The vertical chamber stack of the Great Pyramid - part 2

Abstract

The Great Pyramid of Giza is a well known ancient building that is located on the outskirts of Cairo. It contains complex internal architecture which has been analysed in the previous papers in this series, and in particular in paper B "*The vertical chamber stack of the Great Pyramid - part 1*" it was proven that the upper and lower chambers of the building are stacked above each other in a logical manner which allows the vertical location of the chambers to be deduced without the need for surveying. The vertical architectural stack that was established in that paper terminated at the ceiling of the first of the roof chambers above the pyramid's upper chamber and at a specific half-integer altitude above the base of the building when measured in the architect's unit of measurement, the cubit.

In the three subsequent papers, additional information regarding the horizontal stacking, the position of the roof chambers, and the binary data contained on the upper chamber walls was discovered and documented.

In this paper I extend the vertical stack of the architecture from the ceiling of the first roof chamber up to the mid height of the pyramid using the system that is inherent in the architecture. The information that was discovered in the previous three papers is used to continue the vertical stack in a logical manner until the point that the half height of the pyramid can be determined from a continuous series of data from the base level of the pyramid upwards.

I show that the data that is inherent in the upper portion of the pyramid's vertical stack design incorporates fundamental geodesic constants from which I deduce that the Great Pyramid must be a geometric scale model of Earth.

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The Great Pyramid papers

The vertical chamber stack of the Great Pyramid - part 2

In the earlier paper in this series[1] the fact that the upper and lower chambers within the Great Pyramid are positioned according to a logical stacking system was established. The vertical chamber stack was proven to be continuous from the base level of the pyramid up to the ceiling of the first roof chamber at an altitude above the pavement of 98.5 cubits. A horizontal stacking system was then discovered[2] in which the analysis of the azimuths of the passages of the pyramid concluded at a reference plane within the upper chamber 22 cubits south of the central vertical axis of the building.

The horizontal stacking of the chambers is the same operation as superimposing the north elevation of the pyramid onto the east elevation to form one composite drawing, and in order to complete the architect's overall system the plan view of the pyramid's internal architecture also needs to be combined onto that composite drawing. Diagram F1 shows the standard CAD drawing of the pyramid that is being used in this analysis with the three distinct and traditional areas of the drawing labeled.

To combine the plan view of the CAD drawing with the east elevation there needs to be a mutual reference point on both drawings and this can only be the intersection of the central axis of the pyramid. The north-south axis in plan view is known relative to the internal architecture from Petrie's surveying and the positioning of the internal passages relative to this axis was perfected during the analysis of the north elevation. The east-west axis in plan view is also correctly established, and the position of the internal passages relative to this axis was perfected during the surveying error corrections. This leaves the horizontal axis on the east and north elevations that is located at half the height of the pyramid as the only one of the three principal pyramid axis that is not defined in relation to the internal architecture.

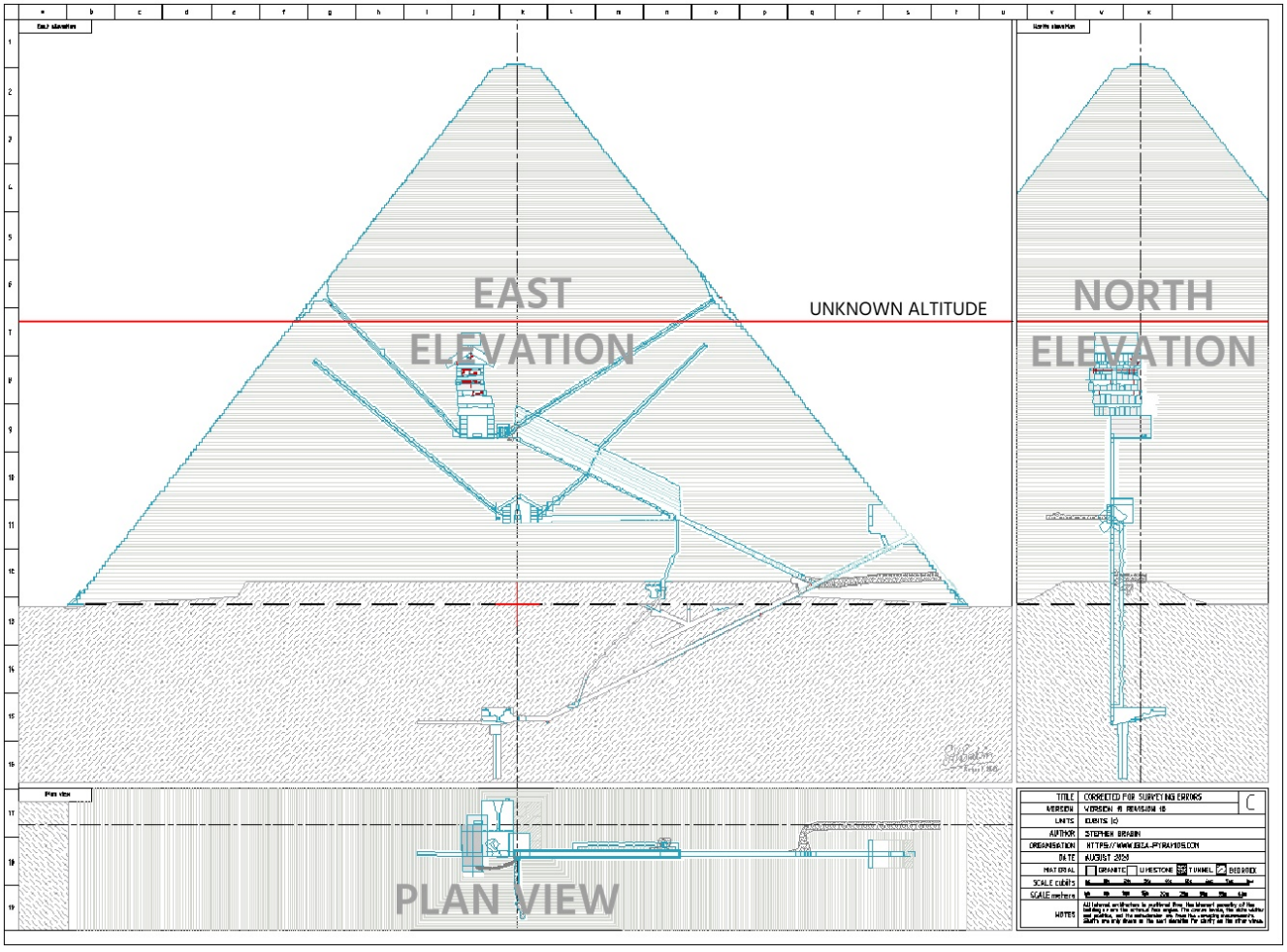

Diagram F1 - A standard CAD drawing of the Great Pyramid

The height of the pyramid

To determine the location of the mid-height axis the most obvious manner to achieve this result would be to first determine the height of the pyramid, however the apex of the pyramid does not exist, as can be seen on Diagram F1. The pyramid's architecture forces anyone trying to establish the altitude of the central horizontal axis to resort to theoretical methods. Therefore the only way to determine an approximate height of the building is to measure the angle of the sides of the pyramid, an angle which is different on the north and south sides, and then to use trigonometry to interpolate the lines of the faces of the pyramid up to the point where they would theoretically meet at the missing apex.

Irrespective of how precisely these surveying measurements are performed, the resulting height of the building will only ever be an approximate result because there are only a few face stones which exhibit the pyramid's side angle dotted around the base of the pyramid.

This surveying and the resulting calculations were performed by William Petrie[3] during his surveying expeditions and the resulting height of the pyramid that he established was 5776 inches. Translated into cubits at a conversion factor of 20.60 inches to the cubit this is 280.35 cubits, giving the location of the horizontal axis of the building as somewhere in the region of 140.17 cubits above the top of the pavement that surrounds the building to which Petrie's measurements and the architect's measurements are both referenced.

Combining the plan view

The plan view can now be combined with the east elevation by aligning the plan view's north south axis with the east elevation's surveyed half-height axis to give the resulting drawing shown in diagram F2.

There are several locations marked on the diagram which indicate features on the plan view to help distinguish them from the east elevation items. There are numerous interesting points about this combined drawing, but the purpose of this paper is specifically to continue the vertical stack of the chambers from where the analysis left off in the earlier paper, and to this end the only area that is of interest on the combined drawing is the area of the roof chambers.

If a logical system can be established within the architecture that allows the plan view of the upper chamber to be locked together with the existing vertical stack, then it will be possible to specify the location of the horizontal mid-height axis without the need to refer to surveying measurements.

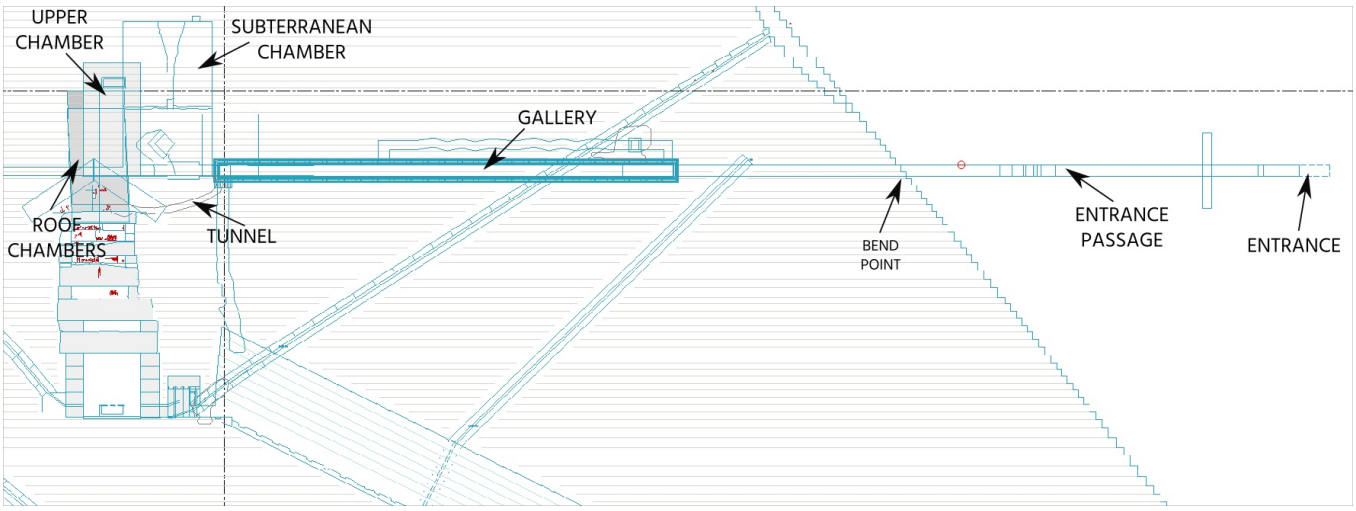

Diagram F2 - The plan view superimposed on the east elevation

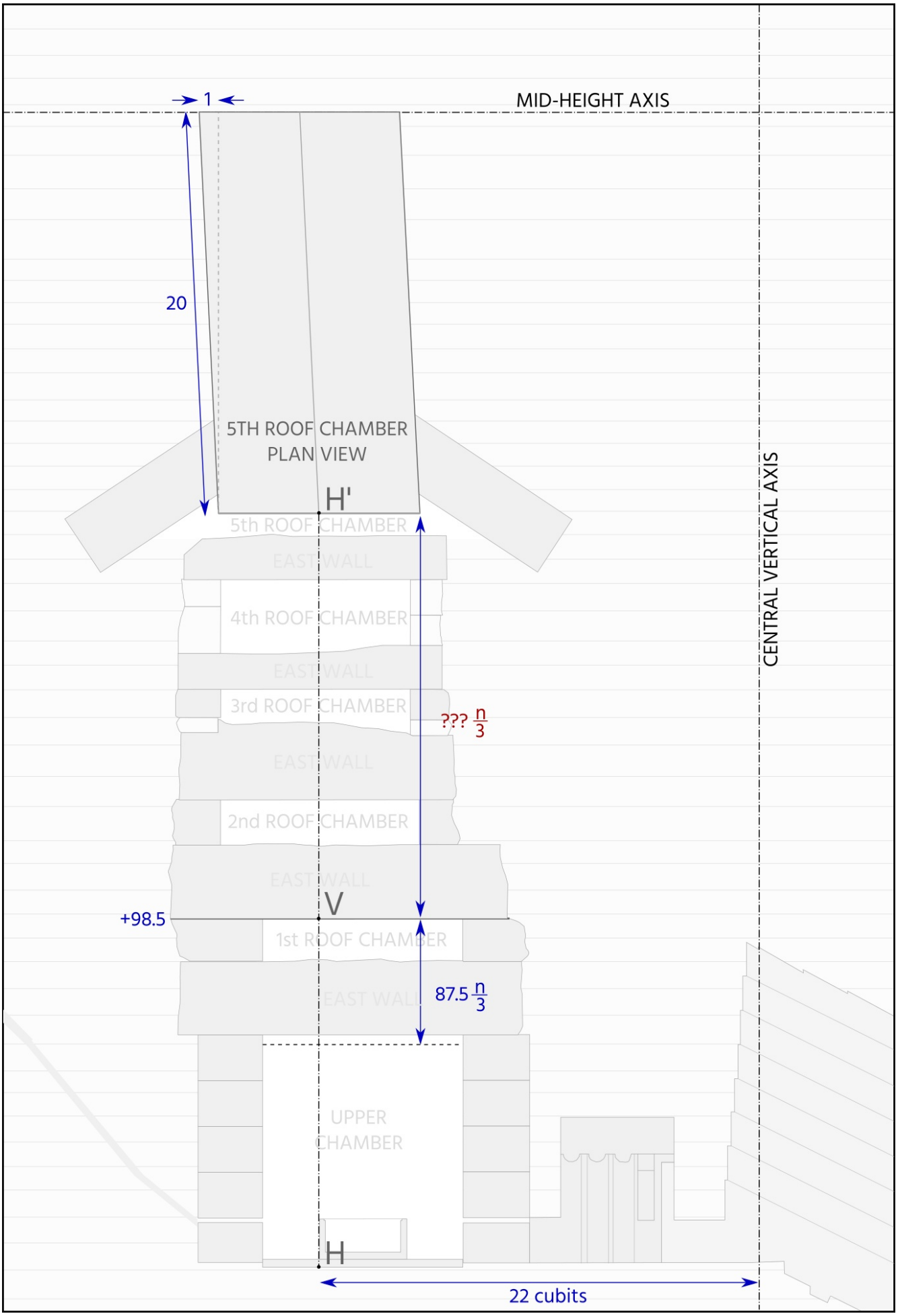

Diagram F3 - The vertical chamber stack and plan view, last known details

Diagram F3 shows the last known items of the analyses from the three previous papers in this series.

From the vertical chamber stack paper[6] the last detail that was encountered was the altitude of the ceiling of the first roof chamber at a height of +98.5 cubits above the pavement outside the building. The final portion of this altitude's measurement was from inside the upper chamber to the ceiling of the roof chamber with a value of 87.5 n/3 where 'n' is the stack constant[7]. This distance is specifically expressed in thirds of a stack constant by the architects. The point *V* on diagram F3 is the point on the ceiling of the first roof chamber that falls on the reference plane H H'.

From the horizontal chamber stack paper[8], the point *H* on diagram F3 is 22 cubits south of the central vertical axis of the pyramid and is the point through which the vertical axis plane of the *east side* of the roof chambers runs, as shown by the vertical black dotted line. The point *H'* at the top of the roof chambers is the vertical projection of the point *H* onto the plan view drawing east wall of the 5th roof chamber.

From the analysis of the roof chambers[9], the gabled 5th roof chamber with its west wall aligned to the plan view's north-south central axis of the pyramid, and with a reference length along its longest side of exactly 20 cubits measured from the west wall on the axis to the unique finishing stone floor beam's west side.

These three items are relatively simple to specify in comparison to the amount of complexity involved in the analysis required to discover them, and they lead to the final part of the vertical chamber stack's design which is presented in the form of a question. What is the gap distance indicated by the red text on diagram F3 which, when defined and added to the height of the fifth roof chamber on the plan view, will define the architect's half height of the pyramid ?

These final two components of the vertical stack need to be resolved in order, with the gap distance being solved before the plan view of the 5th roof chamber.

The roof chamber gap

From a detailed analysis of a CAD drawing of the building and the system's logic, the roof chamber gap distance is identical to the north and south wall lengths of the upper chamber of the pyramid, and is 20 + 2n cubits. This is a value that can only be known once the binary data of all the walls of the upper chamber of the pyramid has been determined, because the grid of rectangles from which the binary data was derived is the construct that defines the length of the chamber's north and south walls. The value of the stack constant being used at this point must therefore be that which was defined in the binary decoding of the upper chamber 3/sqrt(215) cubits.

Diagram F4 shows the 20+2n height of the upper roof chamber gap with its corresponding value expressed in thirds of a stack constant of 299.257566 n / 3 cubits. The numerator of this fraction is not arbitrary.

If you refer to the WGS84 geodesic standard[10] on the shape of the Earth, the reciprocal polar flattening (RPF) of the planet is 298.257224, this being the ratio of the difference between Earth's equatorial radius and the Earth's polar radius compared to the equatorial radius, expressed as a reciprocal number. It is *the* number that defines the shape of our planet.

The numerator of the roof gap fraction of 299.257566 contains another feature of the upper chamber binary decoding system, and that is the implicit 1 of the floating point number protocol. The gap distance has had an implicit 1 added to it's numerator and the value that the architects are displaying is 298.257566, with an extra 1 added to it. The roof gap distance explicitly defines the RPF of the Earth.

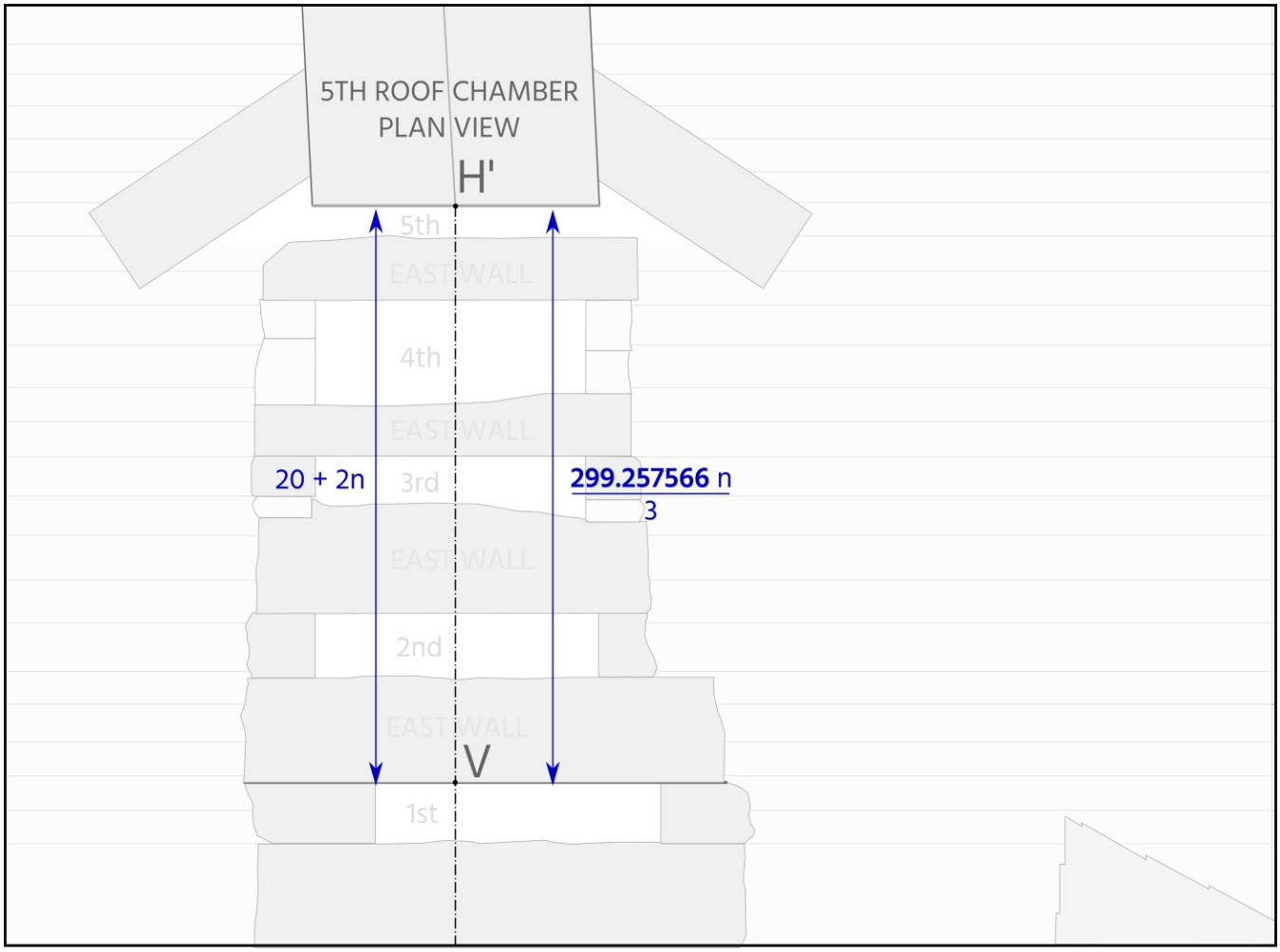

Diagram F4 - The gap length in the roof chamber area of the pyramid

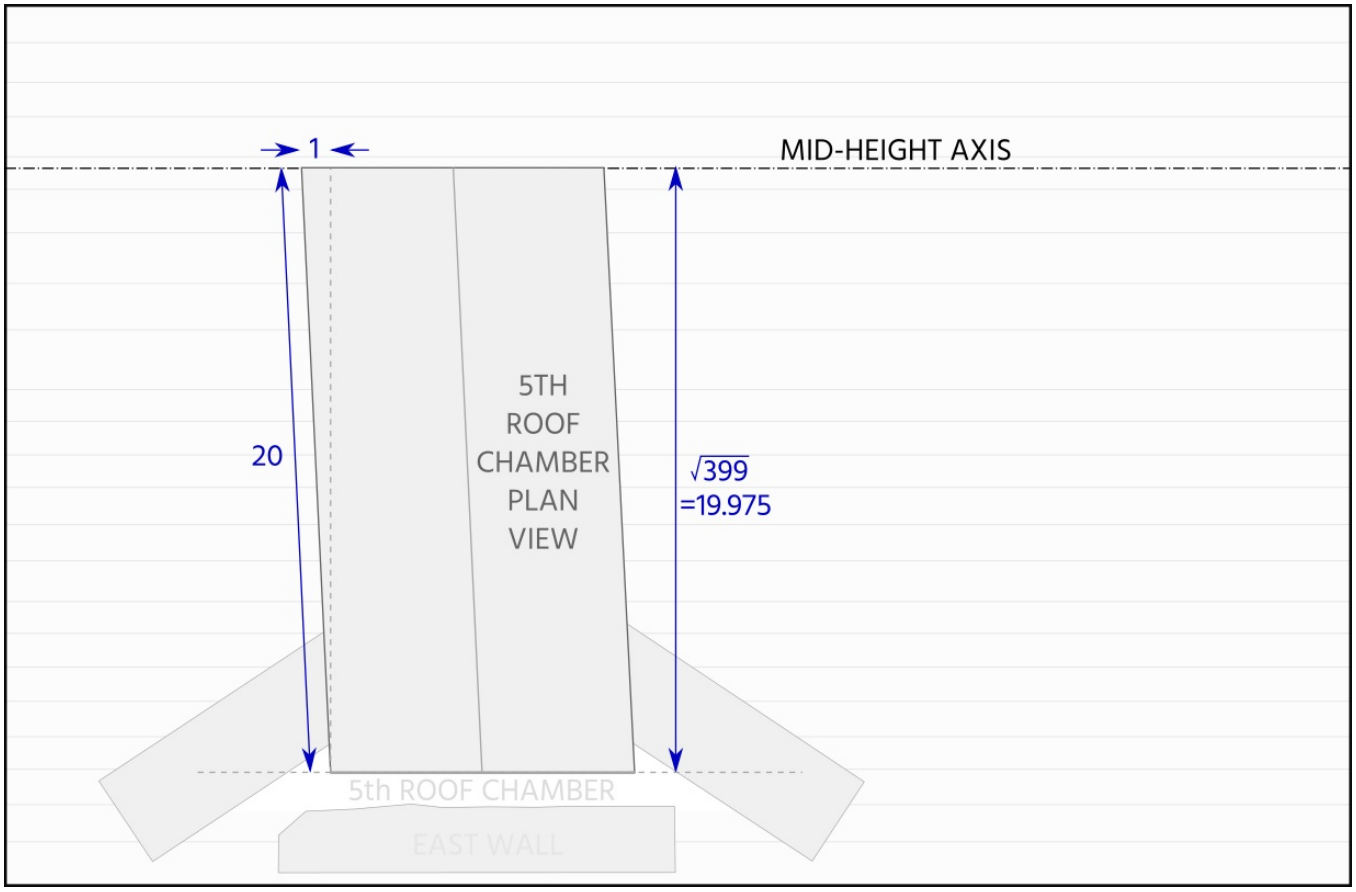

Diagram F5 - The vertical height of the 5th roof chamber plan view

The roof chamber and plan view

The fifth roof chamber plan view is a parallelogram with a south wall length of 20 cubits and the west wall of this roof chamber is offset from the east wall by exactly 1 cubit to the south as shown on diagram F5. From these details, when the plan view is superimposed on the east elevation, the vertical height of the 5th roof chamber can be determined as being the square root of 399 or 19.975 cubits.

However, if the logic of the construction of the roof chamber plan is to remain consistent with the design just seen when constructing the gap, there must be an implicit 1 that has been added to the construction somewhere. To determine where the implicit 1 has been added, the details of the stones within the fifth roof chamber need to be looked at in detail.

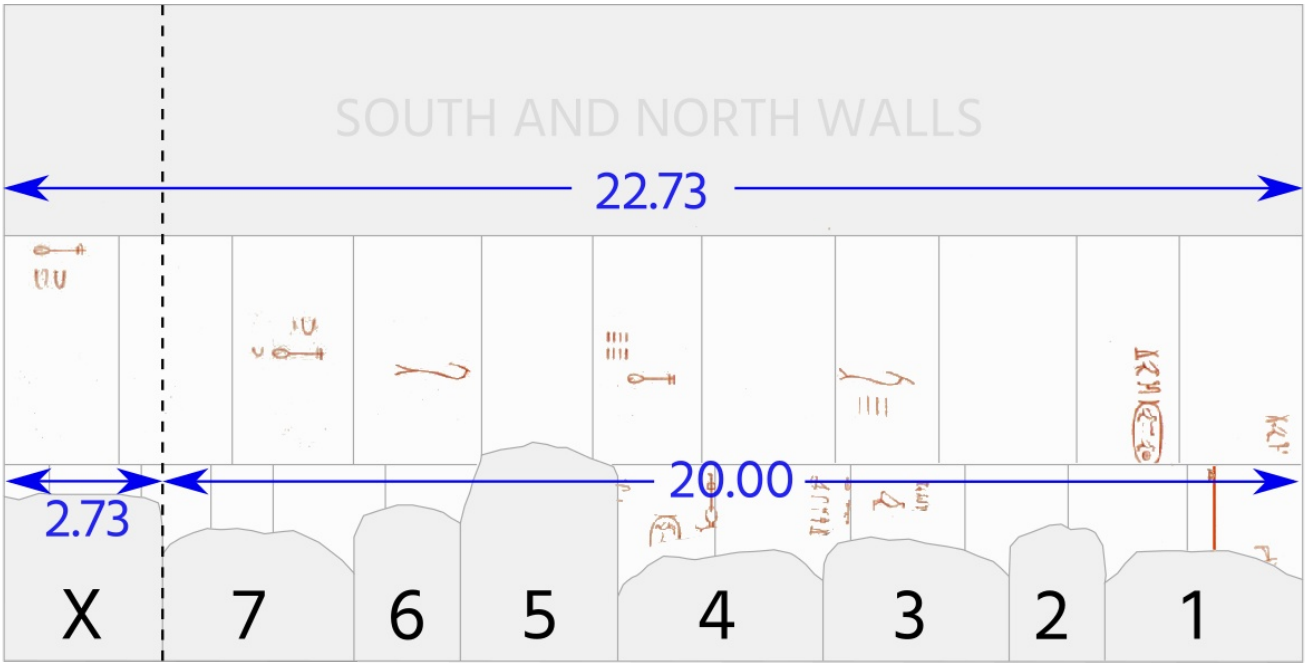

Diagram F6 - The stonework of the 5th roof chamber

There are seven stones which make up the 20 cubit length as shown in diagram F6, and an extra stone has been added at the east end of the roof chamber which needs to be disregarded when using this roof chamber in the vertical stack. This extra stone is not however an implicit 1 in the vertical stack because it is not contained within the 20 cubit length and therefore not part of the vertical stack distance.

From analysys of the logic of the system, each of the seven stones contains an implicit 1, and the measurement unit which is used for this implicit one is the 1/100th of a cubit unit that was defined when the lower level of stonework of the north wall in the upper chamber of the pyramid was decoded[11].

The implicit one hundredths from each of the seven stones needs to be removed at the end of the calculation of the vertical stack height. Diagram F7 shows the plan view of the 5th roof chamber with the floor stones number from 1 to 7 running across the roof chamber and the method for removing the implicit ones is contained within this diagram.

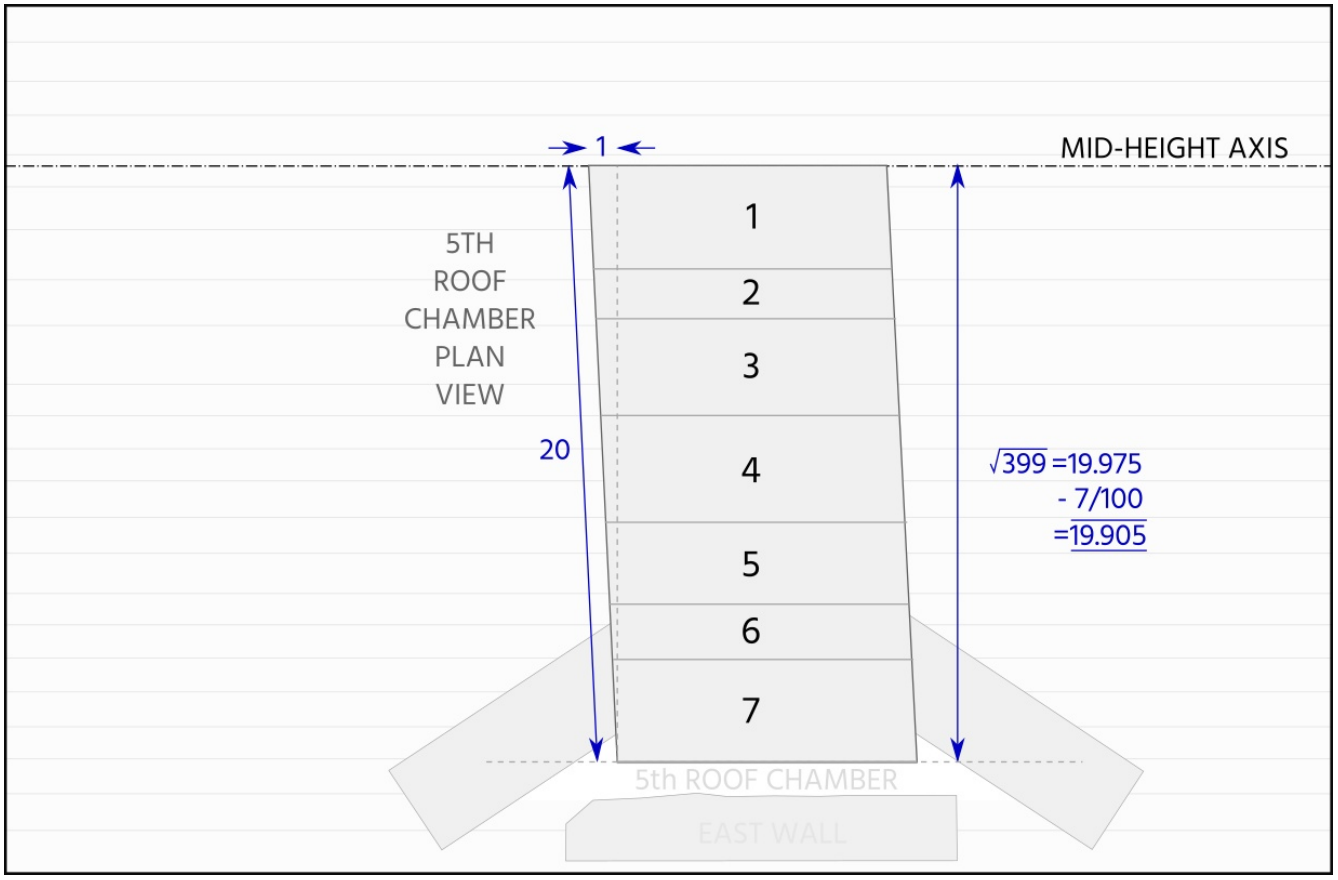

Diagram F7 - The 1/100th of a cubit adjustment to the 5th roof chamber stones

The full vertical stack height

The full stack height from the pavement level outside the pyramid to the mid-height horizontal axis can now be calculated and is best viewed directly from a spreadsheet which gives the output shown in Table F8 listing all of the component parts of the vertical stack, the formula from which they are calculated, their respective lengths in cubits and the height of the completed vertical stack of 138.8207693 cubits.

VERTICAL CHAMBER STACK CONSTRUCTION

Stack Height from pavement top		Section height	Cumulative height
Upper roof chamber stones, implicit ones	7 * -1 / 100	-0.07	138.8208
Plan view upper roof chamber length	Sqrt (399)	19.9750	138.8908
All the upper roof chambers	RPF+1 n/3	20.409197	118.9158
First roof chamber ceiling from false ceiling	87.5 n/3	5.9675	98.5066
Upper chamber wall to false ceiling	11 + 2 n	11.4092	92.5391
Upper chamber unfolded floor	10 + 2 n	10.4092	81.1299
Upper chamber wall to false ceiling	11 + 2 n	11.4092	70.7207
Upper chamber unfolded roof	10	10	59.3115
Gap between upper and lower chamber stacks	2 n	0.4092	49.3115
Lower chamber wall height	87.5 n/2	8.9512	48.9024
Lowerchamber unfolded floor	10	10	39.9512
Lower chamber unfolded wall	87.5 n/2	8.9512	29.9512
Lowerchamber unfolded flat roof	10	10	21
Ground level above pavement	11	11	11
		138.8207693	

Table F8 - The height calculations for the full vertical stack

This is the definitive list of vertical heights above pavement level of the internal architecture of the Great Pyramid and is the conclusion to the analysis of the internal sections of the chamber stack of the building when the east elevation, north elevation and plan view are combined onto one drawing.

The pyramid's height

From the values in Table F8 the full height of the pyramid can be calculated as being 277.642 cubits in comparison to Petrie's surveyed height, which he calculated from surveying the pyramid's side angles, of 280.35 cubits, the difference being 2.71 cubits. On first appearance this difference, which is nearly one and a half meters, indicates that there is an error in either Petrie's work or in the vertical stack calculations, but neither of these scenarios is the case.

In the fifth roof chamber shown in diagram F6 the design of the east-west length is unusual in that the intended length of 20 cubits that is used in the plan view on the vertical stack has a supplementary stone added to the end of it on the east side of the roof chamber for no apparent purpose. The length of this stone was measured as being 2.73 cubits, and within the margins of error of that measurement, it is the same as the difference between Petrie's height calculation and that from the vertical stack data. This stone is added to the fifth roof chamber by the architects to highlight the discrepancy that will result when comparing the vertical stack calculations to any surveying calculations from the external angle of the pyramid to deduce the height of the building. In other words the difference in Petrie's surveyed height and that obtained from the vertical stack is a predictable distance and therefore must be, and is, part of the architectural system.

The reoccurring 87.5 value

Throughout the vertical chamber stack the value 87.5 reoccurs on numerous occasions, the most significant being that the first roof chamber's ceiling is 87.5 cubits above the raised ground level in the first analysis of the vertical stack. It then occurs again in the lower chamber wall height, and in the upper chamber distance to the ceiling of the first roof chamber.

The reason for the repetitive use of the 87.5 value can be seen when the vertical stack height from table F8, 138.8207 cubits, is scaled up by a factor of 87,500.

The resulting value is 12146817.3 cubits which, when converted to meters at a ratio of 0.5233 meters to the cubit is 6356429 m which is very close to the length of the polar radius of the Earth, a value which is specified in the WGS84 document[10] as being 6356752 m.

The pyramid's vertical chamber stack is therefore designed in such a way that from an analysis of the internal architecture of the chambers within the building, a near perfect 87500:1 model of the Earth can be reconstructed which contains, as part of the construction data, the precise elliptical shape of the planet.

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