NOAH'S ARK: ITS GEOMETRY

CONTENTS

TABLE of FIGURES

NOAH'S ARK - ITS GEOMETRY

An earthquake May 15, 1948, caused a mud flow on the slopes of the mountain southeast of Dogubayezit, Turkey. This quake ruined a farmer's hay field and exposed a formation in the shape of a ship at an elevation of 6,300 feet above sea level. Photographed frequently, it has been only since March of 1985, that real measurement has occurred.

Measurements were made of the arrangement of iron locations detected in the formation using subsurface radar units, metal detectors, frequency generators, transits and tape measures. The dirt outline, itself, wasn't measured. The depth could not be measured with the available equipment. A pattern did emerge to the designer's choices of those principle dimensions that could be determined. While a depth could not be measured one can be logically assumed consistent with the emergent pattern.

A calculation procedure consistent with the discovered pattern can be used to estimate a depth of vessel. Indirect Support for the result is found in the Genesis and Sumerian accounts of "the flood". Direct support is found in the prominence of the golden ratio in the measurements made of the formation. This article is a sequel to the stability analysis in the previous treati titled, Noah's Ark, 24,000 deadweight tons, C & AH, Volume XIV, Part 1, January 1992.

The conclusions from the stability analysis are included here with the lofting (full size drafting) technique used for the analysis. Evidence is offered to show it was also probably the technique actually used by the builders of the Ark. The modern lofting procedure is that used for "balanced foil shapes" in NACA (National Aeronautical Civil Administration) curves. See "Theory of Wing Sections" by Ira H. Abbott and Albert E. Von Doenhoff, Dover Publications, Inc., New York, N.Y. The procedure produces a striking similarity to the dimensions of the arrangement of the steel masses in the formation. The similarity is so striking, in fact, as to cast into absurdity any notion that chance or "natural causes" are involved in the shape of the formation.

MARINE TERMINOLOGY

Some marine terms used in this paper will be defined here or the first time each is used. The **BOW** is the front end of the vessel and is shown to the right in the figures. The **STERN** is the rear or aft end of the vessel, shown to the left. The **BEAM** is the width of the vessel at its widest point. The average width is the deck area divided by the length. "**LOFTING**" a vessel is "drawing it" full sized, on the flat ground, i.e., surveying the layout for trueness to the intended shape.

LIGHT SHIP displacement of a vessel is the weight of water displaced by the immersed portion of the floating vessel without cargo or passengers. **FULLY LADEN** refers to water displaced by the immersed portion of the vessel, filled to capacity. (This vessel was probably never filled to capacity".) **DEPTH** is the vertical distance from the lowest point of the ship's bottom to the deck surface. **DRAFT** is the vertical distance from the lowest point of the bottom to the water surface. **FREEBOARD** is the vertical distance from the surface of the water to the vessel's weather deck (the difference between depth and draft). **MIDSHIP** is the longitudinal center of the vessel.

The shape used for the vessel below the water line is that of Thor Heyerdahl's reed boat, Ra I and Ra II. This results in a block coefficient a bit over .5 and is a reasonable assumption. The

BLOCK COEFFICIENT of a vessel is the actual volume of the underwater part of the vessel divided by the least volume of the rectangular prism drawn around the underwater part. The protection against rough seas is assumed to have been the water tight integrity of the superstructure up to the opening in the top, center of the roof.

SOURCE OF THE BASIC DATA

The plan view geometry of the artifact on Mount Cudi (pronounced "Judy"), seven miles SE of Dogubayazit Turkey was measured by David Fasold in 1985 and independently verified by John Baumgardner of Los Alamos Laboratories later that same year. Both were convinced of the validity of their "find". However, in the heat of controversy and after expenditure of vast sums of money, both have backed off from their original enthusiasm. Neither has obtained any additional information since their original work beyond "opinions" of experts who did not examine the site nor analyze the data taken by Fasold and Baumgardner.

Your author, in a group of ten, lead by Fasold, did personally verify some of the measurements in June, 1990. No deviation from the dimensions published by Fasold were found; not even as much as an inch. The Fasold determined dimensions being verified by "spot check", were faired into curved lines by your author using an "AutoCad, Release 10" computer program.

Curved lines were fitted among the measured data points. The curve was fitted to only one side, starboard (right side as you look forward) then mirrored. One part of the forward, port side of the vessel has been apparently crushed by a rock. The lines of iron locations compressed neatly around the rock just forward of the aft end of the "moon pool"; a term explained later in this article. The artifact's position and the shapes of the deformed lines suggest the vessel slid down the mountain, rotating counterclockwise about 240 degrees and swinging its port bow hard into the rock formation. It is still held in place by that formation.

A slightly different and more round bow shape results from fitting a single curve, simultaneously to both sides of the vessel. The curve fitting was to the actual measured dimensions and not to any presupposed original shape. Damage to the port bow required the forward measurements be taken only from centerline to starboard. All other dimensions were verified port and starboard.) This paper is concerned with:

a. The raw data of the measured vessel dimensions,
b. Records in ancient literature, and
c. The fact that both the unit of measure and the golden ratio are common to this artifact and the Great Pyramid of Giza.
d. The prominence of the golden ratio in the Solar System and the probability that the Ark was built to avoid tidal (both ocean and magma) effects by a body deviating from the otherwise "normal pattern". This article doesn't attempt to prove this was true. The assumption is that the ancients' believed it was true.

The upper left corner of Figure 1 shows an exact scale drawing of the dimensions of the artifact measured by David Fasold and described in his book, "The Ark of Noah" Wynwood Press, New York, NY, 1988.

The dimensions were all measured by the following procedure: Both a metal detector and a frequency generator were used to locate the discrete positions of iron masses (most are spaced about 21 inches apart in lines, both longitudinal and transverse). Stakes were driven at the loci of the iron and surveyor's ribbon was laid on the ground over the stakes. The distances

between ribbon centerlines were measured where transverse lines intersected longitudinal lines.

There are approximately 5400 discrete iron masses. While four are quite large, perhaps 4 feet in diameter, the majority are small. Only iron based metal locations were used for this measuring activity. For those who have yet to read Fasold's book, he reports 85% pure manganese nodules are also found in the artifact. The maximum purity of natural manganese nodules is 25%! Manganese of greater purity can be obtained only by electrolysis.

Except for your author in 1990, none of the people measuring the dimensions of the vessel have ship design experience. Had there been any attempt to "fudge" the readings in a dishonest desire to produce "correct" dimensions for ship design, the examiners would not have known in what direction to bias their readings. These people were simply being very careful to accurately report their findings. All independent measurement activity has verified Fasold's original values within 1/10 of one percent. Discovering the principles used to design the ship can be confidently achieved because of the integrity the investigators exercised.

The fact the sharp ended stern is uphill from the rounded bow by about 98 feet eliminates the possibility of the shape being formed on this mountain by water flow. The hydrology of formation by water flow can be easily demonstrated with a garden hose and sand box. The round end always faces into the flow and the flow leaves at the sharp end. This feature should not be ignored by geologists eager to convince the public the artifact is naturally formed.

The details of the Ark such as the presence of dirt and clay deposits in "log appearing shapes, complete with circular grain similar to petrifaction; locations of column pressure plates (large flat stones), etc. are not a part of this article. They demand explanation from detractors but do not contribute to the geometry analysis offered here.

EXAMINATION USING MODERN ANALYSIS

Figure 1 shows the calculated ship characteristics relating to the actual dimensions of the artifact and assume the geometry developed in this article.

1. The depth = the beam divided by the square of phi. It also = the beam minus the average width of the deck area. (This is explained later in this article.)
2. Displacement calculations account for the roundness of the hull by taking the length at the loaded draft waterline as two feet shorter and the beam one and three quarters feet narrower than the deck edge dimensions. This correction wasn't used in the lofting analysis of the geometry. It was for stability and displacement.
3. The section shape is assumed to approximate the section used by later reed rafts in Peru and North Africa.

Figure 2. shows the proportions of the principle dimensions. The alignment of the shape of the measured artifact is shown overlaying the theoretically ideal or "designed" shape. When the Ark was first built it almost certainly conformed more closely to this theoretical shape than to the deteriorated dimensions of today's artifact. The reader will note that the differences in actual and theoretical dimensions are slight.

Even with the differences, the actual curves and locations of major dimensions and the beam/moon pool center are consistent with the theoretical. This is true both in dimension and in proportion. Your author is nearly certain that the original design was created by the modern method used here! Other lofting and curve fitting methods do not produce this conformity.

"Chance" is as good an explanation for this formation as it is for an Orangutan being able to assemble an operating Battle ship from spare parts.

ABOVE DECK CONFIGURATION

The deckhouse is assumed to conform to the Sumerian "quonset hut" style house. Mr. Robert Dipple of Florence, Kentucky, has built a scale model at 1" = 30'. He had to solve some geometry problems and did so using the ancient Sumerian quonset hut style deck house. I believe his deck house configuration more probable than Fasold's gabled ended deck house. The proposed "above deck" configuration in this paper has been modified accordingly.

THE SIZE OF THE ARK

The Epic of Gilgamesh has Utnapishtim telling Gilgamesh that he (Utnapishtim) made the ark's deck one IKU in area. He elaborates to say that this IKU was 120 by 120 [Great Babylonian or 21"] cubits in shape. The area in square inches then would have been 6,350,400. (The success of a square configuration would be no greater than that of a narrow rectangle, 300 by 50 [Egyptian or 20.6"] cubits. The area in square inches of the Genesis account would be 6,365,400. I.e., Either shape would have been destroyed in the high velocity water of the tidal flood.) Both referred to the area of the deck and not to its shape.

The great cubit of Sumer was 21 inches long and an IKU therefore contained 44,100 square feet of area. This area is identical to the modern English acre. The words are similar. Both the word and the size of the English acre seems to come directly to us from ancient (ante-diluvian) Sumer and Chaldea. (Noah was from Shurupuk in Chaldea) The length of the Ark was measured twice by Fasold to be 515 feet or 6180 inches. Baumgardner measured it once to be 6186". A designation of 300 cubits in length suggests the recorder employed the Egyptian cubit, 20.6 inches long. As these things go, the Egyptian cubit might have been 20.62". In any case, there is only .1% difference among the measurements.

THE GOLDEN RATIO

An Italian adventurer named Leonardo Fibonacci first brought Arabic numerals to Europe in the thirteenth century. Fibonacci is credited with discovering the "golden ratio" and with one of the techniques for deriving it. This golden ratio, 1.6180..., is a number significant to nature in that it portrays the manner in which many things grow. It is an "irrational" number, however, in that it has no exact value. Neither is there a pattern of repeating digits, regardless of the number of decimal places developed. The spirals of conch shells and tornadoes and the leafing out of a branch are examples. There is one more example that is probably the reason the number was nearly deified by the ancients.

The ancients claimed "Jove" (Jupiter or Zeus Pater) called the tune for all of the planets. Bode attempted to identify a pattern for the planets and their orbits around the Sun but failed. The correct model couldn't be employed by Bode without Chaos Mathematics and that study is only a couple of decades old. My persuasion is that the presence of Jupiter and Saturn and their outsized massiveness determines Solar System stability (or lack of it). The most stable configuration will be one in which precise repeated position of all of the bodies is denied.

The simplest such relationship is one where the orbit periods vary in multiples of an irrational number. Further, the best irrational number will be the smallest of those available that still

separates all of the bodies far enough apart to minimize the direct effect of their interacting gravities.

The natural log base, e, (2.7182818...) is such a number but it is slightly larger than the square of phi (2.618033989...). The next lower "naturally popular" irrational number is phi (1.618033989...). (The square roots of both 5 and 7 are candidates but do not appear independently in nature.) The majority of the visible solar system seems to be organized in accordance to phi squared. Mercury's period approximates Saturn's divided by phi to the tenth power. (10750 days divided by the product 1.6180x1.6180x1.6180x1.6180..for nine multiplication's.)

Venus' period approximates Saturn's divided by phi to the eighth power. The asteroid belt average approximates Saturn's period divided by phi to the fourth power. Jupiter's period approximates Saturn's period divided by phi to the second power. Uranus' period approximates Saturn's period multiplied by phi to the second power and Neptune and Pluto are equally either side of an orbit corresponding to Saturn's multiplied by phi to the fourth power. The period of any planet beyond Pluto is likely to be a few points off from Saturn's multiplied by phi to the sixth power.

Note the omission of Mars and Earth from this list. We have only one "slot" available for them. It is Saturn's period divided by Phi to the sixth power. The slot has a period approximating 610 days. However, there are two candidate planets vying for this position, not one! Earth's period approximates Saturn's divided by phi to the seventh power. Mar's period doesn't land within 10% of any phi multiple of Saturn's.

Mars was said to be the errant offspring of Jupiter. Friedman's article "Gravity's Revenge" page 54 in the 1990, May issue of Discover Magazine is worth reviewing. It is about Gerald Sussman's work showing the solar system to be an "unstable system". Sussman's Solar System model specifically notes the errant body to be Mars! Lets hope that if either Earth or Mars is ejected from the system, Mars receives the honor of an extended space voyage. Another example of "discrete placement" relative to phi squared is the little hydrogen atom. Hold the angular momentum of the electron constant and measure the energy of the electron in its various discrete energy levels. Subtracting the energy of the electron in level A from that in level B, then dividing that energy difference by the difference of the energy values corresponding to

levels C and B renders phi squared (2.618). Similarly (D-C)/(C-B) = phi squared, etc. In a fractal universe, it may be said "as in heaven, so below". (This is not a new comment on reality.)

PHI

Divide any length straight line into two segments so that the length of the larger part divided by the smaller equals the whole line divided by the larger part. If we call the two line segment lengths a and b, then a/b = (a+b)/a. Algebra scholars will conclude the golden ratio is one half the quantity of one plus the square root of five.

Phi = 1/2 of (1 + square root of 5)

The golden ratio may also be found by creating a particular series of numbers. Select any two numbers (The "Fibonacci series" usually starts with 0 and 1 but you can, if you want, start with 682 and 3). add them together to make the third. The fourth is the third added to the second, etc. After you have created about ten numbers in this manner, divide your last number by the

next to the last. In the series 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ..., 13/8 = 1.625; 21/13 = 1.615384615; 34/21 = 1.619047..

The value usually used, rounded to 8 decimal places is 1.61803399. Rounded off to four significant places, the number is 1.6180. The reciprocal (1/n) of the number (phi) is .6180... This is equal to the number (1.6180...-1). Similarly, the square of phi (n^2 or 1.6180 x 1.6180) equals 1 plus 1.6180 or 2.6180. (The reader is encouraged to play with this number a bit to really understand it. This isn't a good spot to skip on to a more interesting paragraph.)

SO WHAT

Ancient people were intrigued by this number, 1.6180... or phi, by 3.141593..., or pi, and perhaps by the natural log base, 2.7182818... or "e". I suspect the "divinity" of phi and of the number 5 are related to ancient astral observations. They faulted Mars for not fitting the pattern. They seem to have been proved partly correct both by what needed to be done and by who needed to do it (Jupiter).

Looked at from a mythological perspective, Noah wanted to escape the deluge caused by the one planet (other than Earth) not conforming to the pattern. Noah could have felt his best chance was to build a ship with as much phi in it as possible. This assumes Noah more superstitious than history describes. From an Engineering perspective, Noah could have wanted to minimize resonance and amplitude of vibration throughout the vessel. Making the ratios of the principal dimensions conform to the least energetic, irrational number offers the best guarantee. Again, it is hard to argue with success!

ANCIENT EVIDENCE OF THE GOLDEN RATIO

While Fibonacci is credited with the "discovery" of the golden ratio, the number has long been known to appear in at least one other place on earth as a monument to ancient technology. This unique number can be obtained by dividing the area of the surfaces of the Great Pyramid of Giza by the area of the pyramid's base. (The perimeter of that monument, when divided by its height gives the value of 2 times pi. There is a slight discrepancy between the values of pi and phi produced by assuming all surfaces are "flat planes". This discrepancy was eliminated by the builders when they dished the surfaces slightly to increase the surface area.)

THE ARK'S GEOMETRY AND THE GOLDEN RATIO

Figure 2 summarizes the relationships of those measurements and of the depth mentioned in Genesis. The major transverse chord (maximum beam) is located at the center of the moon pool. The expression "moon pool" is chosen because the vertical hole through the vessel reminds us of the vertical hole in an off shore drill rig vessel. The Ark's moon pool provided forced air ventilation via the roof opening (wave action), access for handling anchor stones, access for dumping garbage and manure, and provided a "softening" of the buoyancy amidships. This last was crucial to maintenance of the structural integrity of the vessel in heavy seas. Without it, the hogging and sagging stresses could have demolished the vessel.

The distance from this major chord to the stern of the vessel is 3819 inches.

[1] 6180 / 3819 = 1.618

The distance to the bow, therefore is the difference or 2361 inches.

[2] 6180 / 2361 = 1.618 x 1.618 (& is 1 + 1.618)

The beam was established by multiplying the desired deck area by 1.6180 then dividing that by the length of the vessel. This describes the smallest rectangle into which the boat shape will fit. Ea's (Yahweh's?) requirement was that the area be 44,100 square feet (from the Epic of Gilgamesh). The Genesis account is nearly the same area. It differed mostly in that they used a cubit of 20.6" as compared to the great cubit of 21" and asked for the area by stating one of the principle dimensions. Because the shape of the Ark was developed from a "camber" curve and ellipse (shown in Figure 2), the area inside the deck "circumference" exceeds the 44,100 square feet by exactly 5289.67 square feet. The designers therefore assigned this as the required area to be taken out by putting a rectangular hole through the raft. The Moon pool dimensions approximate this area difference. Note that this is a spectacular "coincidence" detractors would ask us to swallow as chance.

Their design then requires the moon pool area be 761,713 square inches. The total area inside of the "deck edge outline" was 7,112,113 square inches. The area of the deck is then the desired 6,350,400 square inches. This area, multiplied by 1.61803399 is the area of the circumscribed rectangle or 10,275,163 square inches. The rectangle width (and maximum beam of the vessel) is this larger area (10,275,163) divided by the desired length of 6180 inches. This was how Noah decided how wide to build

his vessel. The width of the rectangle is 1663 inches, 79.17 great Babylonian cubits, 80.73 Egyptian Cubits or 138 1/2 feet!

[3] (1662.65 x 6180) / (44,100 x 144in^2/ft^2) = 1.6180

This validates the lofting method. The camber circle and ellipse is a required method to produce a hydrodynamic shape that has exactly one acre of real deck space while still including a functioning moon pool; and, be 6180 inches long. (10,000 / phi or 10,000 x [phi - 1]).

[4] 10,000 x (1.6180 - 1) = 6180

Noah was nothing, if not consistent. He went on to determine the length of the moon pool by making it equal to the vessel's length divided by (L / 1 + 1.6180). The width (323 inches) was simply the required area divided by its length. The computer faired lines showed the measured 138 feet to not have been taken at the widest point. The measurement was made at the intersection of iron readings forward of the place the computer identified as the most probable widest point. The fitted curve shows the maximum beam occurs behind this measured point and not at it.

No one in 1985 had tumbled to the principles controlling the location of the maximum beam. There being no transverse line of iron masses located there, the maximum beam wasn't directly measured. Your author was similarly ignorant of the need to measure the beam at this point in 1990. (Your author didn't tumble to the pattern in the artifact or of planet period until August 19, 1991. One wonders how much more there is that we are not seeing.) Note, however, that the curve for the deck edge developed by the camber curve fits the actual dimensions only if the major chord occurs at the center of the moon pool.

Genesis records the depth to be 30 cubits. 1663 divided by the square of phi (2.6180), produces 635 inches, 30.24 great Babylonian cubits or 30.82 Egyptian cubits.

[5] 1663 / 635 approximates 1.6180 x 1.6180

The length of 6180 inches is 294.28 great Babylonian cubits and 300 Egyptian cubits. If the molded area of the deck is 6350400 square inches, this, divided by the length gives an average width of 1027.57 inches, 48.93 great Babylonian cubits or 49.88 Egyptian cubits. Genesis lists the width as 50 cubits. It appears the average width is intended and not the maximum beam. This is consistent with the concept that expressions of area in that earlier age was typically "X" cubits by "Y" cubits. It may be that they had no word for area, for volume, etc.

Given the variety of lengths the ancients called a cubit, it appears that both the Sumerian and Genesis accounts are "true". Only the length of the cubit differs slightly. The fact the phi ratio shows up in units of measure only in inches, it also appears that it was the inch and not the cubit that served as the actual construction dimensioning unit. The cubit appears to be a unit of measure employed by later examiners. However, the iron indications were approximately one cubit apart throughout the artifact. The clincher on this assumption of depth (recognizing Noah's penchant for symmetry) is that when the average width is added to the calculated depth, the sum equals the maximum beam!

In all of this, the slight variations from "perfect" are unavoidable because of the inexactness of the irrational number, itself.

LOFTING THE LINES

The lines of a vessel are lofted (drawn or laid out) using calculated offsets and curve fitting techniques. OFFSETS are simply the shape of the hull in a coordinate system. The numbers are distances of points along the deck edge from vessel centerline and from the bow. Today, we would loft these lines as follows:

a. Draw a circle at the point of maximum chord (beam) and divide one quadrant of the circle into equal angles (eight, in this example).
b. Divide the distance aft along the centerline into the same number of equal spaces (8)
c. Draw lines parallel to the center line, aft from the intersections of the angle lines with the circle the angle lines "divide".
d. Draw lines athwartship from the centerline space markers. (This is "up and down" on the paper, sideways across the vessel.) Fit a smooth curve to the intersecting points of these longitudinal and transverse construction lines.

The technique is most often applied to shaping a weather deck in cross section for modern ships. This is called "determining its camber" and is intended to promote water runoff. The phrase given to the process is "developing a curve from a camber circle". Occasionally, the process is used to shape a rudder cross section with the rudder stock to be located at the center of the camber circle.

This process isn't used today to shape the [plan view] deck edge in steel ships. Modern vessels have decks larger and of slightly different shape than the hull at the waterline. I.e., the bow plate is usually flared to deflect water from a crashing sea. The reed rafts of the Egyptians and Peruvians had "vertical sides" down from the deck to the water. Developing the shape of the deck with a camber circle is more applicable to the reed raft construction geometry than it is to either wood or steel ship geometry. The use of an ellipse drawing technique to shape the water breaking forward structure of a modern ship is similarly limited to rudders, nozzles, straight sided (vertically) vessels and "bulbous bows" on steel ships.

Figure 2 shows the curved shape drawn using the measured dimensions from "The Ark of Noah" overlaid by a shape developed using the above "modern" procedure. The differences

between the nine transverse dimensions and the percentage of width for each are:

Measured transverse:	developed transverse	%
420 inches (aft)	380.97	-9.3
756 "	696.272	-7.9
923.5* "	907.35	-1.7
1032 "	1040.326	+ .807
1196.5* "	1226.28	+2.4
1440 "	1447.49	+ .52
1608 "	1550.28	-3.59
1656 (fwd)	1600.41	-3.36
1485 "	1383.85	-6.81

* These dimensions were "faired" by the computer, not recorded from direct measurement. They were faired without regard to any relationship to phi (or to any other imposed "pattern").

The departure of the dimensioned and faired curve from the lofted lines is primarily an "increase" in width. This is reasonable, considering that the sides of a vessel tend to "splay out" when grounded and decomposing.

The vessel characteristics that result from the actual dimensions vary only slightly from those relating to the theoretical shape. These characteristics were enumerated in a previous article published in January of 1992, Catastrophism and Ancient History. They are:

- Light ship draft 25.75', Deep load draft, max.; 45.08'.
- Light ship displacement; 23,596 long tons (2240 LB/ton).
- Total displacement at maximum load; 48,219 LT.
- Beam (at waterplane); 136.83' (At the waterline).
- Depth; 51'.
- Length; 513' (At the waterline).
- Block Coefficient with capacity load; .534
- Distance Keel to Light ship center of gravity; 52.5'.
- Distance Keel to Deep load ship CG; 64.55'.
- Distance Keel to Light ship center of buoyancy; 17.608'.
- Distance Keel to deep load ship CB; 26.46'.
- Light ship GM (distance between cg and metacenter); 56.9'.
- Ship loaded to capacity GM; 3.17'.

Stability assumptions were:

1. The depth = the beam divided by the square of phi.

2. To account for the roundness of the hill, the length at the loaded draft waterline was taken as two feet shorter and the beam one and three quarters feet narrower
3. than the deck edge dimensions. This deviation is to maintain a conservative stance and wasn't used in the lofting analysis.
4. The section shape approximated the section used by later reed rafts in Peru and North Africa.

THE ANCIENT INCH

There is another monument from antiquity in which the inch appears prominently as the unit of measure. It is the Great Pyramid of Egypt. This artifact shows both the golden ratio, phi, and the number, pi.

There is a protrusion called the "boss" located in a side wall of the grand gallery of the Great Pyramid. The gallery is the passage down toward the "king's chamber. This "boss" is a half round protrusion of granite "on edge", five inches high, 2 1/2 inches in radius and 1.001 inches thick. (Smyth, in his dissertation on the subject a century ago, explains even that .001" difference. The boss is closer to the English inch as the inch existed before 1700 C.E.)

The sides of the boss are polished flat and are co-planar. The boss' only function seems to have been to record the unit of measure to which the pyramid was constructed. We now suspect it was to record the unit of measure as a "standard" for a much larger society. See "The Great Pyramid" by Piazzi Smyth, Bell Publishing Company, New York, 1990 edition, Pages 209, 290...

An incident is worth noting here. Smyth was castigated a bit for claiming the height of the Pyramid (5832.96 inches), multiplied by 1,000,000,000 was deliberately equal to the Earth's mean orbit radius and the inch being "exactly" 1/500,000,000 the polar diameter of Earth. When the distance to the Sun was accurately determined to be 93,000,000 miles, Smyth's 92,094,000 miles was too great a miss.

Consideration by Smyth's detractors should have been given to the implications of Pepy's Huge Diary and ancient calendars showing the pyramid was constructed at a time the Earth's orbit period was 360 days and not 365 1/4 days. The mean radius associated with the shorter year is 92,096,000 miles! The Etruscan and Roman ten month year had 36 days each, there are 360 "day statues" north of Tokyo, The Mayas had 72, five day weeks, etc. All had to be changed after the eighth century, B.C.E. to incorporate five extra days.

The association of the technologies (Sumerian, Chaldean and Egyptian) with modern English units of measure raises the obvious question, how did the inch and the acre come to England from Ante-diluvian Sumer and Egypt? similarly, why England and not other, closer countries? Did residents of England survive the world catastrophe, after being related to the ancient culture? Or, did people survive the catastrophe elsewhere and migrate to England shortly thereafter? However the inch got to England, it had to be physically taken there deliberately. Not many citizens of our world run around with a sample of the exact inch on their persons!

Other papers and books propose the mechanism and relationships among the change in year length, the flood, the use of large stones to resist floods, etc. See "Catastrophism and the Old Testament" (The Mars-Earth Conflicts) by Donald Wesley Patten, Pacific Meridian Publishing Company, Seattle, Washington, 1988. Also available is The "Recent Organization of the Solar System" by Patten and Windsor. Those interested in future orbit changes (and the obvious implication regarding past orbit changes) might read Freedman's previously mentioned "Gravity's Revenge."

SUSPICIONS

We now can step beyond our temerity and clearly itemize what is being said in this paper.

a. The inch and not the cubit was the standard of measure used in the design and lofting of the vessel. The "length" unit of measure in the ante-diluvian world was the inch (at least in ship and pyramid building). The "cubit" was a later and/or additional unit and varied a bit among cultures. Accounts of the Ark, written after the flood, even though a long time ago, described the Ark in their respective cubits, but without a decimal system. The builders used the inch. There is even an ancient decimal system implied here. This is particularly interesting because the Egyptians used a base 60 system and had no zero.

   One can begin to appreciate the fervor and dedication of scientists in all disciplines to claiming this particular artifact "cannot be Noah's Ark". With the exhibition of such advanced technology, the opposition of much of the world's religious community is understandable.

b. Both the inch and the acre came to modern England from ancient Chaldea, Sumer and Egypt. These units traveled through the veil of time, both in concept and precise size, virtually unchanged (at least until the last three centuries). These may, in fact, have come to the British Isles before the flood. If arriving later, some immediate survivors of that catastrophe must have emigrated to Britain in order to pass on their units of measure. They must also have "carried with them" a "standard inch".
c. The cultures that fashioned both the Great Pyramid of Giza and the Ark of Noah (Utnapishtim, Nu, etc.) had a common technology, at least regarding units of measure, a fascination with the golden ratio and the ability to construct complex shapes with great precision.
d. The ancient people maintained a standard measure somewhere, much as our modern scientists did for years in the Archives of Paris, France. A reasonable supposition is that the stone record in the great pyramid standardized the inch for a much wider area than just Egypt. When your author began his career, the definition of a meter was "the distance between two scribed marks on a platinum-iridium bar located in the Archives of Paris France and maintained at 20 degrees Celsius." The inch was defined as .0254 times that distance. The meter has since been redefined as "1,650,763.73 times the wavelength of the orange light emitted when a gas consisting of the pure krypton isotope of mass number 86 is excited in a electrical discharge". The modern inch, therefore is 41,929.39874 times that particular wavelength.
e. Divine inspiration had to do only with those generalities listed in the scriptures, i.e., size and function. The technology for how to comply with the inspired requirements was widespread and pre-existed the construction both of the pyramid and of the Ark.
f. After Noah and the flood, people examined the Ark very carefully. Its deck length, many transverse dimensions and its depth were measured. The deck area was then carefully computed and recorded variously as "an IKU", "120 by 120 cubits" and "300 by 50 cubits". This follows from the fact the deck area comes down to us in two different sets of numbers. Genesis' 300 by 50 cubits (Egyptian of 20.6" each) and Gilgamesh's 120 by 120 cubits (Great Babylonian of 21" each). The Gilgamesh account of the deck area is verified using the great cubit of Babylon. The Genesis account is verified in giving actual length and actual average width, using a cubit 2%

smaller than the great cubit of Babylon but providing an area within .24% of the Gilgamesh account.

g. Both the Ark and the Great Pyramid of Giza were built before the flood of Noah.
h. Pi (3.141593...), Phi (1.618033989...) and perhaps "e" were known to the architect(s) of the Ark and of the Pyramid of Giza. Also, it isn't just that the golden ratio was known as an "interesting number". The real world physics of things shaped around this number were also known; perhaps to a greater extent than is practiced today. The requirement that all visible planets have to fit into certain narrow bands, defined as functions of the square of phi, bounded by Saturn's and Jupiter's periods was known and revered by them.
i. The lofting (patterned lay out procedure) of ship's curves, using the "camber" circle to produce "parabolic-like" lines for smooth, vibration damped water flow wasn't "first" developed in modern times by the National Aeronautical and Civil Administration. The NACA 0024 balanced foil shown on page 327 of Abbott and Doenhoff's book nearly perfectly portrays the Ark's shape if the foil camber circle's center is moved from .3 times the length aft of the bow to .382 times the length, aft; and the offsets are increased by 15.9%. The procedure is ante-diluvian in original use.
j. The lofting technique of forming an ellipse is similarly ancient. (There is evidence at the Henges in England and in the ancient Western hemisphere observatories in the Andes, that ancient people employed ellipses for showing celestial relationships in their monuments. The Ark and the epic of Gilgamesh make it evident that they also knew how to calculate the area of the ellipse; a process requiring pi. Area = pi x a x b where a and b are the semi axes of the ellipse.

   (Some wistful geologists argue that the Turkish site is "natural" and that ancients measured it and invented the story. This presupposes the level of technology extant thousands of years ago included the ability to accurately measure ellipses, developed curves, and calculate areas in several different units of measure. Like finding an anatomically modern skeleton in undisturbed earth beneath precambien granite, it only changes the way in which accepted views of the past err. Cremo and Thompson include a record of such a find in their publication "The Hidden History of Man" and their out of print book, "Forbidden Archaeology".)

k. The design of the Ark was successful. The shape provided maneuverability, stability, low structural stress, good sea keeping characteristics, forced air ventilation (wave action in the moon pool), overboard discharge without side scuppers (holes in the sides, or freeing ports, with swinging plates), etc. It employed iron in its construction but avoided long electrical conductors from roof to sea.

   The basic ark material was non-conducting, much like a modern mine sweeper. With 200 mph winds and 100 mph current, this had to be an important feature. Frying in a lightening strike isn't being "saved from the flood". The World suspended between the tips of a bull's horns, the references to "the sword of the Lord", etc. all suggest people saw a heavenly image similar to the one they would see from Jupiter as Io passes overhead; and for the same electromagnetic reason.

l. The structural integrity of the Ark was sound. This is evidenced by the conformity of the artifact after 4500 years to the originally lofted lines.
m. The artifact southeast of Dogubayazit Turkey is not a "natural formation" nor is it a "monastery" of unusual shape. It is not a "yacht of medieval construction. It is the silted replacement of reeds and woods and the decomposed coating and fittings of a

grounded raft built by a very advanced culture. The culture had a technology exceeded only in the last few centuries by our own. (Even this statement may be overly Arrogant! Your author is not at all sure how generally known is the planet period relationships. There is not a known reference to the pattern. Neither is there a reference in vibration theory to the beneficial effect of designing so that resonance is suppressed by employing dimensions ratioed to irrational numbers and to "least energetic frequencies".) Your author considers this in mechanical and structural design but the practice isn't generally discussed outside of pure physics and possibly, Electronics Engineering.

n. The Ark survived a tidal flood that devastated and destroyed nearly all other traces of that advanced technological culture. According to Plato, The flood damage was so great, it left us with the, perhaps misinformed notion that we are the first "advanced" culture on earth.

QUESTIONS

Would heat sensitive photography show silt patterns in the skeleton arrangement of a ship?

Do the common units of measure suggest a common technology and help explain the Ancient Britons' ability to quarry and move large stones? Does the presence of the large stones in the English henges imply the Britons' experienced and expected high velocity water from tidal floods, where no doubt the Atlantic Ocean was the source?

Were the henges built to resist these catastrophes? Does the distance between the Sumerian construction site of the Ark and its present location testify to the water velocities with which ancient peoples contested when they used such large stones? Can mountains have been built at the rate of a centimeter per century if they rose up to trap the Ark in a lake of seawater, drained several months after the flood? Does recent exploratory work concerning the age of the salt crust and silt layer in the bottom of the Black Sea verify the same flood that carried the Ark into Eastern Turkey?

How much evidence of catastrophe does Science need to seriously question uniformitarian theory? Isn't it time for a serious examination of the history of man that includes all of the evidence?

CERTAINTIES

The artifact is located 700 miles from the Persian Gulf and 2000 miles from the Indian Ocean. The Indian Ocean is the only source of water that could supply an "unearthly" tide sweeping the Ark to Dogubayazit. To raise the Himalayan range, the flood had to have been approximately 3,000 feet deep at Sumer. It rushed overland, with the land rising under it into Turkey. The cause was a gravity added to that of the Moon and the Sun. This subject is treated elsewhere and is the more significant story.

Regardless of the variety of beliefs about its cargo and the crew size, this is Nuh'un Gemisi. It is the raft of Utnapishtim. It is the Ark of Noah.

Figure 1

THE ARK OF NOAH - HULL PLAN VIEW AND CENTER OF BUOYANCY

Figure 2
DEVELOPED DECK AREA OF THE ARK ARTIFACT

Noah's Ark: Its Geometry
<http://www.creationism.org/patten/WindsorNoahsArkGeometry.html>
