 1, 32, 243, 1024, 3125, 1, 64, 729, 4096, 15625, 46656, 1, 128, 2187, 16384, 78125, 279936, 823543, 1, 256, 6561, 65536, 390625, 1679616, 5764801, 16777216, 1, 512, 19683, 262144, 1953125, 10077696, 40353607(list; table; graph; refs; listen; history; text; internal format)</p> <p>OFFSET 1,3</p> <p>COMMENTS $T(n, k)$ = number of mappings from an n-element set into a k-element set. - Clark Kimberling, Nov 26 2004</p> <p>LINKS Reinhard Zumkeller, Rows n = 1..100 of triangle, flattened</p> <p>EXAMPLE Triangle begins:</p> <pre>1 1 4 1 8 27 1 16 81 256 1 32 243 1024 3125 1 64 729 4096 15625 46656</pre> <p>MATHEMATIC A PROG Column[Table[k^n, {n, 8}, {k, n}], Center] (* Alonso del Arte, Nov 14 2011 *) (Haskell) a089072 = flip (^) a089072_row n = map (a089072 n) [1..n] a089072_tabl = map a089072_row [1..] -- Reinhard Zumkeller, Mar 18 2013</p> <p>CROSSREFS Related to triangle of Eulerian numbers A008292. Row sums are A031971. $T(n,n) =$ A000312(n). Sequence in context: A013611 A077910 A100235 * A036177 A177841 A141680 Adjacent sequences: A089069 A089070 A089071 * A089073 A089074 A089075</p>
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Perhaps not coincidentally, 1024 is the number of Qi Men Dun Jia "ju" or situations which appear annually. That is to say that each individual ju repeats itself four times during the course of a year, which leads to the product of 1024 for all QMDJ ju or situations per year.

In addition, the series fits into key intervals in the 8 x 8 and the 9 x 9 types of matter, suggesting that this series might function as an area of exchange between the two states of matter.

Finally, we see the key number of 256, which is related to the Exceptional Lie Algebra and its lattice, E8, as well as the Clifford Algebra, Cl(8). This is the doorway to higher mathematics.

Tony Smith has written a good introduction to this algebra in a paper published on Vixra (Introduction to E8 Physics at viXra:1108.0027). Here he writes:

Real Clifford Algebras have a tensor product periodicity property whereby

$$\text{Cl}(q+8) = \text{Cl}(q) \times \text{Cl}(8)$$

so that if you understand $\text{Cl}(8)$ you can understand larger Clifford Algebras such as

$$\text{Cl}(16) = \text{Cl}(8) \times \text{Cl}(8)$$

and so on for as large as you want.

$\text{Cl}(8)$ is a graded algebra with grade k corresponding to dimensionality of vectors from the origin to subspaces of 8-dim space spanned by k basis vectors of 8 orthogonal basis vectors $\{x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8\}$ of the 8-dim Euclidean space.

In the following construction use only the positive basis vectors (not their mirror image negatives). That is the same as looking at only the all-positive octant of the 8 -dim Euclidean space.

Grade:

1 - vectors from origin to 1 of the 8 basis vectors - 1-dim - 8 line segments
each of the 8 line segments is a 1-dim simplex
whose outer "face" is a 0-dimensional point.

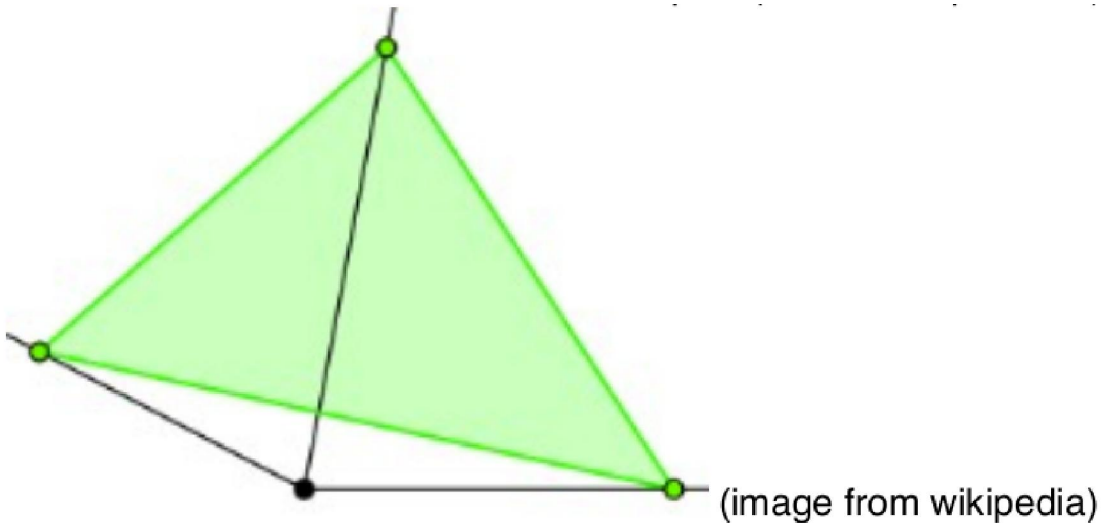
These 8 basis vectors are the basis vectors of the 8-dim vector space of $\text{Cl}(8)$.

2 - vectors from origin to pairs of the 8 basis vectors - 2-dim - 28 triangles defined by pairs of vectors each of the 28 triangles is a 2-dim

simplex (but NOT equilateral) whose outer "face" is a 1-dimensional line segment.

These 28 bivectors (pairs of vectors) give the 28 planes of rotation of the 28-dim group Spin(8) that includes rotations of the 8-dim vector space of Cl(8).

3 - vectors from origin to triples of the 8 basis vectors - 3-dim - 56 tetrahedra defined by triples of vectors each of the 56 tetrahedra is a 3-dim simplex (but NOT equilateral)



whose outer "face" is a 2-dimensional triangle (that IS equilateral).

4 - vectors from origin to 4-tuples of the 8 basis vectors - 4-dim - 70 4-simplexes defined by 4-tuples of vectors each of the 70 4-simplexes is a 4-dim simplex (but NOT equilateral) whose outer "face" is a 3-dimensional tetrahedron (that IS equilateral).

5 - vectors from origin to 5-tuples of the 8 basis vectors - 5-dim - 56 5-simplexes defined by 5-tuples of vectors each of the 56 5-simplexes is a 5-dim simplex (but NOT equilateral) whose outer "face" is a 4-dim simplex (that IS equilateral).

6 - vectors from origin to 6-tuples of the 8 basis vectors - 6-dim - 28 6-simplexes defined by 6-tuples of vectors

each of the 28 6-simplexes is a 6-dim simplex (but NOT equilateral)
whose outer "face" is a 5-dim simplex (that IS equilateral).

7 - vectors from origin to 7-tuples of the 8 basis vectors - 7-dim - 8
7-simplexes defined by 7-tuples of vectors

each of the 8 7-simplexes is a 7-dim simplex (but NOT equilateral)
whose outer "face" is a 6-dim simplex (that IS equilateral).

8 - vectors from origin to 8-tuples of the 8 basis vectors - 8-dim - 1
8-simplex defined by the unique 8-tuple of vectors
the 8-simplex is an 8-dim simplex (but NOT equilateral)
whose outer "face" is a 7-dim simplex (that IS equilateral).

The total dimension of Cl(8) is

$$1+8+28+56+70+56+28+8+1 = 256 = 2^8 = 16 \times 16$$

The Cl(8) algebra is the algebra of 16x16 matrices of real numbers.
The product of the Cl(8) algebra is the product of 16x16 real matrices
but it also has geometric meaning.

If you multiply for example a
grade-2 element = 2-dim simplex with basis vectors { x3, x5 }
by a
grade-4 element = 4-dim simplex with basis vectors { x2, x6, x7, x8 }
then
you get a
grade-6 element = 6-dim simplex with basis vectors { x2, x3, x5, x6, x7,
x8 }

BECAUSE

the Clifford Algebra product in this case acts like the exterior algebra
wedge
product (or the cross-product in 3-dim)
so that the product fo two independent subspaces of the Cl(8) 8-dim

Euclidean space is sort of the span of both subspaces taken together
BUT

If you multiply for example a

grade-2 element = 2-dim simplex with basis vectors $\{ x_2, x_5 \}$

by

a grade-4 element = 4-dim simplex with basis vectors $\{ x_2, x_6, x_7, x_8 \}$

then you get

a grade-4 element = 4-dim simplex with basis vectors $\{ x_5, x_6, x_7, x_8 \}$

BECAUSE

the Clifford Algebra in this case acts partly like a dot-product
so that in the product of two defined-by-the-same-vector subspaces
the two subspaces cancel out to zero (the common basis vector x_2 is
canceled).

In short, Clifford Algebra describes the geometry of vector subspaces
And the geometry is exactly described by matrix algebras like
 $Cl(8) = 16 \times 16$ real matrices $R(16)$.

The 16×16 real matrices $R(16)$ are made up of 16 column vectors
each of which is a 16-dim vector that decomposes into two 8-dim
vectors.

Since 16 times an $8+8 = 16$ -dim column vector gives all $16 \times 16 = 256$
elements of $R(16) = Cl(8)$

it is useful to regard the 16-dim column vectors as fundamental
square-root-type constituents of $Cl(8)$ and to call them $Cl(8)$ spinors.

Since the 16-dim $Cl(8)$ spinors decompose into two 8-dim parts,
call them 8-dim +half-spinors and 8-dim -half-spinors
and denote them by 8_+ and 8_- .

In the case of $Cl(8)$ the grade-1 vectors are also 8-dim, denoted by 8_v ,

so

for $Cl(8)$ we have a Triality Automorphism $8+s = 8-s = 8v$ that turns out to be very useful in physics because it gives a relation between +half-spinors, -half-spinors, and vectors.

The equality between +half-spinors and -half-spinors gives a symmetry between fermion particles and antiparticles.

Since gauge bosons are grade-2 bivectors of which $Cl(8)$ has 28, the gauge boson Lagrangian dimension in 8-dim spacetime is 28.

Since in 8-dim spacetime fermions have Lagrangian dimension $7/2$ the full fermion term of the Lagrangian has dimension 28.

Therefore, in the high-energy 8-dim spacetime Lagrangian, the boson and fermion terms cancel out, due to the Triality Supersymmetry of boson Lagrangian dimension =

28 = fermion Lagrangian dimension.

Once you understand the $Cl(8)$ example, you can extend the model to $Cl(N)$ for any N

and extend it to spaces with any signature (p,q) for $p+q = N$

where p is the number of dimensions of negative signature and q is the number of dimensions of positive signature in the vector space over which the Clifford Algebra $Cl(p,q)$ is defined.

Clifford Algebras for Euclidean spaces $Cl(0,q)$ are denoted $Cl(q)$, such as $Cl(8) = Cl(0,8) = R(16)$ and $Cl(16) = Cl(0,16) = R(256)$

For some (p,q) the Clifford Algebras are matrix algebras over complex C or quaternionic H as for example

$$Cl(4) = Cl(1,3) = H(2)$$

$$Cl(2) = H$$

$$Cl(1) = C$$

Some of the smaller Clifford Algebras are particularly useful in physics.

Here is how some of them fit inside $Cl(8) = Cl(0,8)$:

$$Cl(8) = Cl(1,7) = R(16) = H(2) \times H(2) = Cl(1,3) \times Cl(1,3) \quad Cl(2,6) = \\ Cl(3,5) = H(8)$$

Spin(8) Triality Group and F_4

$$Cl(6) = R(8) = H \times H(2) \quad Cl(2,4) = Cl(1,5) = H(4)$$

Conformal $SU(2,2)$ Group

$$Cl(4) = Cl(1,3) = H(2)$$

Minkowski Lorentz Group

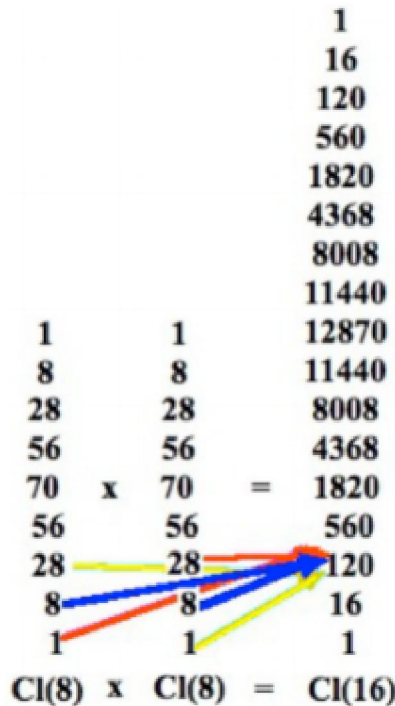
$$Cl(3) = R(4) = H + H$$

$$Cl(2) = H$$

$$Cl(1) = C$$

$$Cl(0) = R$$

How the larger Clifford Algebra Cl(16) gives E8



By Periodicity the tensor product $Cl(8) \times Cl(8) = Cl(16)$ with graded structure

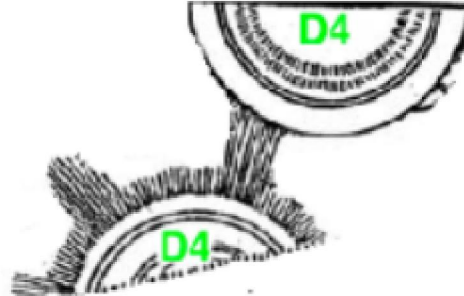
The 16-dim vector space of $Cl(16)$ comes from $Cl(8) \times Cl(8)$
 as grade $(0+1) = (1+0) = 1$
 and dimension $1 \times 8 + 8 \times 1 = 16$

The 120-dim bivector space of $Cl(16)$ comes from $Cl(8) \times Cl(8)$
 as grade $(0+2) = (2+0) = (1+1) = 2$
 and dimension $1 \times 28 + 28 \times 1 + 8 \times 8 = 28 + 28 + 64$

The 28 bivectors in each of the $Cl(8)$ generate the D4 Lie Algebra $Spin(8)$.

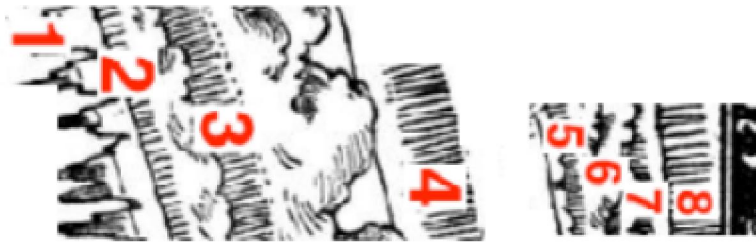
The 120 bivectors in $Cl(16)$ generate the D8 Lie Algebra $Spin(16)$.

Therefore 120-dim D8 contains:



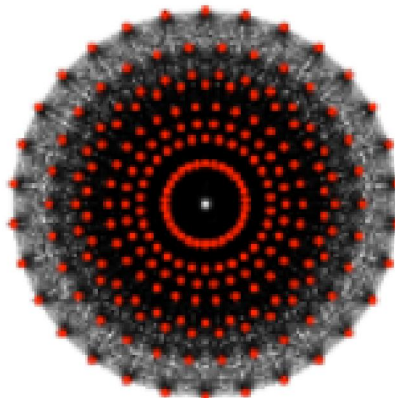
two copies of 28-dim D4

plus



a 64-dim structure that is the product of two 8-dim $Cl(8)$ vector spaces each of which is half of the 16-dim D8 vector space so that effectively the 64-dim structure is the square of the rank 8 of D8, which is also

the rank of 248-dim E8 whose 240 Root Vectors can be seen as 8 concentric circles of 30 Root Vectors (Wikipedia image)



such that there exists the symmetric space
 $D8 / D4 \times D4 = 8 \times 8 = 64$ -dim rank 8 Grassmannian

and

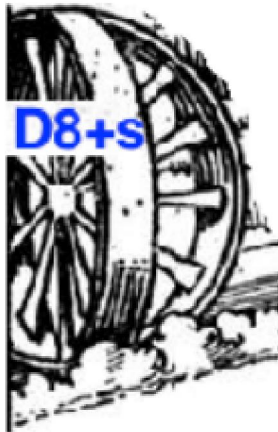
$$248\text{-dim } E8 = 120\text{-dim } D8 + 128\text{-dim } D8 + \text{half-spinor} = \\ = D4 \times D4 + 8 \times 8 + 128\text{-dim } D8 + \text{half-spinor } D8+s$$

The spinors of $Cl(16) = Cl(8) \times Cl(8)$ come from the spinors of $Cl(8)$:
 $(8+s+8-s) \times (8+s+8-s) =$
 $= (8+s \times 8+s+8-s \times 8-s+8-s \times 8+s+8-s \times 8-s) =$
 $= (8+s \times 8+s+8-s \times 8-s) + (8+s \times 8-s+8-s \times 8+s) =$
 $= (64+++64--) + (64+-+64-+) = 128 + 128 = 256\text{-dim } Cl(16)$
spinors

If you try to combine all $128+128 = 256$ of the $Cl(16)$ $D8$ spinors with the $120\text{-dim } Cl(16)$ $D8$ Lie Algebra you will see that they will fail to make a nice Lie Algebra

but

if you take only the $(64+++64--) = 128\text{-dim } Cl(16)$ $D8$ +half-spinors $D8+s$



and combine them with the $120\text{-dim } Cl(16)$ $D8$ Lie Algebra they DO form the $128+120 = 248\text{-dim } E8$ Lie Algebra. Although $E8$, like all Lie Algebras, can be written in terms of commutators,

the 128-dim D8 +half-spinor part of E8 can be written as
anticommutators,
a property that E8 in Cl(16) inherits from F4 in Cl(8). Therefore,
the 120-dim D8 part of E8 physically represents boson and vector
spacetime with commutators
and
the 128-dim D8 +half-spinor part of E8 physically represents fermions
with
Anti-commutators. Further, since it is made up of (64+++64--)
it represents 8 spacetime components of 8 fermion particles
plus 8 spacetime components of 8 fermion antiparticles.

The 8 first-generation fermion types are
electron , red up quark , green up quark , blue up quark ;
blue down quark , green down quark , red down quark, neutrino

Second and Third fermion generations, Higgs, and 3 mass states of
Higgs

and T-quark emerge as consequences of the Octonion / Quaternion
transition from 8-dim Spacetime of the Inflationary Era of our Universe
to 4-dim Physical Spacetime + 4-dim CP2 Internal Symmetry Space.

Discussion

If the above discussion of the Exceptional Lie Algebra E8 by Frank "Tony" Smith accurately describes the Aztecs understanding of advanced mathematics, since they included the number 44,656 in the Fifth Stone of the Sun, then this implies that the Nahua people are truly "la raza cosmica," a term which has been used to describe the people of Mexico for the past century, since a 1925 essay by Jose Vasconcelos.

The Exceptional Lie Algebra E8 forms the final and most important section of the Magic Square of Exceptional Lie Algebras, as well as the Magic Triangle of the same; the same holds for the Barnes - Wall lattices. As will be seen in a forthcoming paper, E8 plays a key role in the Qi Men Dun Jia Model. Further research into the functions of the remaining figures in the Stone will probably yield more fascinating results.

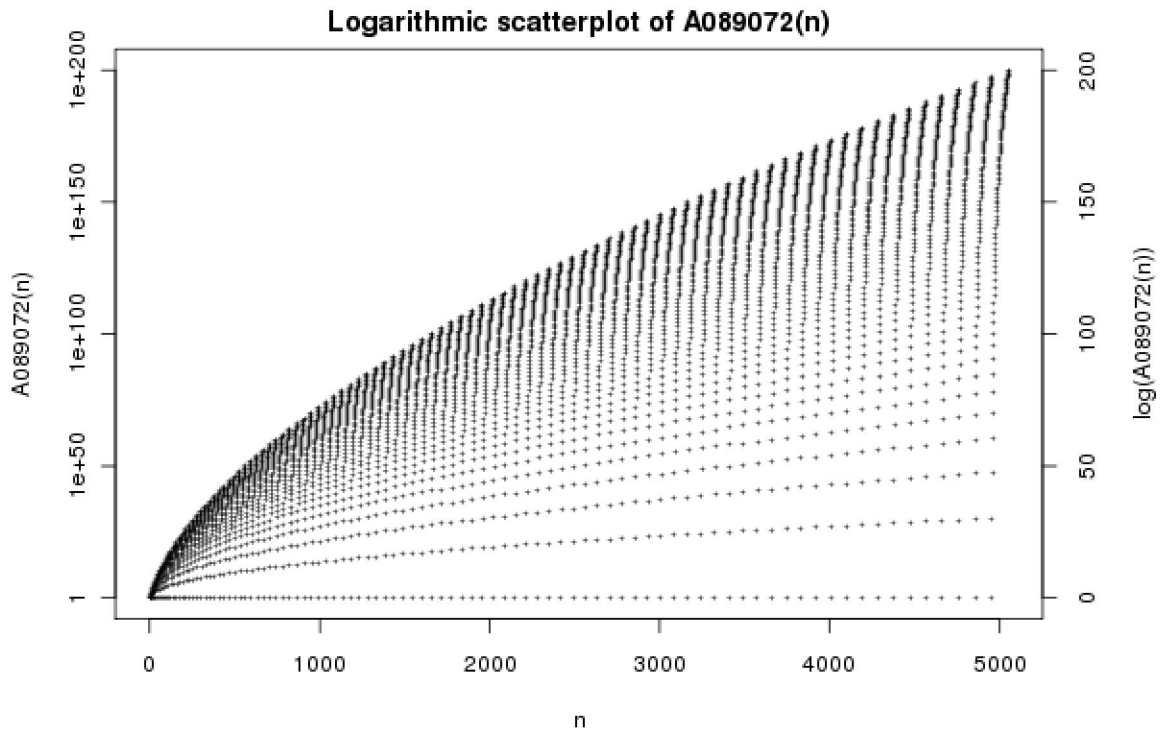
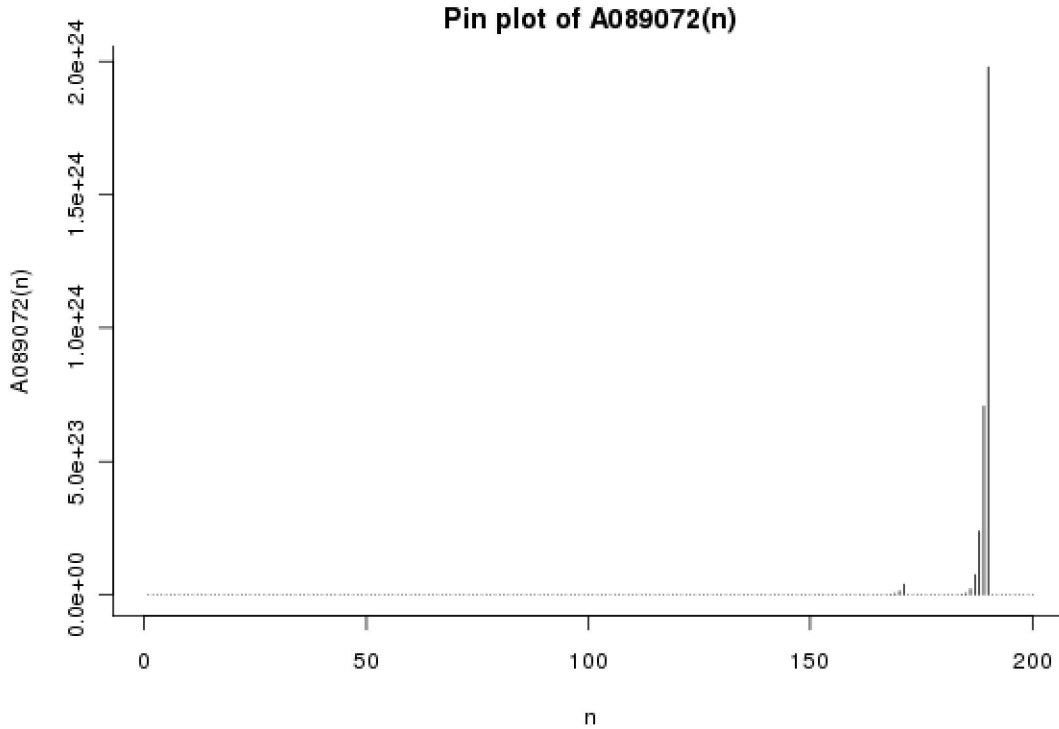
We know that the Aztecs had methods of divination, for when Hernando Cortez arrived on the eastern shore of Mexico in 1519, the Aztecs had been waiting for a white - haired visitor for many years. Divination had instructed them to expect such a visitor.

By the time he arrived in Tenochtitlan the Spaniards had a large army. On November 8, 1519, they were peacefully received by Moctezuma II.^[1] Moctezuma deliberately let Cortés enter the Aztec capital, the island city of [Tenochtitlan](#), hoping to get to know their weaknesses better and to crush them later.^[8] He gave lavish gifts in gold to the Spaniards which, rather than placating them, excited their ambitions for plunder. In his letters to King Charles, Cortés claimed to have learned at this point that he was considered by the Aztecs to be either an emissary of the feathered serpent god [Quetzalcoatl](#) or Quetzalcoatl himself.

From Wikipedia

Jose Arguellos wrote about the connections between the Aztec or Maya

calendar and the Chinese I Ching (Zhou Yi), especially the hexagrams or six lined symbols, composed of two trigrams. The numerical series noted above permits this crossover between the two calendars.



A089072 as a square array

1	1	1	1	1	1	1	1
4	8	16	32	64	128	256	
27	81	243	729	2187	6561		
256	1024	4096	16384	65536			
3125	15625	78125	390625	1953125	3125		
46656	279936	1679616	10077696	50331648	251995136		
823543	5764801	40353607	282429536	1978526720	13931406976		
16777216	120795904	823543040	5764801024	40353607040	282429536000		

A089072 as an upper right triangle

1	1	1	1	1	1	1	1	1
	4	8	16	32	64	128	256	512
		27	81	243	729	2187	6561	19683
			256	1024	4096	16384	65536	262144
				3125	15625	78125	390625	1953125
					46656	279936	1679616	10077696
						823543	5764801	40353607
							16777216	

The presence of numerous triangular shapes in the Stone of the Fifth Sun suggest the mathematical pyramids embedded in this numerical series, displayed in various formats above. These further reflect the pyramids of Meso America, which spread from the area around Mexico City down into Guatemala and Belize.

In the same way, the triangles and their relationship to the numerical triangles above may suggest an understanding of the combinatorial nature of the universe on the part of the Aztecs, which the author has described in a separate paper, published on Vixra.

Stone of the Fifth Sun and the Qi Men Dun Jia Cosmic Board II

Comparison of the two cosmic boards indicate obvious similarities: the eight external palaces of the QMDJ cosmic board correspond to the four cardinal directions of the Stone of the Fifth Sun and the four intermediate directions. The Stone contains 12 intervals or empty spaces marked by maguey plants, which correspond to the 12 Earth Branches of Chinese metaphysic, which are not illustrated but are understood to circle the outside of the QMDJ 3 x 3 Magic Square. Ten animal figures correspond to ten Heavenly Stems of QMDJ.

The god of the central ring, Tonatiuh, corresponds to the vacant Fifth Palace of the QMDJ cosmic board, with its echoes of Brahma in the Vedic Vastu Shastra 9 x 9 square. This is the area from which matter arises into the visual spectrum, seeming to appear from nothing, or zero.

The Qi Men Dun Jia cosmic board functions along with the 60 Jia Zi and the 60 Na Yin, which are comprised of Base 60 math. At the same time, the Stone of the Fifth Sun is based on 18 seasons of 20 days each, for a total of 360 days, which corresponds to Base 60 math. Where the Aztec calendar adds 5 extra days to compensate for the 365.4 days needed for the Earth to circumnavigate the Sun, intercalary periods known as "run" are added to the Chinese calendar to compensate for the same lag period.

The Qi Men Dun Jia cosmic board contains levels of eight rotating stars and spirits, while the Stone of the Fifth Sun is comprised of 20 animal gods, with ten located on each side. Much as in Egyptian metaphysics with its concept of neters, or divine numbers, the Aztec version contains animal gods with numerical associations.

Despite differences in the mathematics of calendars, the two calendars show marked similarities. The Stone of the Fifth Sun is based on an eighteen - season calendar with 20-day months, with an extra five days added to make up 365 days. The QMDJ Cosmic Board is based on the 24 - season calendar of traditional China and the 60 Jia Zi, with an additional intercalary season injected every four years to compensate for the deficit.

From Crystal links website:

The calendar consisted of a 365-day calendar cycle called *xiuhpohualli* (year count) and a 260-day ritual cycle called *tonalpohualli* (day count). These two cycles together formed a 52-year "century," sometimes called the "calendar round". The *xiuhpohualli* is considered to be the agricultural calendar, since it is based on the sun, and the *tonalpohualli* is considered to be the sacred calendar.

The *tonalpohualli* (count of days) was the sacred almanac of the Mexicas. This ritual calendar was registered in the *tonalamatl* (book of days), a green-fold bark paper or deerskin codex from which a priest (called *tonalpouque*) cast horoscopes and predicated favorable and unfavorable days of the cycle.

The almanac year comprised of 260 days, each of which was assigned a date by intermeshing one of 20 day-signs, represented graphically with a glyph, and a number from 1 to 13, represented by dots so that no two days in the cycle could be confused. The almanac year was thus made up of 20 13-day weeks, with the first week beginning on 1-Crocodile and ending on 13-Reed, the second week running from 1-Ocelot to 13-Deaths' Head and so on. A god or goddess was believed to preside over each day-sign.




















Trecenas

A set of thirteen numbered days is known by the Spanish term trecena (from trece "thirteen"). Each of the twenty trecenas in the 260-day cycle was associated with a particular deity:

Trecena	Deity
1 Crocodile – 13 Reed	Ometeotl
1 Jaguar – 13 Death	Quetzalcoatl
1 Deer – 13 Rain	Tepeyollotl
1 Flower – 13 Grass	Huehucocoyotl
1 Reed – 13 Snake	Chalchiuhtlicue
1 Death – 13 Flint	Tonatiuh
1 Rain – 13 Monkey	Tlaloc
1 Grass – 13 Lizard	Mayahuel
1 Snake – 13 Quake	Xiuhtecuhtli
1 Flint – 13 Dog	Mictlantecuhtli

Trecena	Deity
1 Monkey – 13 House	Patecatl
1 Lizard – 13 Vulture	Itztlacoliuhqui
1 Quake – 13 Water	Tlazolteotl
1 Dog – 13 Wind	Xipe Totec
1 House – 13 Eagle	Itzpapalotl
1 Vulture – 13 Rabbit	Xolotl
1 Water – 13 Crocodile	Chalchiuhtotolin
1 Wind – 13 Jaguar	Chantico
1 Eagle – 13 Deer	Xochiquetzal
1 Rabbit – 13 Flower	Xiuhtecuhtli

18 Seasons of the Aztec Calendar

Duran Time	Sahagun Time	Aztec calendar – Wikipedia, the free encyclopedia	Symbol	English Translation
1. MAR 01 - MAR 20	1. FEB 02 - FEB 21	<i>Atlcahualo, Cuauhitlehua</i>		Ceasing of Water, Rising Trees
2. MAR 21 - APR 09	2. FEB 22 - MAR 13	<i>Tlacaxipehualiztli</i>		Rites of Fertility; Xipe-Totec
3. APR 10 - APR 29	3. MAR 14 - APR 02	<i>Tozoztonli</i>		Small Perforation
4. APR 30 - MAY 19	4. APR 03 - APR 22	<i>Huey Tozotli</i>		Great Perforation
5. MAY 20 - JUN 08	5. APR 23 - MAY 12	<i>Toxcatl</i>		Dryness
6. JUN 09 - JUN 28	6. MAY 13 - JUN 01	<i>Etzalcualiztli.</i>		Eating Maize and Beans
7. JUN 29 - JULY 18	7. JUN 02 - JUN 21	<i>Tecuilhuitontli</i>		Feast for the Revered Ones
8. JULY 19 - AUG 07	8. JUN 22 - JUL 11	<i>Huey Tecuilhuitl</i>		Feast for the Greatly Revered Ones
9. AUG 08 - AUG 27	9. JUL 12 - JUL 31	<i>Miccailhuitontli</i>		Feast to the Revered Deceased
10. AUG 28 - SEP 16	10. AUG01 - AUG 20	<i>Huey Miccailhuitontli</i>		Feast to the Greatly Revered Deceased
11. SEPT 17 - OCT 06	11. AUG 21 - SEPT 09	<i>Ochpaniztli</i>		Sweeping and Cleaning
12. OCT 07 - OCT 26	12. SEPT10 - SEPT 29	<i>Teotleco</i>		Return of the Gods
13. OCT 27 - NOV 15	13. SEPT 30 - OCT 19	<i>Tepelihuittl</i>		Feast for the Mountains
14. NOV 16 - DEC 05	14. OCT 20 - NOV 8	<i>Quecholli</i>		Precious Feather
15. DEC 06 - DEC 25	15. NOV 09 - NOV 28	<i>Panquetzaliztli</i>		Raising the Banners
16. DEC 26 - JAN 14	16. NOV 29 - DEC 18	<i>Atemoztli</i>		Descent of the Water
17. JAN 15 - FEB 03	17. DEC 19 - JAN 07	<i>Tititl</i>		Stretching for Growth
18. FEB 04 - FEB 23	18. JAN 08 - JAN 27	<i>Izcalli</i>		Encouragement for the Land & People
18u. FEB 24 - FEB 28	18u. JAN 28 - FEB 01	<i>nemontemi</i> (5 day period)		Empty-days (nameless, undefined)

Animal Figures of the Aztec Calendar





















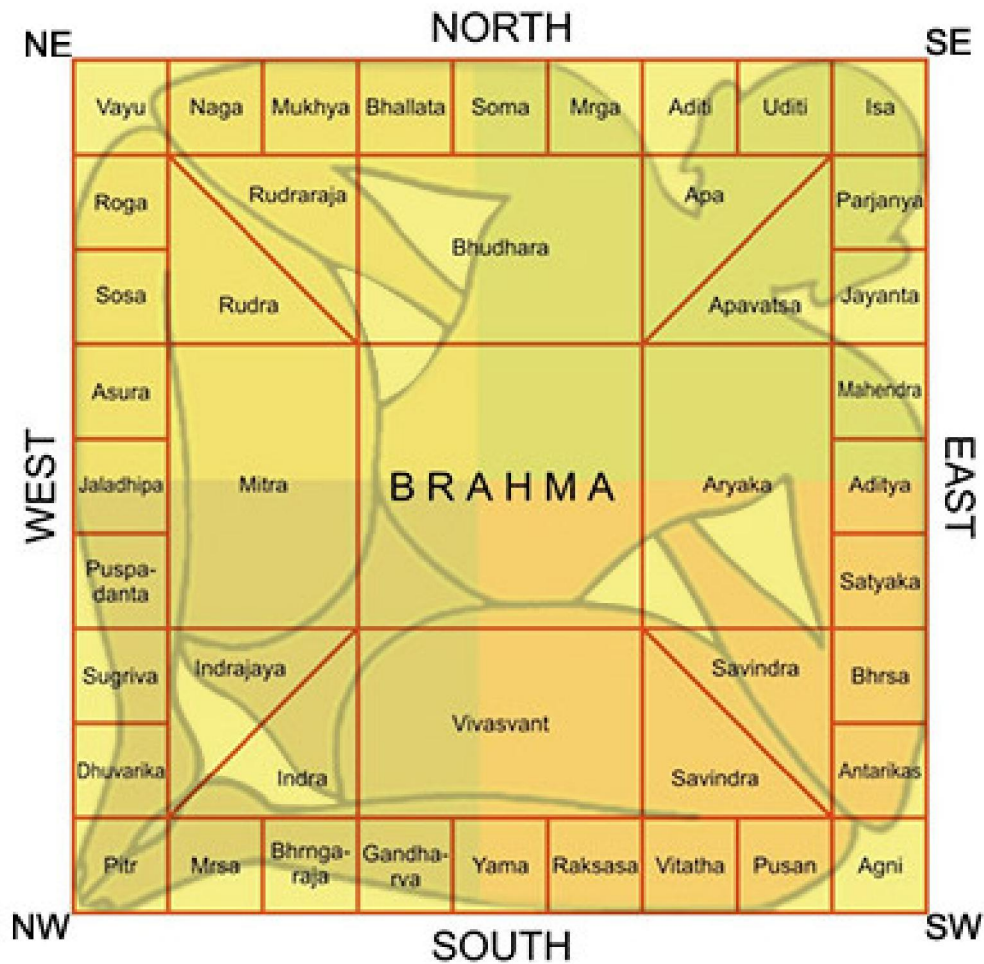
Image	Nahuatl name	Pronunciation	English translation	Direction
	<i>Cipactli</i>	[si paktʃi]	Crocodile Alligator Caiman Crocodilian Monster	East
	<i>Ehecatl</i>	[eʔ ekatʃi]	Wind	North
	<i>Calli</i>	[kali]	House	West
	<i>Cuetzpalin</i>	[kʷets palin]	Lizard	South
	<i>Coatl</i>	[ko:(w)atʃi]	Serpent Snake	East
	<i>Miquiztli</i>	[mi kistʃi]	Death	North
	<i>Mazatl</i>	[masatʃi]	Deer Animal	West
	<i>Tochtli</i>	[to:tʃi]	Rabbit	South
	<i>Atl</i>	[atʃi]	Water	East
	<i>Itzcuintli</i>	[its kʷintʃi]	Dog	North
	<i>Ozomatli</i> <i>Ozomahtli</i>	[oso maʔtʃi]	Monkey	West

Image	Nahuatl name	Pronunciation	English translation	Direction
	<i>Malinalli</i>	[maliznalli]	Grass	South
	<i>Acatl</i>	[akattʃi]	Reed	East
	<i>Ocelotl</i>	[o se:lotʃi]	Jaguar	North
	<i>Cuauhtli</i>	[kʷawtʃi]	Eagle	West
	<i>Cozcacuauhtli</i>	[koska kʷawtʃi]	Vulture	South
	<i>Ollin</i>	[ollin]	Movement Quake Earthquake	East
	<i>Tecpatl</i>	[tekpattʃi]	Flint Flint Knife	North
	<i>Quiyahuittl</i>	[ki(j)awittʃi]	Rain	West
	<i>Xochitl</i>	[ʃotʃitʃi]	Flower	South

Tonatiuh's Face, Brahma and Four Gods in the Vedic Square of Vastu Shastra



This conception of the Vastu Shastra 9 x 9 Cosmic Board bears elements of the 3 x 3 Magic Square of Qi Men Dun Jia as well as the central disc of the Stone of the Fifth Sun, with Brahma equivalent to Tonatiuh. Note the presence of four element gods Agni, Pitr, Vayu and Isu in the corners instead of the center, as in the stone.

The Center of the Disc - Tonatiuh



Tonatiuh's Face is the face of the sun, Lord of Heaven, around which takes place all daily and periodic phenomena. The crown, nose-pendant, ear-rings and necklace are magnificent, as must be the ornaments characteristic of this deity. The hair is blond, due to the golden appearance of the sun. The wrinkles on the face show age and maturity. And the tongue, stuck out is the form of an obsidian knife, indicates that the deity demands to be fed with blood and human hearts.

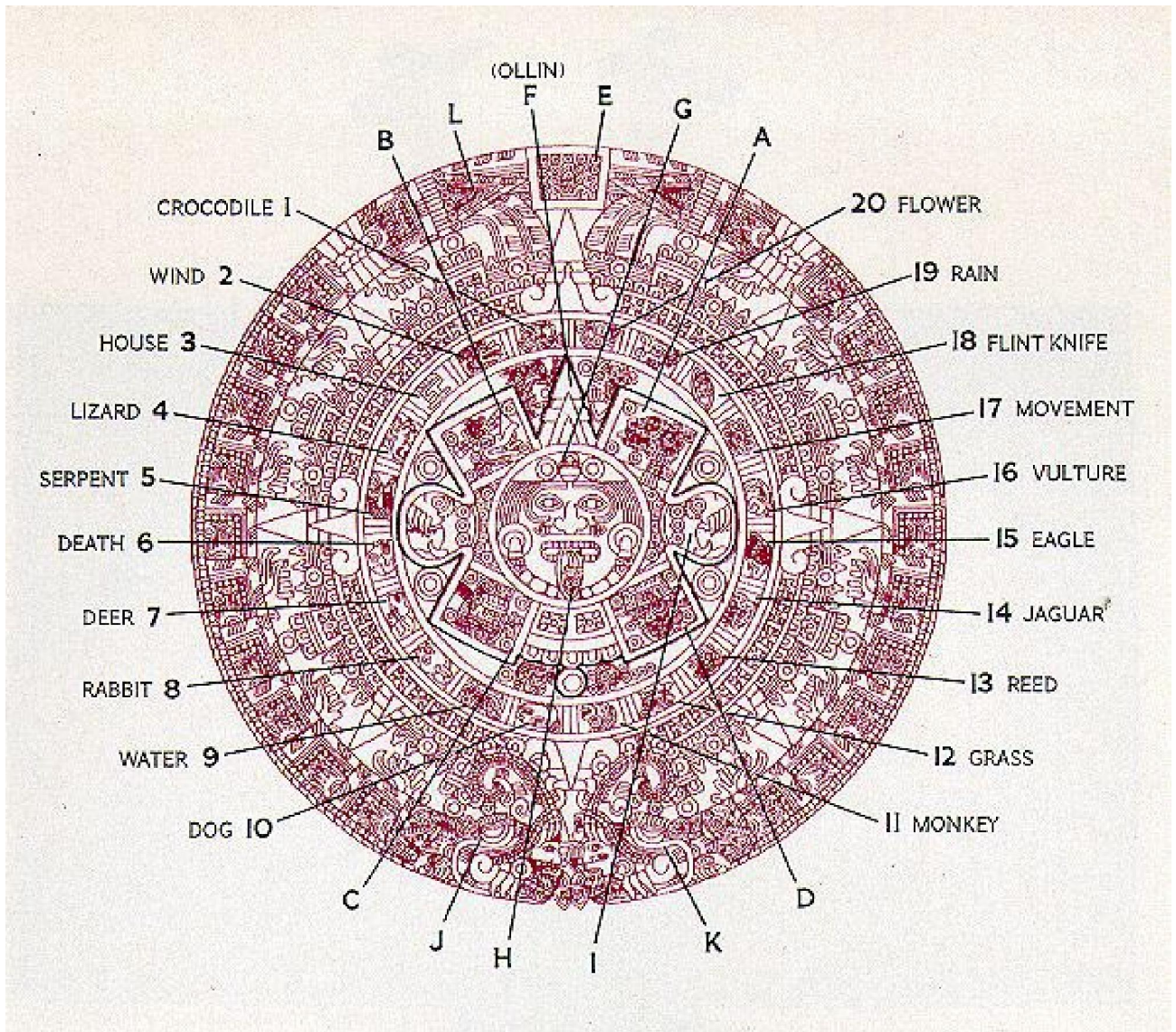
The Rings

First Ring - from Center. Four Olin representing the Earthquake Epoch or Sun. The four epochs represented inside the square portions of this symbol correspond to the four previous epochs also called suns.

Second Ring - The second ring from the center is composed of 20 named days contained in one month, also used for naming years. Each year starts on one of four of these 20 days.

Third Ring - Sun Rays - Chalchihuite Ornaments - Splashed Blood Symbols

Outer Ring - Dedication Plate - Herbs with Buds - White Scrolls - Flame Sign - Xiucoatl's Tail



The Stone of the Fifth Sun consists of ten animal names, 3 Element names and the names of three nouns or objects. The central figure of the god with its tongue stuck out could prove a metaphor for "black hole" material, which subsumes matter into the substratum.

Math Functions of the Animal Figures of the Stone of the Fifth Sun

		Function	Value
1	Crocodile		
2	Wind		-1
3	House		
4	Lizard		0
5	Serpent		0.292
6	Death		
7	Deer		1.002
8	Rabbit		2.113
9	Water		
10	Dog		
11	Monkey		2.718
12	Grass		2.946
13	Reed		
14	Jaguar		10.920
15	Eagle		33.619
16	Vulture		
17	Movement		
18	Flint Knife		
19	Rain		
20	Flower		46,656
A			
B			
C			
D			
E			
F			
G			
H			
I			

Awaiting word from Larson, Kanold and Stiff on the remaining values.

Five Suns

- *Nahui-Ocelotl*(Jaguar Sun) - Inhabitants were giants who were devoured by jaguars. The world was destroyed.
- *Nahui-Ehécatl*(Wind Sun) - Inhabitants were transformed into monkeys. This world was destroyed by hurricanes.
- *Nahui-Quiahuitl*(Rain Sun) - Inhabitants were destroyed by rain of fire. Only birds survived (or inhabitants survived by becoming birds).
- *Nahui-Atl*(Water Sun) - This world was flooded turning the inhabitants into fish. A couple escaped but were transformed into dogs.
- *Nahui-Ollin*(Earthquake Sun) - We are the inhabitants of this world. This world will be destroyed by earthquakes (or one large earthquake).

The late Dr. Cecilio Orozco, who researched the stone under the guidance of his Mexican mentor for three decades, apparently believed that the five suns marked stages in the migration of the Nahuatl people from Utah to the Valley of Mexico:

Only recently deciphered, our great history book tells, in part, the history of the four great disasters which caused the migrations of the Native Americans who would ultimately build the great TENOCHTITLAN (Mexico City, Today). The group had been forced to migrate from their "Happy Hunting Grounds" in the North to the colorful lands of the NAHUATL (Four Waters) in what is now Utah in the U.S.A. then south to the CHICOMOSTOC (Seven Entrances), thence to AZTLAN (Land of Egrets) and finally to the valley where they found the eagle and the serpent and founded TENOCHTITLAN.

From a website about Dr. Orozco

The Aztec Calendar (Wikipedia)

The term **Five Suns** in the context of creation myths, describes the doctrine of the Aztec and other Nahua peoples, supported amply by ancient texts and calendars, in which the present world was preceded by four other cycles of creation and destruction. It is primarily derived from the mythological, cosmological and eschatological beliefs and traditions of earlier cultures from central Mexico and the Mesoamerican region in general. The Late Postclassic Aztec society inherited many traditions concerning Mesoamerican creation accounts, while however modifying some aspects and supplying novel interpretations of their own.^[1]

In the creation myths which were preserved by the Aztec and other Nahua peoples, the central tenet was that there had been four worlds, or "Suns", before the present universe. These earlier worlds and their inhabitants had been created, then destroyed by the catastrophic action of leading deity figures. The present world is the fifth sun, and the Aztec saw themselves as "the People of the Sun," whose divine duty was to wage cosmic war in order to provide the sun with his *tlaxcaltiliztli* ("nourishment"). Without it, the sun would disappear from the heavens. Thus the welfare and the very survival of the universe depended upon the offerings of blood and hearts to the sun.^[2]

From the void that was the rest of the universe, the first god, Ometeotl, created itself. Ometeotl was both male and female, good and evil, light and darkness, fire and water, judgment and forgiveness, the god of duality. Ometeotl gave birth to four children, the four Tezcatlipocas, who each preside over one of the four cardinal directions.

Over the West presides the White Tezcatlipoca, Quetzalcoatl, the god of light, mercy and wind. Over the South presides the Blue Tezcatlipoca, Huitzilopochtli, the god of war. Over the East presides the Red

Tezcatlipoca, Xipe Totec, the god of gold, farming and Spring time. And over the North presides the Black Tezcatlipoca, known by no other name than Tezcatlipoca, the god of judgment, night, deceit, sorcery and the Earth. [3]

It was these four gods who eventually created all the other gods and the world we know today, but before they could create they had to destroy, for every time they attempted to create something, it would fall into the water beneath them and be eaten by Cipactli, the giant earth crocodile, who swam through the water with mouths at every one of her joints.

The four Tezcatlipocas descended the first people who were giants. They created the other gods, the most important of whom were the water gods: Tlaloc, the god of rain and fertility and Chalchiuhtlicue, the goddess of lakes, rivers and oceans, also the goddess of beauty. To give light, they needed a god to become the sun and the Black Tezcatlipoca was chosen, but either because he had lost a leg or because he was god of the night, he only managed to become half a sun. The world continued on in this way for some time, but a sibling rivalry grew between Quetzalcoatl and his brother the mighty sun, who Quetzalcoatl knocked from the sky with a stone club. With no sun, the world was totally black and in his anger, Tezcatlipoca commanded his jaguars to eat all the people. [4]

The gods created a new group of people to inhabit the Earth, this time they were of normal size. Quetzalcoatl became the new sun and as the years passed, the people of the Earth grew less and less civilized and stopped showing proper honor to the gods.

As a result, Tezcatlipoca demonstrated his power and authority as god of sorcery and judgment by turning the animalistic people into monkeys. Quetzalcoatl, who had loved the flawed people as they were, became upset and blew all of the monkeys from the face of the Earth with a mighty hurricane. He then stepped down as the sun to create a new people.

Tlaloc became the next sun, but Tezcatlipoca seduced and stole his

wife Xochiquetzal, the goddess of sex, flowers and corn. Tlaloc then refused to do anything other than wallow in his own grief, so a great drought swept the world. The people's prayers for rain annoyed the grieving sun and he refused to allow it to rain, but the people continued to beg him. Then, in a fit of rage he answered their prayers with a great downpour of fire. It continued to rain fire until the entire Earth had burned away. The gods then had to construct a whole new Earth from the ashes.

The next sun and also Tlaloc's new wife, was Chalchiuhtlicue. She was very loving towards the people, but Tezcatlipoca was not. Both the people and Chalchiuhtlicue felt his judgment when he told the water goddess that she was not truly loving and only faked kindness out of selfishness to gain the people's praise. Chalchiuhtlicue was so crushed by these words that she cried blood for the next fifty-two years, causing a horrific flood that drowned everyone on Earth.

Quetzalcoatl would not accept the destruction of his people and went to the underworld where he stole their bones from the god Mictlantecuhtli. He dipped these bones in his own blood to resurrect his people, who reopened their eyes to a sky illuminated by the current sun, Huitzilopochtli.^[3]

Some of Omteotl's later children, the Tzitzimitl, or stars, became jealous of their brighter, more important brother Huitzilopochtli. Their leader, Coyolxauhqui, goddess of the moon, lead them in an assault on the sun and every night they come close to victory when they shine throughout the sky, but are beaten back by the mighty Huitzilopochtli who rules the daytime sky.

To aid this all-important god in his continuing war, the Aztecs offer him the nourishment of human sacrifices. They also offer human sacrifices to Tezcatlipoca in fear of his judgment, offer their own blood to Quetzalcoatl, who opposes fatal sacrifices, in thanks of his blood sacrifice for them and give offerings to many other gods for many purposes. Should these sacrifices cease, or should mankind fail to please the gods for any other reason, this fifth sun will go black, the world will be shattered by a catastrophic earthquake, and the Tzitzimitl

will slay Huitzilopochtli and all of humanity.

The Aztec calendar is the calendar system that was used by the Aztecs as well as other Pre-Columbian peoples of central Mexico. It is one of the Mesoamerican calendars, sharing the basic structure of calendars from throughout ancient Mesoamerica.

The calendric year may have begun at some point in the distant past with the first appearance of the Pleiades (Tianquiztli) asterism in the east immediately before the dawn light. But due to the precession of the Earth's axis, it fell out of favor to a more constant reference point such as a solstice or equinox. Early Spanish chroniclers recorded it being celebrated in proximity with the Spring equinox.

Conclusion

This paper has noted the similarities between the Stone of the Fifth Sun and the Qi Men Dun Jia Cosmic Board, which appear more plentiful and suggest that more than coincidence was at work in creating the similarities, such as the eight directions, the intimate relationship to cultural calendrics, the central vacant spot of the gods, twelve divisions in both boards, suggestive of 12 months, 12 Earth Branches, or the 12 Stages of the Life Cycle.

The presence of numerous triangular shapes in the Stone of the Fifth Sun suggest the mathematical pyramids embedded in numerical series, and further reflect the pyramids of Meso America. Just as the Great Pyramid of Giza has mathematical codes and formulae built into its structure, it remains possible that the pyramids of Meso America contain similar properties, as yet unexplored.

Just as the circular or octagonal shape of the Qi Men Dun Jia contains trigonometry and its periodic functions, so does the round shape of the Fifth Stone of the Sun contain trigonometry and its periodic functions. In the same way, the eight directions imply period 8 periodicity, just as in the Qi Men Dun Jia Cosmic Board. The twelve intervals of maguey correspond to the twelve Earth Branches and Life Cycle of QMDJ, while the ten Heavenly Stems correspond to the ten animal figures of the Fifth Stone of the Sun.

The two numbers discussed here, the e natural logarithm and 46, 656 contain important linkages to the substratum of "black hole" matter as well as to a mathematical series which leads to the Exceptional Lie Algebra E8 and further beyond. One might assume an additional ten values associated with the remaining ten animal figures, as well as the elements and objects which compose the stone. Much remains for

investigation and research.

Given the lack of information remaining after the devastating destruction of Aztec and Mayan culture by the Spanish since 1492, today's researchers can barely understand the context of the Stone of the Fifth Sun. Given the similarities to the Qi Men Dun Jia Cosmic Board to the stone, it remains quite possible that the stone represents a static version or Earth pan of a dynamic board in which symbols "fly" as time passes. If so, then the stone might well have served purposes of divination.

Finally, we note the possibility that the Aztecs knew about periodicity and the Exceptional Lie Algebra, since their knowledge of functions included the e natural logarithm and the number 44,656 with its implied relationship to numerical series related to the Exceptional Lie Algebra E_8 , and to the Clifford Algebra $Cl(8)$. The numerical series which includes 44,656 transcends E_8 , in fact.

If we may posit that the Aztec understood these relationships of high level mathematics, then we may infer that the Aztec and the other Meso American cultures enjoyed a level of civilization which equates or surpasses our own level.

Appendix I Pantheon of Aztec Deities

Water deities

- Tlaloc, god of thunder, rain, and earthquakes.
- Chalchiuhtlicue, goddess of water, lakes, rivers, seas, streams, horizontal waters, storms, and baptism.
- Huixtocihuatl, goddess of salt.
- Opochtli, god of fishing.



Embodied spirits; Tonalleque (1), Cihuateteo (2).

Fire deities

- Xiuhtecuhtli, god of fire.
- Xantico, goddess of firebox.



Sky deities

- Tezcatlipoca, god of providence, matter and the invisible, ruler of the night, Great Bear, impalpable, ubiquity and the twilight, the lord of the North.
- Xipe-Totec,

Patterns of War; (1a) Tlaloc, (1b) Xiuhtecuhtli, (2a) Mixcoatl, (2b) Xipe-Totec.

god of force,
patron of war,
agriculture,
vegetation,
diseases, seasons,
rebirth, hunting,
trades and
spring, the lord of
the East.

- Quetzalcoatl,
god of wisdom,
life, knowledge,
morning star,
fertility, patron of
the winds and
the light, the lord
of the West.

- Huitzilopochtli
, god of will and
the sun, patron
of war and fire,
the lord of the
South.

- Ehecatl, god
of wind.

- Ehecatotontli,
gods of the
breezes.

- Coyolxauhqui,
goddess of
moon.

- Meztli,
goddess of
moon.

- Tonatiuh, god
of sun.

- Centzonmimix
coa, 400 gods of



Patterns of Merchants; (1a)
Huehuecoyotl, (1b) Zacatzontli, (2a)
Yacatecuhtli, (2b) Tlacotzontli, (3a)
Tlazolteotl, (3b) Tonatiuh.

Lords of the Day

- Xiuhtecuhtli, god of fire.
- Tlaltecuhli, god of the
earth.
- Chalchiuhtlicue, goddess of
water, lakes, rivers, seas,
streams, horizontal waters,
storms and baptism.
- Tonatiuh, god of the Sun.
- Tlazolteotl, goddess of lust,
carnality, sexual misdeeds.
- Mictlantecuhtli, god of the
Underworld.
- Centeotl, god of maize.
- Tlaloc, god of the thunder,
rain and earthquakes.
- Quetzalcoatl, god of
wisdom, life, knowledge,
morning star, fertility, patron of
the winds and the light, the lord
of the West.
- Tezcatlipoca, god of
providence, matter and the

the northern stars.

- Centzonhuitznahua, 400 gods of the southern stars.
- Tlahuizcalpantecuhtli, god of dawn.
- Xolotl, god of sunset.

Lords of the Night

- Xiuhtecuhtli, god of fire.
- Itztli, god of flint.
- Piltzintecuhtli, god of the temporals, the rising sun and healing.
- Centeotl, goddess of maize.
- Mictlantecuhtli, god of the Underworld.
- Chalchiuhtlicue, goddess of water, lakes, rivers, seas, streams, horizontal waters, storms and baptism.
- Tlazolteotl, goddess of lust, carnality, sexual

invisible, ruler of the night, Great Bear, impalpable, ubiquity and the twilight, the lord of the North.

- Mictecacihuatl, goddess of the Underworld.
- Tlahuizcalpantecuhtli, god of dawn.
- Citlalicue, goddess of female stars (Milky Way).

Earth deities

- Tonacatecuhtli, god of sustenance.
- Tonacacihuatl, goddess of sustenance.
- Tlaltecuhctli, god of the earth.
- Tlalcihuatl, goddess of the earth.
- Chicomecoatl, goddess of agriculture.
- Cinteotl, god of the maize.

Matron goddesses

- Coatlicue, goddess of fertility, life, death and rebirth.
- Chimalma, goddess of fertility, life, death and rebirth.
- Xochitlicue, goddess of fertility, life, death and rebirth.
- Toci

misdeeds.

- Tepeyollotl,
god of the
mountains.
- Tlaloc, god of
the thunder, rain
and earthquakes.

Appendix II

This is the numerical structure of
the Mesoamerican Tzolkin Cycle of

$$20 \times 13 = 5 \times 4 \times 13 = 260,$$

which is irreducible:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
1 2 3 4 5 6 7 8 9 10 11 12 13 1 2 3 4 5 6 7
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
8 9 10 11 12 13 1 2 3 4 5 6 7 8 9 10 11 12 13 1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
2 3 4 5 6 7 8 9 10 11 12 13 1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
9 10 11 12 13 1 2 3 4 5 6 7 8 9 10 11 12 13 1 2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
3 4 5 6 7 8 9 10 11 12 13 1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
10 11 12 13 1 2 3 4 5 6 7 8 9 10 11 12 13 1 2 3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
4 5 6 7 8 9 10 11 12 13 1 2 3 4 5 6 7 8 9 10
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
11 12 13 1 2 3 4 5 6 7 8 9 10 11 12 13 1 2 3 4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
5 6 7 8 9 10 11 12 13 1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
12 13 1 2 3 4 5 6 7 8 9 10 11 12 13 1 2 3 4 5
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
6 7 8 9 10 11 12 13 1 2 3 4 5 6 7 8 9 10 11 12
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
13 1 2 3 4 5 6 7 8 9 10 11 12 13 1 2 3 4 5 6
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 1
7 8 9 10 11 12 13 1 2 3 4 5 6 7 8 9 10 11 12 13 1

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Appendix III

**This is the numerical structure of the Chinese
Stem-and-Branch Cycle
of $12 \times 10 = 4 \times 3 \times 5 \times 2 = 120$,
which reduces $4 \times 3 \times 5 = 60$:**

**1 2 3 4 5 6 7 8 9 10 11 12
1 2 3 4 5 6 7 8 9 10 1 2
1 2 3 4 5 6 7 8 9 10 11 12
3 4 5 6 7 8 9 10 1 2 3 4
1 2 3 4 5 6 7 8 9 10 11 12
5 6 7 8 9 10 1 2 3 4 5 6
1 2 3 4 5 6 7 8 9 10 11 12
7 8 9 10 1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 1
9 10 1 2 3 4 5 6 7 8 9 10 1**

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Contact

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'Other people, he said, see things and say why? But I dream things that never were and I say, why not?'

Robert F. Kennedy, after George Bernard Shaw