A MAYAN MILESTONE

by Hugh Harleston, Jr.

On the first day of August, 58 years after my first visit to the Teotihuacan Valley, I was allowed to find a Mayan milestone, a marker on the road to unified space and time, a mathematical marker called a "factorial."

A factorial is a product of all positive whole numbers from the number one to a selected number. For example, factorial three, symbolized by 3!, is one times two times three. The product is the number six. If I continue multiplying, I see that factorial five is the number one hundred twenty: 5! is 120, or one times two times three times four times five.

Any number, as everyone discovers, can mean whatever I decide to assign it. If it is minutes, then 120 is two hours of sixty minutes, because we have agreed worldwide to make an hour be sixty seconds per minute and sixty minutes per hour. This holds only if we continue to agree to this arbitrary selection.

If I assign a value to a piece of ceramic or stone used as the measure for laying out the Great Pyramids of Mexico at Teotihuacan, then 120 of these rulers will be a precision model of our polar diameter, reduced one hundred thousand times,.

If I divide my model sphere into twenty equal surface triangles, then each can be subdivided into only *six* smaller triangles. All are curved like a child's balloon. The 120 triangles are not duplicates, because sixty of them are curved differently from the other sixty. They have to be bent backwards to fit over the others.

With the Mayan rod used at Teotihuacan each smaller triangle has an <u>area</u> of six times seven times nine. If the units assigned are earth revolutions (we call them "days,") the <u>area</u> of each triangle can count the reappearance overhead in the sky of the planet Saturn every 378 <u>days</u>, six times seven times nine.

But astonishment does not end here. A great Quadrangle was built, with sides of six times seven times nine rods. Six of these sides measure the length from north to south of a rectangle that defines the Monumental Zone area, a rectangle whose width is two Great Squares. The area assigned the name – "Ceremonial Zone" – covers twelve squares shown by what I have suggested be renamed the Quadrangle of Saturn. Mayans combined space and time measures, so that their Monumental Zone is also two by six Saturn orbits, seen from earth.

The wonder grew when I found that twenty times the six orbits of Saturn becomes the <u>surface area</u> of my earth model. But then came more: twenty earth model areas become the number that measures its <u>volume</u> in <u>cubic</u> units with high precision.

And to leave me speechless: that volume divided by six is the number of <u>days</u> in four hundred <u>orbits</u> of Saturn. Each time period of 400 Saturns, registered on stone stelae, is equal to one hundred walks around the Great Quadrangle of Saturn. Each walk is four times 378: one thousand five hundred and twelve. This number, in Mayan bar and dot code, is sculpted on the wall of a mural in the chamber underneath a multi-column patio assigned a speculative Aztec name: Palace of the *Quetzal* Butterfly.

What does all this have to do with factorials? Study of Teotihuacan's architecture confirms that the basis for Mayan measurements of space and time given by the design of their Great Pyramidal Zone, whose architecture is a time-count model of our solar system, was factorial 9! …

<u>362,880</u>

in Mayan format: <u>36</u> <u>288</u> <u>0</u>

Our solar system, like life itself, is a mathematical game played by *Hunab Ku*, the Giver of Unified Measurement. Teotihuacan is a monument to mathematical truths.

In order to reach this conclusion thousands of conversions were made to map the "Ceremonial Zone" in Standard Teotihuacan Units (STU). The first data were presented in September of 1974. Significant repeating dimensions have been reconfirmed. Of the 127 factors of 9! that I tested, 56 are principal dimensions.

Mayan time counts, verified by previous scholars, are whole numbers that produce the six-digit factorial and higher. I plan to add tabulations of these factors and new conclusions to my website:

<u>Mayan Treasure: Space and Time Unified at Teotihuacan</u>
Posted on <u>www.harleston13.com</u>
By Hugh Harleston, Jr. – © - 1974-2005

This essay, appearing on earthmatrix2004(at)yahoo.com, includes an explanation of map accuracies, a one-page summary of salient points in *Mayan Treasure*, and an abbreviation of the construction of a Mayan Multidimensional Matrix. Also included is my map of Teotihuacan (1998) in Standard Teotihuacan Units (STU) of 1.0594(6)…meters, redrawn from data accumulated between 1974 and 1998.

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Information identified by the subject research project includes dimensional data published by the author since 1974. This supplement is to clarify that the principal parameters of measurements at Teotihuacan were shown in my first paper (*A Mathematical Analysis of Teotihuacan*, 1974,) with minor corrections in subsequent publications. It is pertinent that the accuracy of topographical maps made by Mexican Government Survey Studies were machine-corrected from aerial photographs (scale 1:50,000,) such that the linear dimensions on the Teotihuacan high plateau are to be seen as plus or minus 50 centimeters.

Rounding of these data obeyed my policy of not exceeding the accuracy of those maps. Field confirmations were made with steel tape, and defined in many cases by cut stone dimensions, including smaller sculptures that give the base unit of measure: one meter, 5.94(6) centimeters, or namely 1.0594(6) meters.

My research also included using maps made by the Mexican Defense Ministry on a scale of 1:2,000 that showed contour lines for elevations of plus or minus 50 centimeters. These maps were made available by the Interamerican Geodesic Service (IAGS) in Mexico City. The IAGS also provided geographical coordinates from U.S. Defense Mapping sources, Washington, D.C., for the bronze plate on the southwest corner of the fifth body of the largest pyramid, arbitrarily assigned the name of "Sun" pyramid by early students of the Mexican Institute of Anthropology and History (I.N.A.H.) All naming has been Aztec, not Mayan. Coordinates were corrected by reading steel tape to the center of the sixth "body," a formless lump of stones and mortar refilled in later decades by I.N.A.H. It was not possible to define the sixth structure, although paintings by Mexican professionals had in the 19th century demonstrated that there were six stages on the Great Pyramid. These corrected coordinates were published in a technical paper presented by me in 1976 at the Congress of Americanists in Paris, France, to define the center of the Great Pyramid of Teotihuacan with an accuracy of plus or minus 0.08 seconds of an arc for Latitude and Longitude: namely, North Latitude 19 degrees-41 minutes-30.8285 seconds; West Longitude 98 degrees-50 minutes-35.8122 seconds. (See Bibliography, Section I, Internet.)

This locates the point within plus or minus 2.5 meters. Coordinates published by the official Map (Rochester Univ./University of Texas Press, 1973) are N.19d-41m-30s and W.98d-50m-30s, obtained by graphical approximation. They are obsolete, since they show a point that lies 25 meters to the south and 179 meters east of the actual centerpoint of the Pyramid. Even today the GPS system for civilians does not permit the accuracy used by the Defense Departments of Mexico and the U.S.A.

The preceding is to underline that the mathematical model of the Ceremonial Zone is supported by evidence in stone and by reliable data that has not been arbitrarily molded by subjective thinking. The comparison with data from Greece, Egypt and ten other world locations has borne out the conjecture that in the remote past a high technology civilization could have been a reality on this planet. Students are invited to evaluate the correlations in *Mayan Treasure* with critical review.

Tijuana, B.C., Mexico
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Mayans unified space and time in whole numbers. They synthesized planetary movements with dimensions at Teotihuacan, a pyramidal complex 45 kilometers northeast of Mexico City. Their architecture defines mathematical geometry, plus other relationships that are invisible with French meters, Egyptian circles and Babylonian seconds.

The builders' measure was one meter, six centimeters, that I have designated an STU, Standard Teotihuacan Unit, to mark whole numbers among pyramids, courtyards and palaces that show universal spheres, cubes and tetrahedrons with numerical values, the same no matter which units are assigned.

A sphere of diameter <u>six</u> fits inside a cube with a side of <u>six</u>, as well as in a regular tetrahedron <u>twelve</u> units high. A single number can define multiple dimensions.

A circle's length is its diameter multiplied by <u>*Pi.*</u> Possibly Mayans knew an exact value, but applied an intentionally inexact <u>*Pi*</u> to define multiple dimensions with the same number. A universal sphere's *area* and <u>*volume*</u> are one-twentieth of the north-to-south <u>*length*</u> of a rectangle enclosing structures today named "Citadel" and "Moon Pyramid."

The great rectangle's *length* suggests six orbits of Saturn. The largest square construction – the Citadel – presents the count of Saturn's reappearance, its synodic orbit: six times seven times nine <u>*days.*</u> Significant STU dimensions repeat (see map.)

Two thousand *areas* (or <u>*volumes*</u>) of a universal cube, plus a day-count correction, mark a Mayan long-term Venus orbital count, in the form of an invisible rotating five-pointed star. One million tetrahedrons, each twelve STU's tall, measure the north-to-south diameter of our planet. STU dimensions and Mayan planetary counts are whole number factors of what mathematicians call "factorials": one times two times three…, and so on up to sixteen factorial, a fourteen-digit number.

Vertical levels at Teotihuacan confirm that Mayans knew elevations above mean sea level. The structures show us a scale model of earth. Six significant numbers were used that are duplicated in the architecture of the Greek Parthenon (438 B.C.) The Parthenon, however, was designed with Pythagorean Diatonic Units, an independent system not found in America, to my knowledge.

Teotihuacan, said to date to 750 B.C. is a monument to mathematical truths, a Mayan Rosetta, but Mayans are now believed to have begun in at least 8,239 B.C. In Guatemala 16,117 B.C. is carved on a Mayan stele. The synodic orbits of Saturn and Jupiter, and their conjunctions were registered with precision by the Mayans, and encoded in Teotihuacan's art and abacus inscriptions. They also appear as factors of the architectural volumes of the magna design.

Space/time integration might be found in other ancient sites if we view them through Mayan eyes.

For details please see:

<u>www.harleston13.com</u>

Mayan Treasure: Space and Time Unified at Teotihuacan

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Research Summary 1971-2004, 72 pp. of text; 20 drawings, 16 tabulations, posted Internet Nov.2004 in IV Sections (Section V pending 2005) by Hugh Harleston, Jr. – © - 1971-2005

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What is multidimensional? "Multi-" means "many;" "dimensional" is a manner of measurement. A matrix can show a series of concepts that are related. The Mayan bar-and-dot system for numbers (not calendar counts) consists of a series of boxes, one above the other, that form an abacus to add, subtract, multiply and divide numbers. On the left, a vertical stack of four boxes. One dot in the lowest box stands for the number "one;" a dot in the next higher box is "twenty;" in the third box, it's "four hundred;" in the fourth "eight thousand." Each next higher dot is multiplied by twenty. Twenty, four times five, is a key Mayan count.

Add another four-box column to the right of the first stack. Instead of the number "one"we use "thirty-six," area of a square with sides of six. The units do not matter: centimeters, inches, whatever. The answers will be the same numbers. In the next box we see twenty times the first number: seven-hundred-twenty.

Move up a box. Multiplication by twenty is fourteen thousand-four-hundred: twelve times twelve times one hundred. This is two Mayan day counts, called "*Katuns*." The fourth box will show twenty times two *Katuns* of 7,200 days: a Long count called "*Baktuns.*" "Days" are revolutions of the Earth on its axis.

What could be a new relationship?

Add a third column of four boxes. The lower box number is obtained by multiplying thirty-six by an intentionally inexact value of *Pi*, the ratio of a circle's circumference to its diameter. Mayans used seven times nine (63), divided by four times five (20.) 36 *Pi* is the area and *volume* of a unique universal sphere of diameter six, and radius three units. The shared number is 113.4, but instead of a decimal value Mayans could put three "Citadels" divided by ten units: 1134 / 10. Or other whole numbers, such as (18x63) divided by (2x5.)

In the second box, twenty times 113.4 is the design *length* of the "Ceremonial Zone:" 2,268 STU. Simultaneously this is the daycount of six orbits of Saturn. The number also measures the *length* of six Earth circumferences, as well as the *area* of a spherical triangle, if our planetary model is divided into twenty equal triangles.

Again multiply by twenty to get the *Total Area* of a rotating earth model reduced one hundred thousand times. 45,360 *square* STU appears in the third box (p.7.) Again multiply by twenty. It's the *Volume* of our earth model: 907,200 *cubic* STU.

MAYAN MULTIDIMENSIONAL MATRIX

° A dot is eight thousand (a cube twenty per side)	Two *Baktuns*-Long Count in earth revolutions	*Volume* of Earth model, reduced 100,000 times
° A dot is four hundred (a square twenty per side)	Two *Katuns* A Long Count in days	*Area* of Earth model, reduced 100,000 times
° A dot is twenty	Orbits for Jupiter to cross one-third of Zodiac	Six Saturn orbits (days) or Area, spherical triangle
° A dot equals one	A square with sides of six or a 36-spoke wheel	Area *and Volume* of a Universal Sphere, D=six
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NOTES: (1) The intentional inexactitude for Mayan *Pi* = 63 / 20 = 3.15. This value makes correlations visible as integral numbers.
(2) Teotihuacan artifacts include thirty-six-spoked wheels.
(3) "Orbit" refers to synodic reappearance, seen from earth. This applies throughout this research. H.M.Calderon showed that sidereal orbits were known to Mayans, by clocking positions as a planet crosses the Pleiades (*Tzab*, rattler of *Kan* the Serpent constellation.)

MAYAN *PI* PRODUCES INTEGRAL VALUES THAT CANNOT BE SEEN WITH MODERN UNITS: FRENCH METER, EGYPTIAN 360-DEGREE CIRCLE, BABYLONIAN SECOND OF TIME. IF A DECIMAL VALUE FOR *PI* IS USED THE RESULTS ARE IRRATIONALITIES.

A Mayan Milestone: THE MULTIDIMENSIONAL MATRIX in numbers

NUMBERS	MAYAN COUNTS	RELATED VALUES
(20x400) (dot) = 8,000	288,000 x *Pi* = (= 14,400 x 20)	907,200 (= 45,360 x 20)
(20x20) (dot) = 400	14,400 x *Pi* = (= 720 x 20)	45,360 (= 2,268 x 20)
(20x1) (dot) = 20	720 x *Pi* = (= 36 x 20)	2,268 (= 113.4 x 20)
(dot) = 1	36 x *Pi* =	113.4
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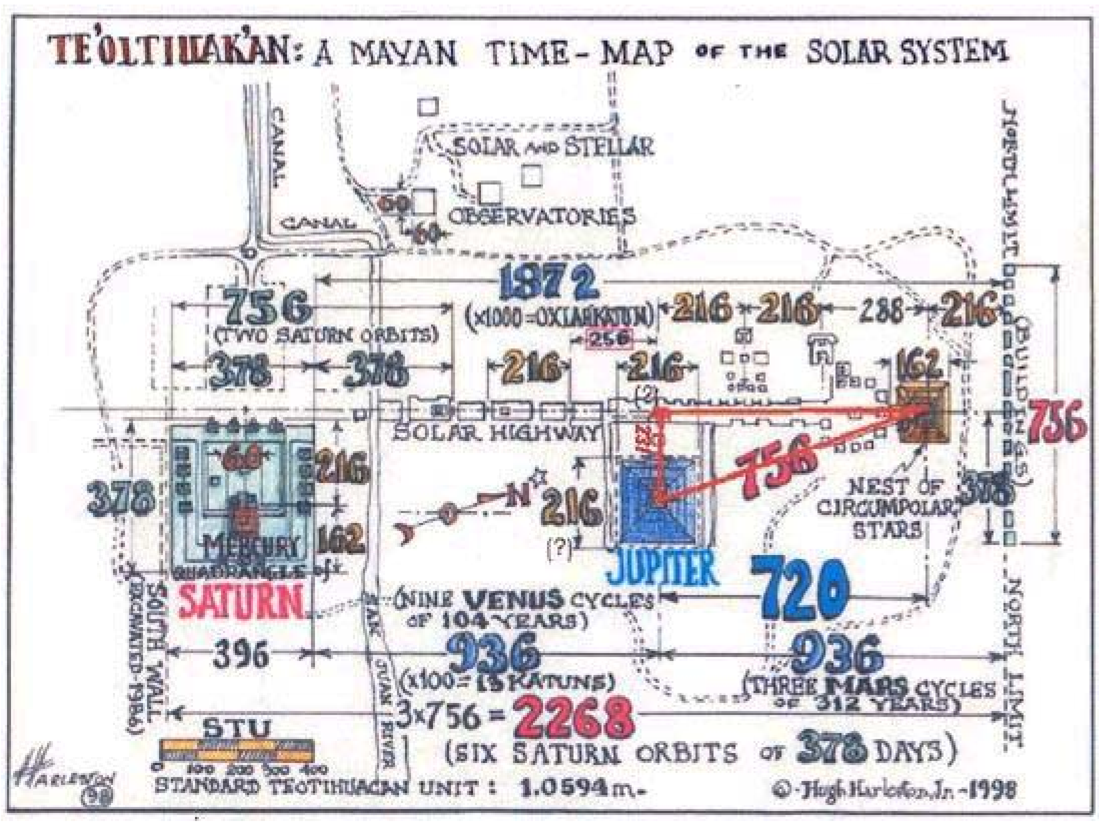
NOTES:

These numbers correspond to the text in words, page 6. A Universal Circle must have a radius of 3 and a diameter of 6; area and volume are found using *Pi* = 63 / 20 = 3.15; therefore 36 *Pi* = 113.4 units = 567 / 5. Other values in whole numbers are: (3x378) / 10 = 1,134 / 10 = 2,268 / 20 = (42x27) / 10 = (21x54) / 10 = 362,880 / 3200. Almost every number underlined on this page is a whole number dimension and a factor of 9!... or 36 288 0 as Mayans might have seen it (1008 *Tuns* of 360 days, probably by adding 360,000 = 1,000 *Tuns* to eight *Tuns* = 2,880.) It is significant that the sum "1,008" = 720 + 288.

The World Model is Radius 60 and Diameter 120 STU: 6 times 20. The circumference of a rotating dynamic earth sphere model will be an averaged value of 6 times 7 times 9 = 378. Underlined numbers are found at Teotihuacan as dimensions. 36, 144, 288, 720 and other dimensions repeat.

If a bar is used in the lower box, it signifies five times the dot, or 5; up one box, it is 100. In the third box, a bar's value is 2,000. The preceding applies to a mathematiccal abacus. Mayans also used a calendar abacus, in which the third box has a value for one dot of 20 x 18, or 360 days (the *Tun*.) One box higher, this value becomes 20 x 360: the *Katun* of 7,200 days. The next box is to show 20 x 7,200 = 144,000, the daycount of a *Baktun* (or *Niktekatun*).

MAP OF TEOTIHUACAN IN STD. UNITS OF 1.0594(6) METERS



[<u>Data sources</u>: (1) official Teotihuacan Map/Univ.of Rochester/U.of Texas Press; (2) Inter-American Geodesic Services (IAGS), Mexico City; (3) Secretaria de la Defensa, Mexico ; (4) Defense Mapping Agency, Wash - ington, D. C. via IAGS-Mexico; (5) Aerial Mapping, Comision de Estudios de los Territorios Nacionales, (CETENAL), Mexico, D. F. - 1974 to 1981.