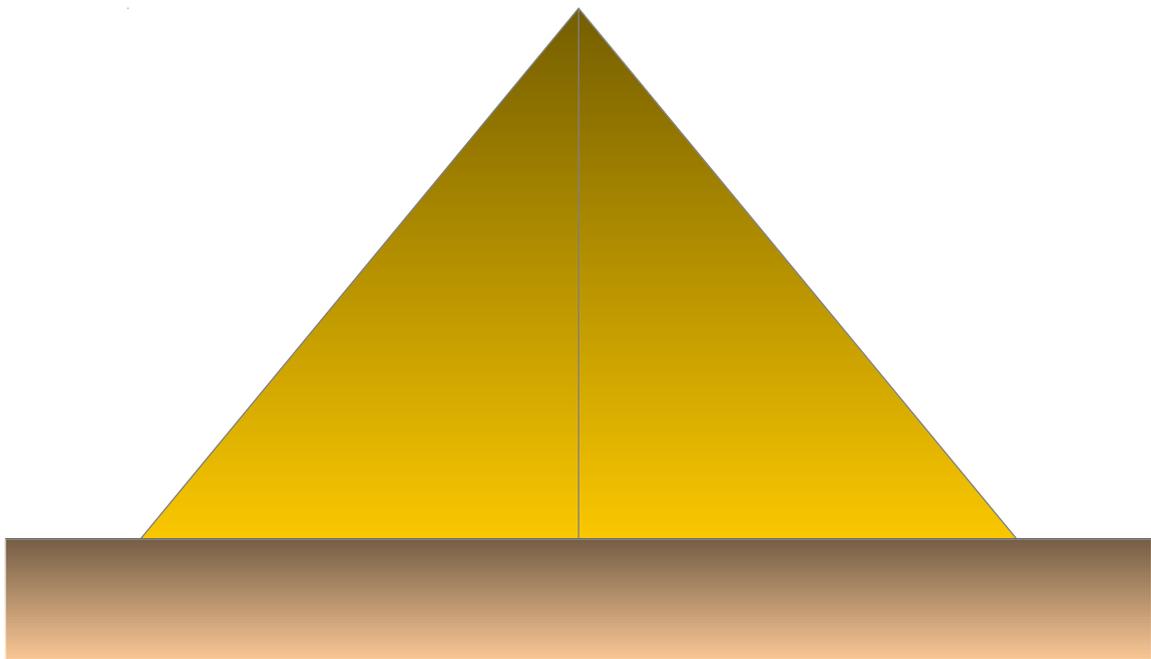


THE PYRAMID

THE TRUTH



BY JEREMY POTTER

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INTRODUCTION

The original Great Pyramid no longer exists. It disappeared some nine hundred years ago and the structure that can be seen today is but the remnant. The pyramid is missing its outlines and minus its integrity. Because original pyramid had once existed it can only be imagined if the truth is ever now to be found. Something important had been there and it would take me over ten years to discover the incredible truth of what had been there. I would very soon be making hundreds of calculations and using my skills as an architectural building surveyor to find out what had been there. I would find this because I knew about lines and angles but in the meantime I would ask a question. Why was the Great Pyramid called great? It was a simple enough question and I did not know where the answer would lead me, but the further I looked, the more profound it became. The pyramid was unique.

The accepted view is that the Great Pyramid was built as a tomb for the pharaoh Knufu, but nothing at all was found inside the pyramid when it was first entered. There was no body of a pharaoh, no tomb furniture, and nothing anywhere except bare walls, free of any artwork or inscriptions. The idea was based only on supposition. The proof was not given but the theory persisted and that is how it continues to be published in books. It was probably misplaced. I then began to think that the original pyramid might have had some other purpose, but that was not in compliance with the official philosophy emanating from museums and institutions who have always insisted that it built was a tomb. There were no clear alternatives but why were they also insisting that the pyramid had not been planned? It was an archaeologist's viewpoint but mathematicians had been there as well. Perhaps it was time to see if anything geometrical existed for consideration instead?

The upper chamber had been very carefully made into an exact double square and that was a geometrical figure. Another researcher had claimed that the original pyramid was never a pyramid at all but a truncated pyramid, or one that was missing its tip. The Great Pyramid has a flat summit. But why would they build a pyramid without a tip? The reason was that another much smaller pyramid had once been placed at the pinnacle and that was another geometrical figure, as was the truncated pyramid below.

I did not believe that the tomb theory was the reason for the pyramid's existence and it had to have another reason for being there. I was by now convinced that it was

mathematical and geometrical, and that was when I started down the path to find the evidence. It was going to be a difficult journey but first I had to know what was already there, and not just in general terms, but specifically and accurately, and that was when I found the first of the keys to the original Great Pyramid. It had come in the form of a very large folder tied with ribbon inside which was a complete set of very large and accurate architectural style drawings showing the detailed interior, the result of a post-war survey undertaken by Italian engineers. The survey would soon be forming the basis and verification for every discovery made.

The next key was in the discovery of the unit of measure that had been used by the pyramid builders. The survey was done in metres, and a conversion was needed because the French metre did not exist at the time when the pyramid was built. The unit had to convert from metres to feet, and then from feet to the unit used. Many books have already been written on the subject of the pyramid units, with all manner of different kinds of units considered, but the answer was in fact very simple when the right assumptions were made. That had made it possible to know the original distances that had applied at the pyramid when it was first built and the resulting dimensions were revelations indeed.

Then the third and most important key was the discovery that the planners had not measured angles in degrees but in number form. If that is accepted, then distances in the correct unit could be found from angles inside a pyramid triangle, and once that was accepted, then the pyramid distances themselves were revealed. It was extraordinary. It gave me the feeling that I was actually looking into minds of those who lived many thousands of years ago, and I was seeing these things with their eyes, and knowing them after eons of time had come and gone. It was a humbling experience. I could see the meaning in the numbers, and in the way the geometry was working out with a fabulous logic of its own as I found one thing after another. These were people who knew what they were talking about. Many questions could now be answered, including the reasons why the chambers and corridors were built in the manner they were, and in the places they were. That was why the pyramid was called great.

Why were there two chambers rather than just one? Why was the lower chamber located on the pyramid centerline whereas the upper chamber was placed offset to the south of centre? It was mathematical. Why were there four shafts when no other pyramid of the Nile Valley carried any shafts at all, and what in anycase were they doing there? They were geometrical guidelines. Were the Egyptologists and archaeologists correct when they

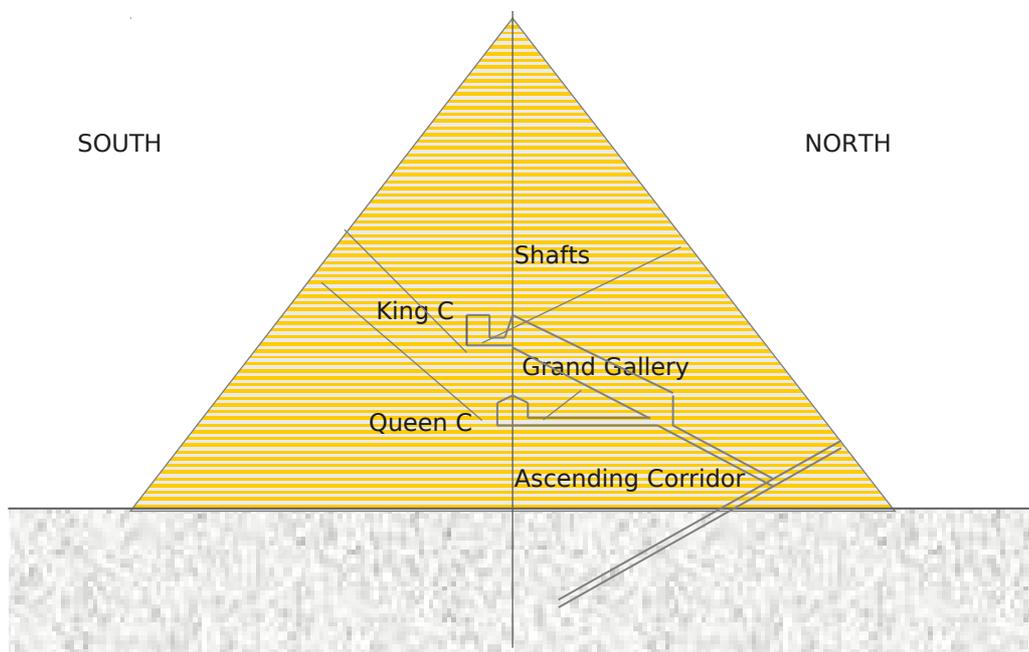
maintained that the Great Pyramid was not designed at all, except on a very casual basis? No, they were not correct and the specifics will show why. Were they right when they claimed that the unknown builders had changed their minds about the location of the lower chamber as the pyramid progressed upwards? They were wrong because vandals had demolished the original floor in order to hide the evidence on the floor level, another number. Did the upper chamber have a geometrical purpose? It had a clear geometrical purpose and when I found out what it was it was intriguing, to say the least. The fact of two chambers in one pyramid was no accident.

This account will show by the means of large numbers of computer generated drawings how the Great Pyramid was first planned, how the geometry was based on triangles, squares and double squares, and how these figures were harmoniously coordinated into a fantastic whole to make sense of everything that exists and had once existed. The Great Pyramid was unlike any of the others except that it looks like a pyramid and was built of stone. It was a gigantic engine of numbers and angles, and it was designed in honour of the gods and to dimensions that would harmonise with their relatively unpublicized, but ancient numbers of identity. Everything was built to a specific geometrical purpose and the secrets were hidden in the reasons why the original pyramid was a certain height, and sloped at a certain angle. The modern survey and the two main keys had found the mathematical Great Pyramid and this account will show how it was created for the first time. The pyramid was indeed great.

THE PYRAMID SURVEY OF 1965

Somebody, somewhere, had long ago decided to build a structure that would stand the test of time and would carry a message into the future. The message could only be transmitted in a language and the only possible language was number, but first the nature of the structure had to be decided. It could be a tower, cube, a pyramid, or a cone. These were all geometrical figures but a tower would be prone to falling down, a cube was also prone to falling down, and that left a square based pyramid or a cone. A cone would be difficult to build and hard to express in the form of triangles and that left the square based pyramid, the most stable and the most practical of all geometrical shapes. That was why a pyramid-shaped structure was chosen as the most likely to survive into the future, and it was best suited to the triangle.

Pyramid Section seen East to West.

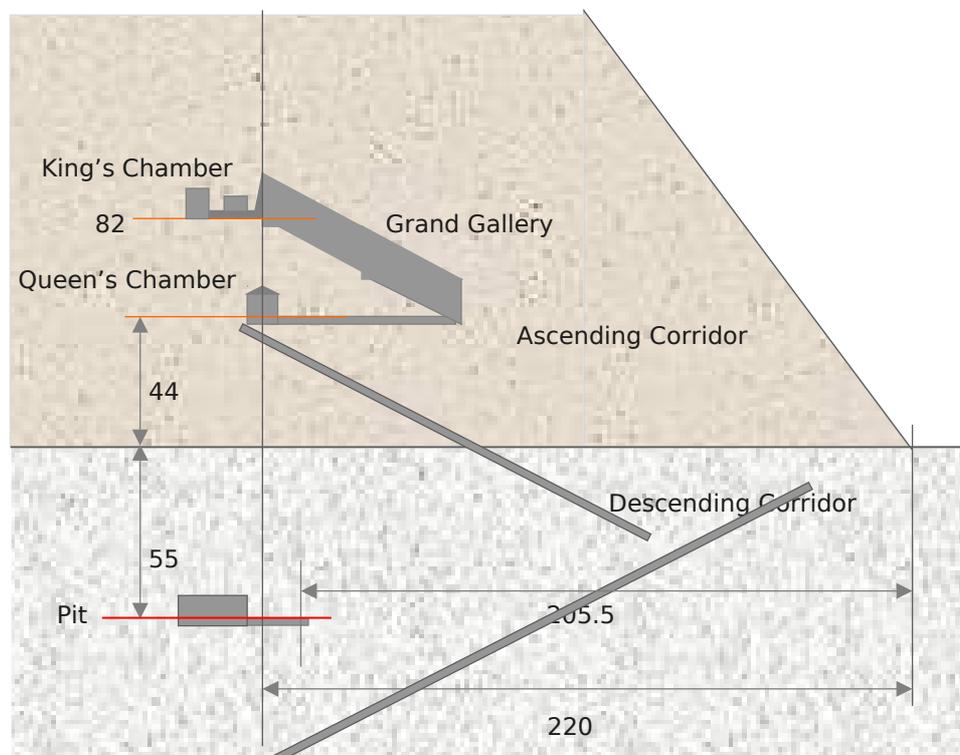


Pit  Descending Corridor

The details of the pyramid and its interior can now be considered, as they exist today. The engineers Rinaldi and Maragioglio had obtained the information necessary to find the hidden geometry given in a set of large-scale drawings after they had completed their survey of 1965.

Because their information was in drawn form instead of in tabulated form it was possible to see exactly what they were measuring and the points on stone that were being investigated. Without these drawings showing the distances and levels of the many of strategic points, it would have been quite impossible to reach any reliable conclusions. With the drawings it was possible and parts are repeated here where they are relevant. They gave their dimensions in metres and all distances have been converted into cubits where 1 cubit = 1.7181 feet.

The Ascending and Descending Corridors



The section through the pyramid was as if seen from the east looking towards the west. The reason was that the corridor systems were all on a plane that was basically north to south and so if the section were shown north to south very little would be seen except a vertical line some 2 cubits wide somewhere in the middle of the pyramid. If the pyramid was planned, it was from a vertical cross-section through the tip seen looking from the east.

The entrance to the pyramid is at its upper parts and there had once been a stone door that when closed it was all but invisible before the pyramid was stripped of its outline. The corridors incline at very close to the slope on the diagonal of a double square rectangle, and for the Descending Corridor the diagonal is on the ceiling because the ceiling was straight and true where the floor was prone to damage. Many other alignments were on ceilings.

The level of the Descending Corridor ceiling where it had once passed out of the pyramid was at 17.92 metres, according to survey, or 34.21 cubits above base. The distance found by survey between the entrance and the floor of the Ascending Corridor was 28.27 metres, or 53.98 cubits. The distance between the north base of the pyramid and the point where the Descending Corridor changes from sloping to horizontal, and measured on the floor is 107.39 metres, or 205.05 cubits. The point of change of direction was therefore $220 - 205.05$, or 14.95 cubits north of pyramid centre, taken as measured on the corridor floor.

An interesting fact is that the level of the horizontal floor at the bottom of the Descending Corridor is 30 metres below pyramid base, or 57.28 cubits. But because the corridor is 1.20 metres high, or 2.29 cubits high, the level on the ceiling is $57.28 - 2.29 = 54.99$ cubits below pyramid base and that is to within 0.01 cubits of 55 cubits exactly. That could mean that this was a datum level as close as the survey could measure it. But if the corridor ceiling is 55 cubits below pyramid base then that would explain why the corridor runs horizontally for a short distance, and around pyramid centre, before rising upwards. If there is a datum at 55 cubits below pyramid base and the full pyramid base is 440 cubits long then the datum on a square of sides 55 cubits would divide the base by 8 exactly. The number 8 was important.

The Grand Gallery is a continuation of the Ascending Corridor below and the alignments on the floor are the same at an inclination of just over 26 degrees. Once again the slope appears to be very close to a diagonal on a double square but this time slightly less steep than that of the Descending Corridor. The difference is because of the Great Step at the

upper reaches of the Grand Gallery that brings the floor to terminate at the base of the riser, where the diagonal of the double square falls on the top of the Step. The level on the top of the Step is 42.90 metres or 81.91 cubits above base, but the surface slopes downwards according to the drawings. The original design level was more than probably 82 cubits above base.

The junction between the Grand Gallery and the Ascending Corridor is the point where the Entrance Corridor to the Queen's Chamber runs horizontally at a level on the floor at 21.74 metres, or 41.51 cubits above base. The corridor height is given at 1.29 metres, or another 2.46 cubits, making a total of $41.51 + 2.46 = 43.97$ cubits above base. That is within 0.03 cubits of 44 cubits exactly. The design level was probably 44 cubits above base and it was measured on the ceiling as it was on the corridor below, the error being explained by the very uneven floor from which the measurements were taken. That means that another datum would exist on the Entrance Corridor ceiling at 44 cubits above base where the first datum was 55 cubits below base on the Descending Corridor ceiling. That would give a difference of 99 cubits between the two levels, and another difference of 11 cubits between the two values. The number 11 has often been seen pyramid number and it is here in the numbers 44, 55, and 99, which are all divisible by that number.

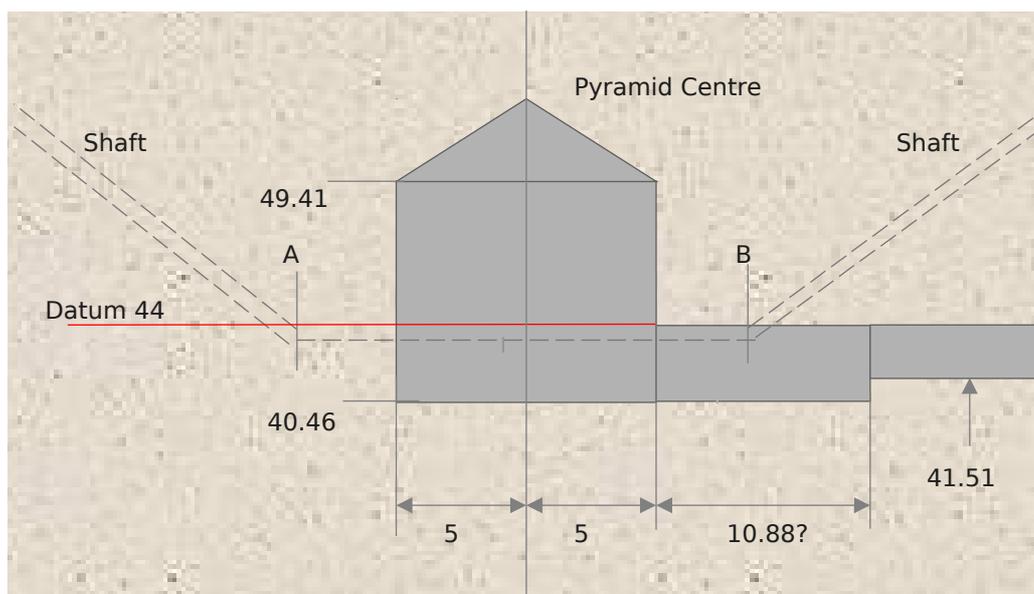
The Stone Plugs

The Grand Gallery was the place where six stone plugs were stored before they were released in order to slide down into the Ascending Corridor, one after the other, and each hammering its predecessor home more tightly to close the pyramid forever. This was possible because the Ascending Corridor was made smaller in cross section as it progressed downwards. Because it was slightly less wide than the plugs, the ancients had intended that they would become wedged at a previously determined point within the Ascending Corridor, after release. This had involved some very fine calculations because the planners did not know precisely where the leading face of the first plug would come to a halt. If the plug were made too small it would overshoot into the Descending Corridor but if the plug were made too large it would become wedged too soon. They appear to have got it right because the plugs became jammed in the required position when eventually they were released, whenever that time in history actually was. The position of the face of the leading plug became known only after the plugs had been released. Where it had come to rest, an additional masking stone was made to fit the space remaining in the

ceiling of the Descending Corridor. Because this masking stone was suspended within the ceiling rather than being bedded onto another stone it was always vulnerable to falling free under the relentless forces of gravity. That was the one weak point in the design, and had it not existed it is arguable whether the interior of the Great Pyramid would ever have become known as it is seen today.

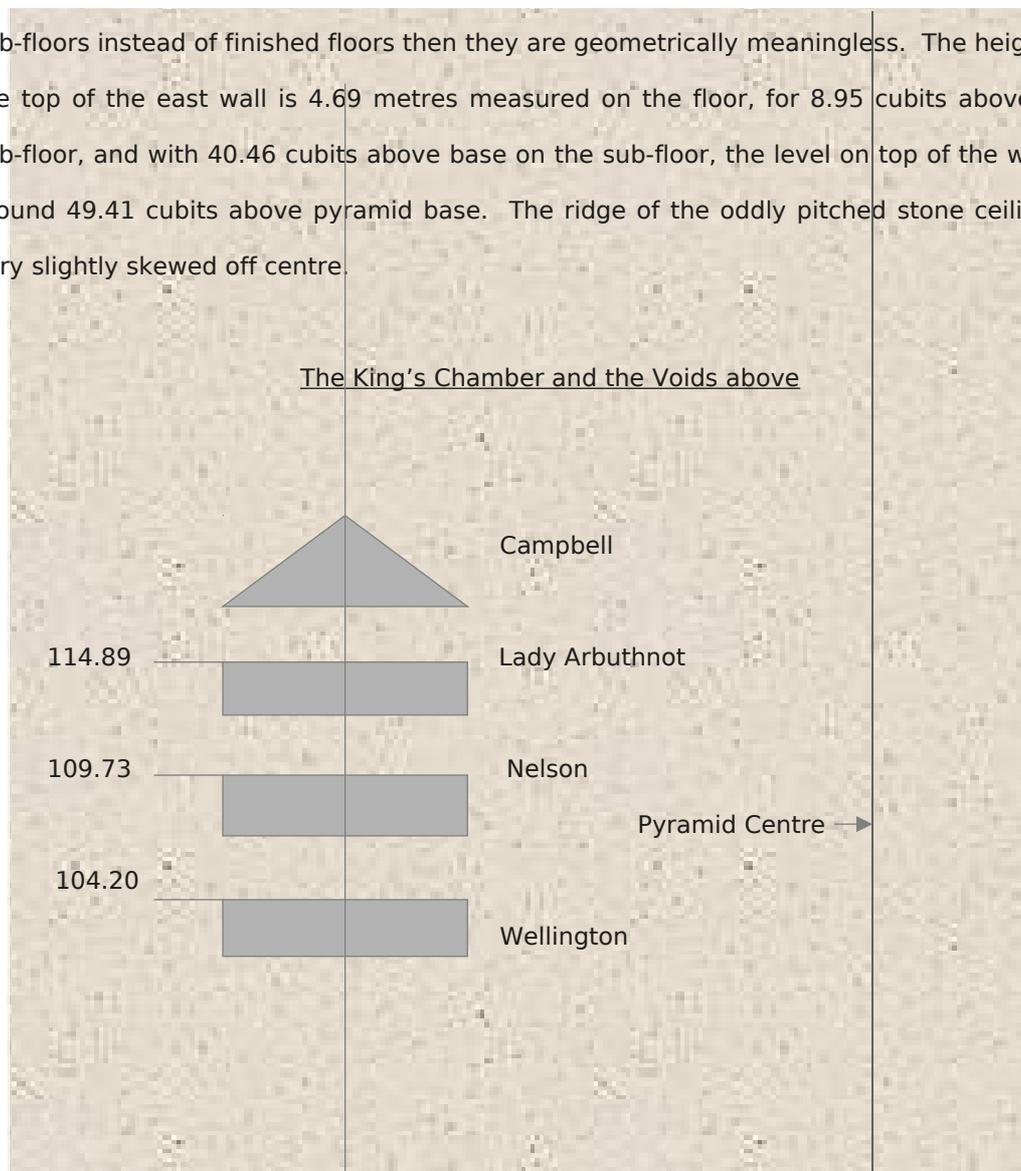
The peculiar, regular, niches within the flanking walls of the Grand Gallery are believed by some to have held timber beams restraining the plugs until they were ready to move. A stone ledge at high level on the east and west walls could have been intended to support wooden planks forming a temporarily floor over the stone plugs, while they awaited release. There is also a theory that the Grand Gallery was used as an astronomical observing platform at the time when the pyramid builders had reached the level of the top of the Great Step feature, but not beyond that. The planks had presumably been removed down the escape shaft after the plugs were released because there was no recorded evidence of them when the pyramid was first broken into. However, in an effort to further explain why the body of the pharaoh was not found when the pyramid was first broken into, some Egyptologists are now claiming that the pyramid was robbed at a time before the pyramid was attacked. It seems unlikely.

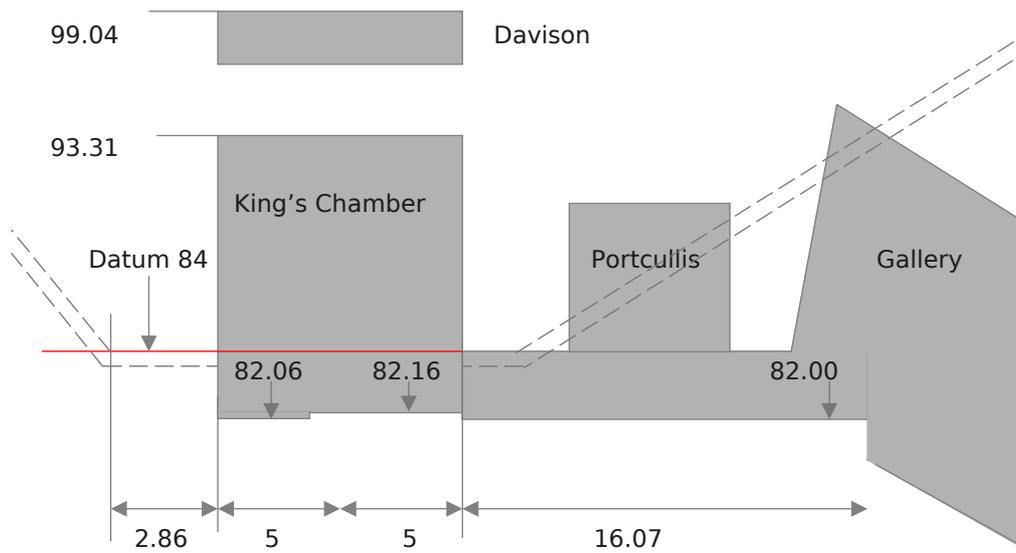
The Queen's Chamber Datum Level



The Queen's Chamber floor is exceedingly rough and unfinished. The floor had probably been laid but people unknown had later taken up the stones that made the original floor in order to destroy the built level above base. There are the two shafts leading out of the chamber and built with great care but originally closed at both ends. The upper sides of both shafts are at the same level as the ceiling of the entrance corridor, putting them on the datum at 44 cubits above pyramid base. The points of change of shaft direction are at distances of 2.29 metres, or 4.37 cubits from the south wall for the South Shaft at point A, and 2.25 metres, or 4.29 cubits from the north wall for the North Shaft at point B. The two shaft openings are opposite to each other and handed so that the west side opening of the North Shaft is opposite the east side opening of the South Shaft, creating a north-south centreline. The exit point levels are entirely unknown but the shafts do not pass out of the pyramid.

The chamber is 5.23 metres wide or 9.98 cubits wide, and the length is 5.76 metres or 10.99 cubits long, for a probable design plan of 10 x 11 cubits. The level on the existing floor of the entrance corridor is approximately 21.74 metres above base or 41.51 cubits, but within the chamber it is 21.19 metres or about 40.46 cubits above base. If these are sub-floors instead of finished floors then they are geometrically meaningless. The height to the top of the east wall is 4.69 metres measured on the floor, for 8.95 cubits above the sub-floor, and with 40.46 cubits above base on the sub-floor, the level on top of the wall is around 49.41 cubits above pyramid base. The ridge of the oddly pitched stone ceiling is very slightly skewed off centre.





The King's Chamber walls are finished in hard granite and are true to perfection. The reason why is clear for this area is the focal point of the whole pyramid. The ancients had done this in order to preserve the inte

that required breathable air, thereby contradicting the other historical theory that this was a burial chamber. It could not have been a burial chamber if at the same time the shafts were for ventilation. They must have possessed another altogether different purpose and that purpose was geometrical. The shafts were geometrical lines on section and they were there to mark slopes on diagonals. Once again, there are shafts running for a short distance horizontally before rising upwards and once again their upper surfaces are at the same level as the ceiling of their respective adjacent entrance corridor. The upper surfaces of the horizontal sections of the shafts were marking datum levels just as they were for the chamber below. The distance from the floor to the top of the shaft opening was given at 0.94 metres, or 1.8 cubits. The datum level for the King's Chamber would then be at somewhere around $82.16 + 1.8 = 83.96$ cubits above base, and the design level might then have been 84 cubits above base, compared with 44 cubits above base for the Queen's Chamber datum below. The upper exit points are both unknown because the original pyramid casing stones are missing, but the south shaft passes out of the pyramid on stone course 104 at 80.43 metres or 153.57 cubits above base, and the north shaft exits on course 101 at 78.62 metres above base, or 150.12 cubits above base. The original levels of exit would have been higher with the casings in place.

The horizontal shaft outlets for the King's Chamber carry another similarity with those of the Queen's Chamber. They too are opposite to each other but rather than being opposite and handed they are directly opposite in line and level. This means that a notional extra shaft could theoretically run across the width of the King's Chamber and join the two openings together. This was deliberately intended to mark an alignment and a distance.

The Second Security Barrier

The first barrier was in the form of the stone plugs. Now there is the second barrier. It was built in the entrance corridor leading into the King's Chamber in the form of an enclosed space that carried runners in which had slid three stone doors, one behind the other. These were raised and lowered in the manner of a portcullis, and seemingly by means of ropes over pulleys. They must have been intended to make the chamber secure while giving access to it at certain times. That implies that some kind of activity had taken place within the chamber that was surely not then a tomb. The portcullis effectively contradicts the pharaoh's tomb theory in favour of some kind of previously unknown storage area. If it

were a storage area then it must have been for something that was certainly very important.

The Stone Container

A granite stone box was found inside the King's Chamber when the pyramid had been broken into and it had probably been resting against the north wall and to the west. The box was found to be empty. There were the remains of fixing pins on the upper edge implying that it once had a lid and it was missing. The dimensions were roughly to human size and because of that it was called a sarcophagus in furtherance of the tomb theory but it might not have been a coffin at all. The inner volume is known to be half the outer volume and there is evidence that some kind of rotary machine was used to hollow it out from one large block of very hard granite. The box is not now in its original position inside the chamber.

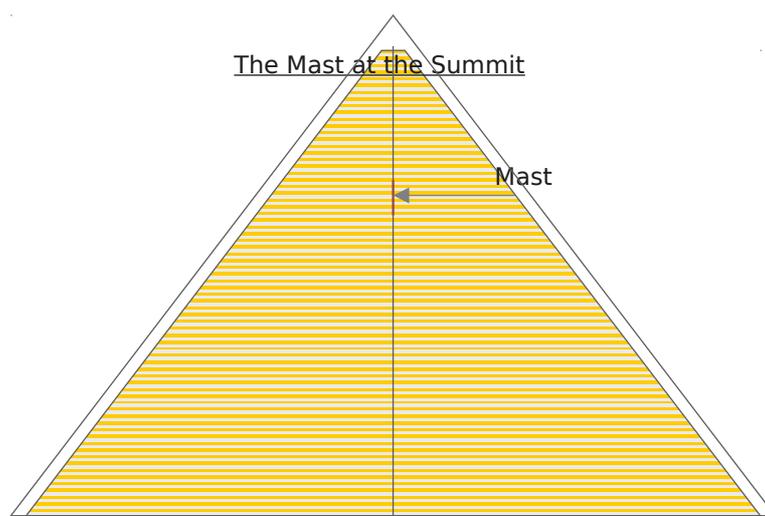
The Five Voids Over

These are most mysterious because they were built entirely enclosed with no entry points or exit points. They were related with each other because they were placed one upon the other exactly in line vertically to reflect the plan of the King's Chamber below. The current theory is that they were built to act as 'relieving' chambers so that the weight of stone above was being reduced to reduce stresses. That is not convincing. They might have carried another purpose altogether. This is because the upper surfaces of the voids are all true and level, whereas the floor levels are so grossly uneven that they could not mean anything at all. There would be no logic in providing flat and level ceilings for each of these voids if the reasons were exclusively structural. It was within the voids that many cartouches identifying the pharaoh Knufu were found, giving rise to the belief that this was his pyramid. Each void was given a name when it was discovered, and the names Wellington, Nelson, etc, can be seen written inside each in large capital letters. People had been here with a paintbrush in order to record these names for posterity, but they were not done in the context of ancient pyramid history. It is uncertain why the pharaoh would have wanted to name himself for all eternity inside these buried and inaccessible voids that nobody would ever see if they were built exclusively for structural purposes. Nor can it be explained why any pharaoh would want to associate himself with these markings in such crude locations. The probability is that they mean nothing at all but that the levels on the

ceilings of the mean everything. The levels found by measurement were subject to restriction of access for the instruments and sightlines and they might well carry substantial error.

THE ORIGINAL GREAT PYRAMID

It is an illusion to view the Great Pyramid as merely a simple triangular shape rising up from the desert floor. That is the impression which all pyramids give but this pyramid had always stood apart. It held mysterious things that told the story of its origins, things that would not be easy to discover unless the right tools were used. What then were those tools? They had been hidden away by the designers of the monument and they had certainly not wanted them easily found. Nothing could have been discovered without the use of particular numbers for angles and units for measuring distances. That is why the pyramid has kept its secrets for so long and it was also why it was in the form of the triangle, the most rigid structure known to man. The first accurate survey of was carried out in 1880. A mast had been erected on the summit four years earlier intended mysteriously to mark the original height before it lost its casing stones. The height to the top of the mast was just over 481 feet but the level of the flat summit seen today is around 451 feet above ground. The average length of base was just less than 756 feet, but the dimensions given in decimal feet were misleading.



Existing Stone →

← Original Stone



The Egyptologists (Mark Lenher. *The Complete Pyramids*) often give the average length of base at around 230.33 metres (755.66 feet) and that demonstrates that archaeologists generally had found it perfectly acceptable to define the pyramid in metres. But the metre was first conceived in France in 1670 by Gabriel Mouton, a priest of Lyon, and it did not come into effect until 1793, and even then only after Louis XVI instructed the engineers Delambre and Mechain to measure the Paris Meridian from Barcelona to Dunkirk. The work took them eight years, and none of the pyramids of Egypt could have been linked with the geography in France. Nor were the four sides based on averages. What then were the four sides based on? Another survey that would follow would give the clue to that but it was only a clue.

The Intended Square Base

The original builders had quite clearly intended to build a pyramid that was 'square on base' and they would have tried very hard to build a pyramid that was square on base. They would not have intended by some strange inverse logic to build a pyramid that was not a true square on base, and that simple act of reasoning is at the very heart of the unit of length used by the original pyramid builders. The unit used was the Egyptian Royal Cubit and its length could be found on the base dimensions. The actual length of the four sides on base were measured from the existing corners stones found during the Cole and Borchardt survey of 1925, and the distances found in feet would eventually illustrate the point.

<u>Side.</u>	<u>Length.</u>	<u>Orientation.</u>	<u>Error in direction.</u>
North	755.43 ft	South of West	00 degrees 2 min 28 sec
South	756.08 ft	South of West	00 degrees 1 min 57 sec

East	755.88 ft	West of North	00 degrees 5 min 30 sec
West	755.77 ft	West of North	00 degrees 2 min 30 sec

They were able to establish the original 'as built' length of sides, given in feet, as opposed to the 'intended' length of sides that had been based on pre-planned design principles before the pyramid was built. The findings were published and often taken literally but that was a fundamental mistake. The error distances had not in fact been intended and because of that, any interpretations made from them were meaningless. The design distances were 756 feet and in whole numbers, or as currently believed, 440 whole number cubits. Everything would then fall into place.

The fact that the four pyramid sides were not exactly 756 feet long was entirely due to simple builder's error. This commonly occurs in modern building construction of today using lasers and other technological aids and it is unreasonable to assume that similar errors had never occurred in ancient times. Even so, the errors were very small when seen in the context of the lengths involved, and the conversion factor from cubits to feet, was obvious.

$$1 \text{ cubit} = 756 / 440 = \mathbf{1.718181 \text{ recurring feet}}$$

If the designers had intended that the Great Pyramid would also be oriented on due north then there existed a slight error by direction as well as by distance. The pyramid as it is seen today is skewed very slightly anti-clockwise away from due north due to the cyclic precession of the Polar Star caused by earth wobbling around its north-south axis over many thousands of years. If the orientation at one time long ago was perfect, then Polar North has moved by something like 2 minutes of arc east of due north since the time when the pyramid was first laid down on the Giza Plateau. It looks therefore as if it had been aligned on due north for a specific reason that had tied the pyramid base to terrestrial earth through a line of longitude, otherwise known as a meridian similar to that at Greenwich.

The Pyramid Tangent

Almost without exception, the many and various angles of slope inside and outside the Great Pyramid have been measured and given in degrees, minutes, and seconds of arc.

Why would they not be? It was the obvious means by which to give an angle. In doing so, however, those that had done this had denied themselves the means that would lead the way to the essential use of the unit cubit. They had not used tangents!

Without tangents, the numerology would be lost, the geometry would be lost, and the secrets would never be found in a hundred years. It is much easier to calculate an angle by number than by adopting the process of using degrees, minutes, and seconds, to find an angle, and having found the number it is a simple matter of multiplying or dividing to find distances on a right-angled triangle that forms half the pyramid triangle. The height and length of base on a right-angled triangle for its slope angle given in tangent can readily be found, and at the Great Pyramid, the correct distances for its height and base would follow.

A number in tangent can be to many decimal places and because of that it is hugely more accurate than the angle measured physically in degrees to parts of a second, and so it was that the properties of the right-angled triangle had formed the original pyramid structure. The numerical value of the angle can be found by dividing the opposite side by the adjacent side for a tangent, or the adjacent side by the opposite side for a sine. The result can then be converted back into degrees by using the Standard Mathematical Tables. In the case of the Great Pyramid the value for pyramid slope angle is...

$$\text{Height } 280 / \text{Half base } 220 = \mathbf{\text{Tan } 1.272727 \text{ recurring}}$$

From the Standard Tables issued by Cambridge University

$$\text{Tan } 1.2723 = 51 \text{ degrees } 50 \text{ minutes } 00 \text{ seconds}$$

$$\text{Tan } 0.0004 = 00 \text{ degrees } 00 \text{ minutes } 30 \text{ seconds}$$

$$\text{Tan } 1.2727 = 51 \text{ degrees } 50 \text{ minutes } 30 \text{ seconds precisely}$$

The slope angles at the original Great Pyramid were just less than 52 degrees, and the true angle was confirmed in the value of Tan 1.2727 recurring, a number that was geometrically unique for other reasons, and that will be demonstrated later.

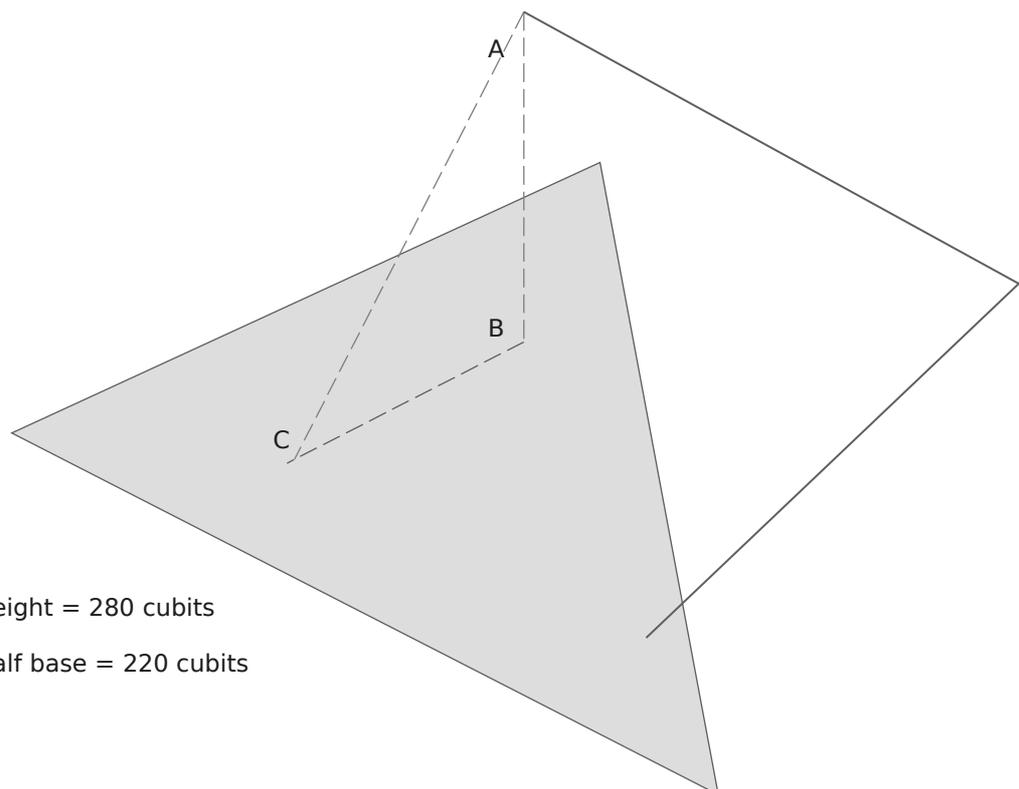
The Area to Height of one Sloping Side

Piazzi Smythe, Astronomer Royal of Scotland, had seen a relationship between the area of one of the sloping sides of the Great Pyramid and the pyramid height squared. Unfortunately he did not know in his time that the relevant dimensions were 280 cubits and 440 cubits, and because of that, he was unable to work out for himself the implications of these dimensions. Had he done so, he would have been very surprised when he saw the result.

There was a subtle difference between the value of Standard $\pi = 3.1416$ and Pyramid π at the Great Pyramid based on the area of one sloping side. The relationship is revealed through the area of one sloping side and the height squared, as he had anticipated. What he had not realised was that the conversion factor for cubits into feet would also have a bearing on his version of Pyramid π and it would be a very strange one indeed.

The answer was not quite correct. Many researchers have been looking for the exact value of π at the Great Pyramid and without success. Others began thinking it was not there and that the whole idea was fanciful but they had not been looking in the right direction, and had not benefited from the use of the modern calculator, without which, the calculations would have taken months or even years to work out. But the true value for π really did exist at the Great Pyramid in the area of one sloping side, and the answer was in the application of how that would be applied at the pyramid. It was not at all obvious.

The Great Pyramid in perspective



The Calculations

$$AC \text{ squared} = 280 \times 280 = 78400 \text{ sq cubits}$$

$$BC \text{ squared} = 220 \times 220 = 48400 \text{ sq cubits}$$

$$AB = \text{square root} (280 \text{ squared} + 220 \text{ squared})$$

$$AB = \text{square root} (78400 + 48400)$$

$$AB = \text{square root of } 126800 = 356.08987 \text{ cubits}$$

$$\text{Area of sloping side} = \text{Base} \times \text{Half Height}$$

$$\text{Area} = 440 \times 178.04493 = \mathbf{78339.769 \text{ sq cubits}}$$

The difference between the $78400 - 78339.769 = 60.231$ square cubits and it is very small indeed when seen in relation with the total areas, but it raises a question about the assumed number of feet per cubit. There were 1.718181 recurring feet per cubit according to the 756 feet on the square base of the built pyramid, and that could also be seen as 171.8181 cubits when multiplied by 100. If that value were then to become the half the height of the pyramid slope, the area would be $440 \times 171.8181 = 75600$ square cubits. Therein lies the mystery because the difference between the two areas would be $78400 - 75600 = 2800$ square cubits less than the pyramid height at 280 cubits squared! It is unlikely indeed that a difference of 2800 square cubits would occur on a pyramid 280 cubits high if that were mere coincidence and it suggests that this had been planned. But conversion factor multiplied by 100 was the beginning.

The numbers 1.718181 and 171.8181 must then have been valid and the assumption made on 756-foot sides was correct. But if 78339.769 square cubits were seen as the area of the pyramid height squared instead being seen of the area of one sloping side, then a new height appears as the square root of 78339.769. That new height falls short of 280 cubits by a new distance, and that distance was the means of finding the true value for π .

$$\text{Square root } 78339.769 = 279.89242$$

$$280 - 279.89242 = 0.10758 \text{ exactly}$$

$$280 + 0.10758 = 280.10758 \text{ exactly}$$

$$280.10758 \times 2 = 560.21516 \text{ the circle diameter}$$

$$1760 / 560.21516 = \mathbf{3.14165 = \pi}$$

If the square root of the area of one of the pyramid's sloping sides is deducted from the pyramid height and the difference is added to the original pyramid height; that would make the radius of a circle where the perimeter is the circumference, assuming that the pyramid was 280 cubits high, on a base of 440 cubits, and sloping at Tan 1.2727 recurring. The radius would then give the exact value for π and to 5 decimal places. The pyramid slope angle is the key to π .

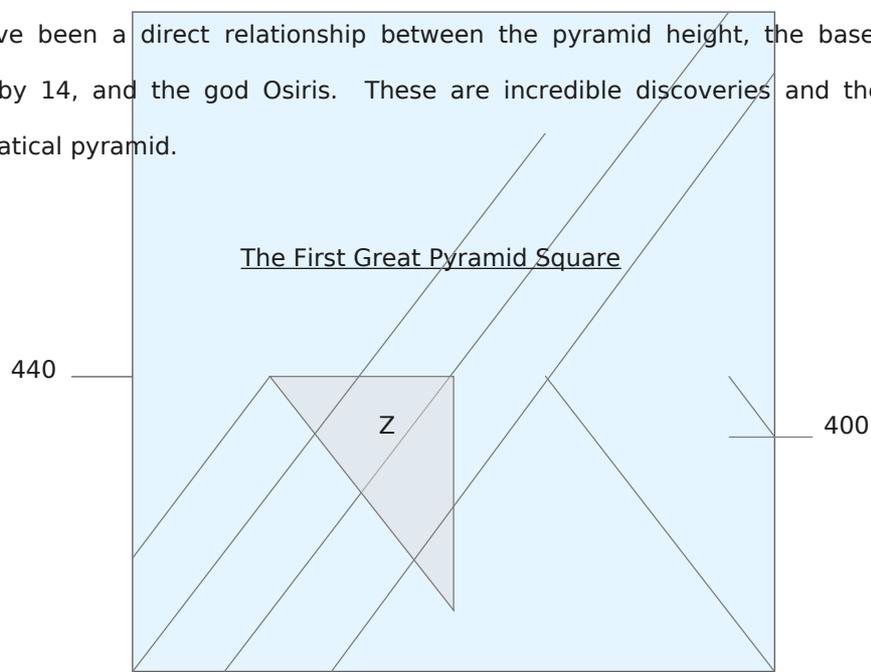
That would have been impossible unless the value was known at the time when the Great Pyramid was built, believed to have been 5000 years ago, but that too is impossible unless the generally accepted history of world mathematics was always essentially wrong.

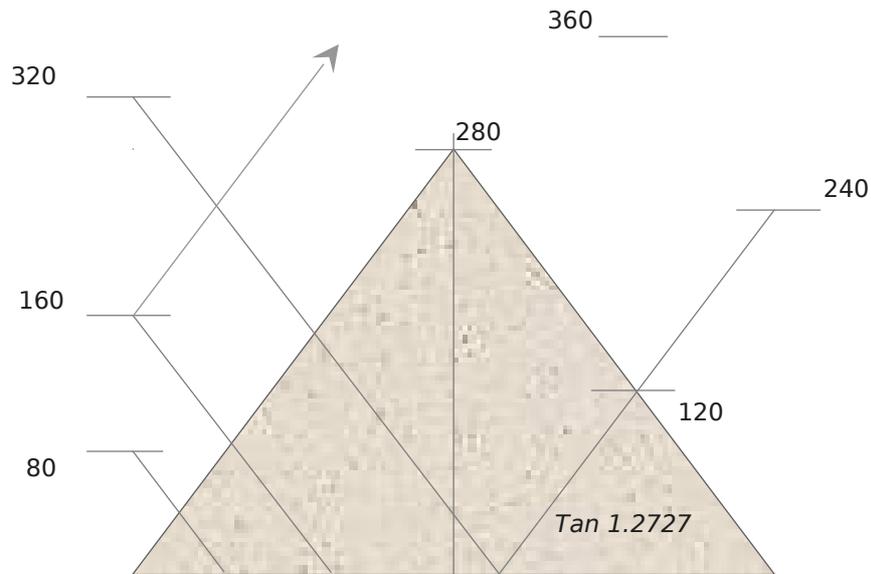
The official record for π says that the Egyptians had used $256/81 = \underline{3.16049}$ for the value as shown on the Ahmos Papyrus, dated circa 1650 BC. But the Great Pyramid predates that by a thousand years, and is fully correct. The Babylonians had used $25/8 = \underline{3.1250}$, and the Greeks had used $22/7 = \underline{3.142857}$. Archimedes appears to have come nearest by saying that it was on a regular polygon with 96 sides to give $3 + 1/7 = \underline{3.142857}$ and precisely that value was at the Great Pyramid as well but by another route.

There was that other value for pyramid π where Smythe had thought the radius of the circle was the pyramid height, and the circumference of the circle was the pyramid perimeter.

$$\pi = (440 \times 4) / (280 \times 2) = 1760 / 560 = \underline{3.142857}$$

That is exactly as Archimedes had seen it, but 10 times smaller than 31.42857 cubits, which is the width in cubits of each of the divisions of the Great Pyramid base at 440 cubits divided by 14, where 14 was the sacred number for the Egyptian god Osiris. There must then have been a direct relationship between the pyramid height, the base, the base divided by 14, and the god Osiris. These are incredible discoveries and they prove a mathematical pyramid.





If the Great Pyramid is seen again as a triangle inside a pyramid square, and if its slopes are extended inside that square then the points where the slopes rebound on the perimeter can be found by using tangents. The first stage can then be demonstrated where the top of the square will be $440 - 280 = 160$ cubits above the pyramid tip to form triangle Z.

The north pyramid slope creates the sloping side of triangle Z at $\text{Tan } 1.2727$. The base of the triangle is therefore $160 / \text{Tan } 1.2727 = 125.71429$ cubits long. That leaves a remainder to the corner of the Great Pyramid Square of $220 - 125.71429 = 94.28571$ cubits.

Another triangle is formed at the corner and it will be $94.28571 \times \text{Tan } 1.2727 = 120$ cubits high, a result in whole number cubits. The tip of the triangle will be $440 - 120 = 320$ cubits above base, and so the sequence continues throughout the square. The alignments on the slope will eventually pass out of the square on a multiple of the intersections, showing that it is viable throughout the square, and that the intersections are meaningful.

$$440 - 280 = \underline{160 \text{ cubits}}$$

$$160 / \text{Tan } 1.2727 = 125.7142 \text{ cubits}$$

$$220 - 125.7142 = 94.2858 \text{ cubits}$$

$$94.2858 \times \text{Tan } 1.2727 = \underline{120 \text{ cubits}}$$

$$440 - 120 = \underline{320 \text{ cubits}}$$

$$320 / \text{Tan } 1.12727 = 251.4285 \text{ cubits}$$

$$440 - 251.4285 = 188.5715 \text{ cubits}$$

$$188.5715 \times \tan 1.2727 = \underline{240 \text{ cubits}}$$

$$440 - 240 = \underline{200 \text{ cubits}}$$

$$200 / \tan 1.2727 = 157.1428 \text{ cubits}$$

$$440 - 157.1428 = 282.8572 \text{ cubits}$$

$$282.8572 \times \tan 1.2727 = \underline{360 \text{ cubits}}$$

$$440 - 360 = \underline{80 \text{ cubits}}$$

$$80 / \tan 1.2727 = 62.8571 \text{ cubits}$$

$$440 - 62.8571 = 377.1429 \text{ cubits}$$

$$377.1429 \times \tan 1.2727 = \underline{480 \text{ cubits}}$$

It can be seen that during its journey throughout the square, the slope angle of the pyramid has produced a series of vertical levels in whole number cubits, and horizontal distances in long numbers, using the tangent 1.2727 and then by either multiplying or dividing.

The line of the slope then passes out of the topside of the Great Pyramid Square at 40 cubits above a level of 440 cubits. The reverse of that alignment on the opposite slope (not shown for clarity) would be another 40 cubits. That gives 11 layers of 40 cubits across the square.

The pyramid square will then divide into 14 columns each with a base $40 / \tan 1.2727 = \underline{31.42857}$ cubits long and that will create a total of $11 \times 14 = \mathbf{154}$ rectangles inside the square. The number 154 was a planned pyramid number as will soon be demonstrated.

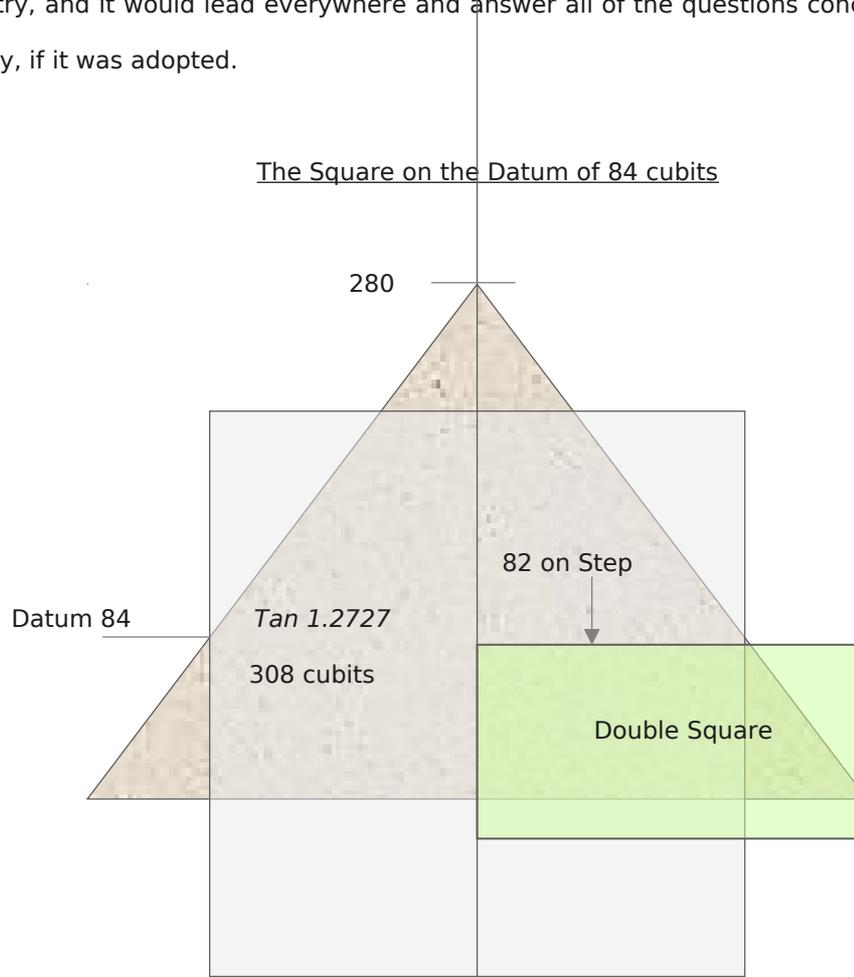
TWO CORRIDORS AND A FLOOR

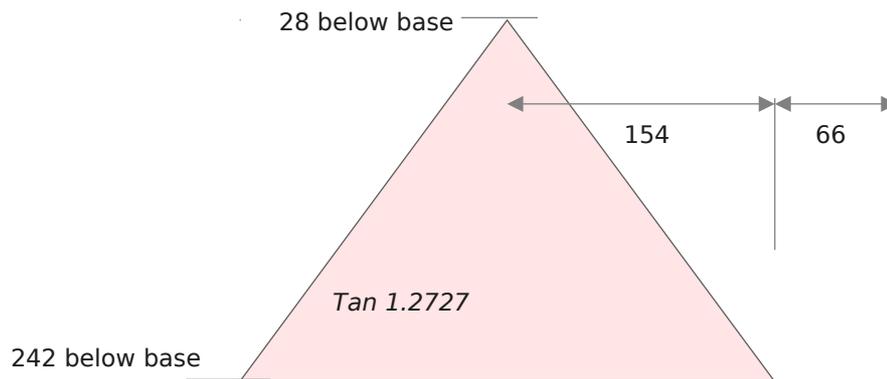
One of the most striking things about the cross section through the Great Pyramid is the way in which one corridor rises above the other, and both appear to incline at the same angle to the horizontal. The other peculiar thing is the elevation of the entrance at a point high above the sand at ground level. Why would the builders place an entrance some sixty feet above the desert floor and then locate it on a smooth and sloping pyramid side? It was just about as inconvenient as it could get? Quite clearly, it was not intended for convenience of access if the pyramid were a tomb for the pharaoh, and its position would have grossly hindered any funerary procession. The answer was that it was never intended to form part of any funerary procession. The entrance and corridors leading from it were

strictly geometrical, and they were based on the double square principle in this location on the pyramid section.

The First Double Square

Strangely enough, the answers concerning the question about the corridor layout was not on the corridors at all but at the King's Chamber. It was on the level of 84 cubits above base that looked like a datum on the upper surfaces of the horizontal section of shafts and the entrance corridor ceiling leading into the chamber, and it would have very strange correlation with the number 154, the number of rectangles found on the Great Pyramid Square. It would relate with the use of pyramid squares, and pyramids inside those squares, with the use of tangents. A pyramid above the level of 84 cubits would be $280 - 84 = 196$ cubits high, and the half base would be $196 / \tan 1.2727 = 154$ cubits. Somebody had deliberately located the level of 84 cubits above base so as to produce 154 cubits, the number of rectangles. That seems to suggest that the level of 84 cubits above base was important, and if it was important then how was it important? It could only show this if the geometry were able to progress somewhere, and that could only mean that the half base distance of 154 cubits was extended across the pyramid to give 308 cubits. If that were so then a square of sides 308 cubits was being created at that level and its upper corners would abut the pyramid slopes. This was in fact the principle behind the pyramid geometry, and it would lead everywhere and answer all of the questions concerning where and why, if it was adopted.





A pyramid above the level of 84 cubits above base would 196 cubits high and its half base would be 154 cubits long. The pyramid square at that level would then be of 308 cubits sides and it would extend below the base of the Great Pyramid by $308 - 84 = 224$ cubits. If then another smaller pyramid of same slope is created on the base of that second square it will be $154 \times \text{Tan } 1.2727 = 196$ cubits high, but because its base is 224 cubits below the Great Pyramid base its tip must occur at a level of $224 - 196 = 28$ cubits below the base of the Great Pyramid. The tip of the second pyramid would then mark a level 28 cubits below a pyramid 280 cubits high and in the same number but 10 times greater! The factor of 10 frequently occurs on the pyramid geometry and the level of 84 cubits above base, revealing 154 cubits and then a gap of 28 cubits, must be seen as valid in the context of the levels at the chamber. A height of 28 cubits on a pyramid 280 cubits high could not possibly occur by coincidence and the 28-cubit gap might well mean something else because the level on the top of the Great Step at 82 cubits above base, added to the distance of 28 cubits below base, gives a vertical distance of exactly 110 cubits. A double square 220 cubits long will now emerge and it will be 110 cubits high and on the half base of the Great Pyramid at 220 cubits. A double square will explain why the Descending Corridor was built as a diagonal on a double square rectangle in this very same position and on that same inclination. That was why the door was placed so high above the desert floor.

The Double Squares on the Two Corridors

The question of inclined slopes at the Great Pyramid would not be complete without recourse to both the Descending Corridor and the Ascending Corridor. These two access

ways carry slopes that are very close indeed to the diagonal of a double square. Petrie had measured the slope angles in 1880 and they were repeated on the survey drawings. For the Descending Corridor the slope angle given by Petrie was 26 degrees 31 minutes 23 seconds and for the Ascending Corridor it was 26 degrees 02 minutes 00 seconds. The slope angle for the diagonal of a double square would however be in the tangent 0.5000. These two slope angles can therefore be compared to see how they comply with the tangential value 0.5000.

From the Standard Tables

Tan 0.5022 = 26 degrees 40 minutes 00 seconds

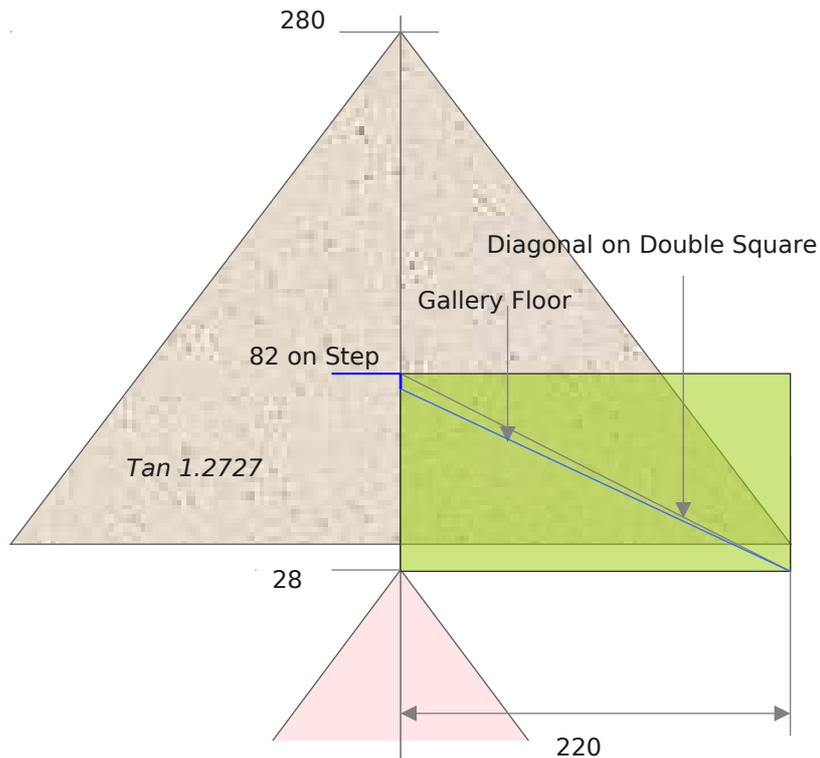
-Tan 0.0022 = 00 degrees 06 minutes 00 seconds

Tan 0.5000 = 26 degrees 34 minutes 00 seconds

In other words, both of the slope angles on corridors were very close indeed to the diagonal of a double square and but for some small error in measurement it can be assumed that they were intended to be so. The slightly lesser slope on the Ascending Corridor might have been due to the height of the face of the Great Step at the Grand Gallery, where the diagonal was taken off the top of the Step, and the floor was taken off the bottom of the Step and its rising face. In that event, the Grand Gallery floor was not originally intended as an important geometrical alignment but the line to the riser of the Great Step was important. There was a good reason for these differences in slope angle and it was because of the stone plugs.

A distance of 28 cubits below the Great Pyramid base had been found on the tip of a pyramid on a square coming off the level of 84 cubits above base, which was the datum on the ceiling of the entrance corridor of the King's Chamber. It was creating a double square rectangle 110 cubits high and 220 cubits long. It is certain therefore that the tip of that pyramid was intended to mark out the base of the double square and that the diagonal of that double square was a geometrical alignment on the floor levels of the Ascending Corridor, but taken off the important level at the top of the Great Step.

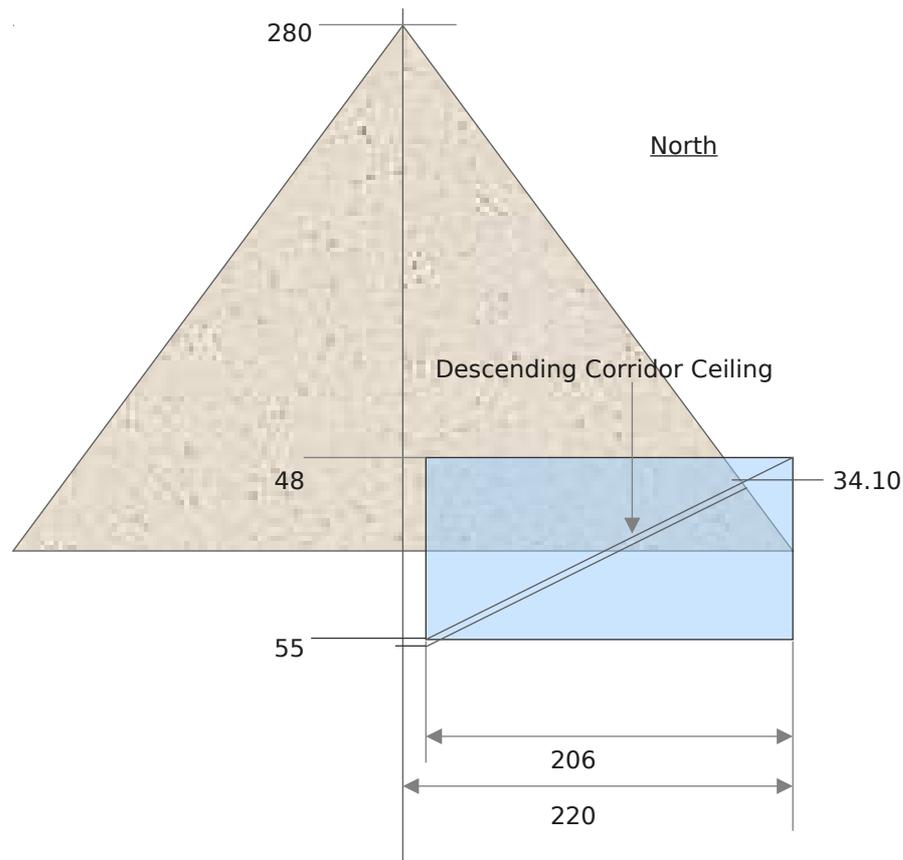
The Tapering Effect for the Stone Plugs



Since the inclination was less than the angle $\text{Tan } 0.5000$ by a few minutes of a degree then the rising face of the Great Step must have determined the slope of the Grand Gallery floor. It can be imagined that a very fine difference in slope angle had been transmitted down the Grand Gallery floor due to the riser on the Great Step and into the Ascending Corridor below, but the ceiling of the Ascending Corridor had remained true to $\text{Tan } 0.5000$. In that event there would have been a small tapering effect between the ceiling and floor of the Ascending Corridor and it had been that which had caused the jamming effect when the stone plugs were released to seal the pyramid. Geometrically, therefore, the slope angle of the Ascending Corridor had been determined by a double square 110 cubits high and 220 cubits long, the half-base of the Great Pyramid, and at a level of 82 cubits above base on the Step.

What then of the Descending Corridor? The pyramid survey says that the distance between the north base of the Great Pyramid and the point of change of the floor of the Descending Corridor from the inclined to horizontal is 107.39 metres, and that converts to 205.06 cubits, which is 0.06 cubits short of 205 cubits exactly, but the design distance was on the ceiling.

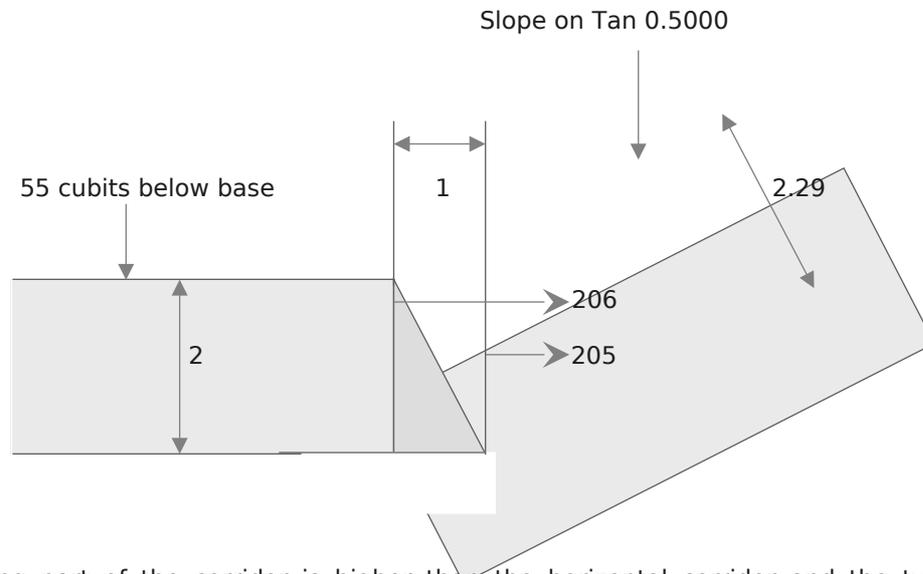
The Pyramid and the Second Double Square



It seems likely therefore that 205 cubits was the intended distance because it was taken on the floor rather than on the ceiling? The surveyors had taken their dimensions off the floor but the horizontal section of the Descending Corridor at 55 cubits below the base was on the ceiling. The distance of 55 cubits was an important number when seen in relation with the pyramid base and with the pyramid as a whole. It can be assumed therefore that 55 cubits below base was the correct position for the second double square. Then the survey drawing says that the exit point of the Descending Corridor ceiling on the original pyramid entrance *assuming that the engineers had used the value $\tan 1.2727$* , was 17.92 metres above base, and that converts to 34.22 cubits above base, but there were problems because the engineers had taken their measurements on the floor and the outer casing stones are missing. They had extrapolated to find that level, there was error, and their measurements should have been on the ceiling. The survey states that the corridor height changes from 1.2 metres, or 2.29 cubits, on the slope, to 2 cubits high where it runs horizontally? This means that the distance of 205.06 cubits on the point of change on the floor is too short, and if the surveyors had measured on the ceiling at 55 cubits below base,

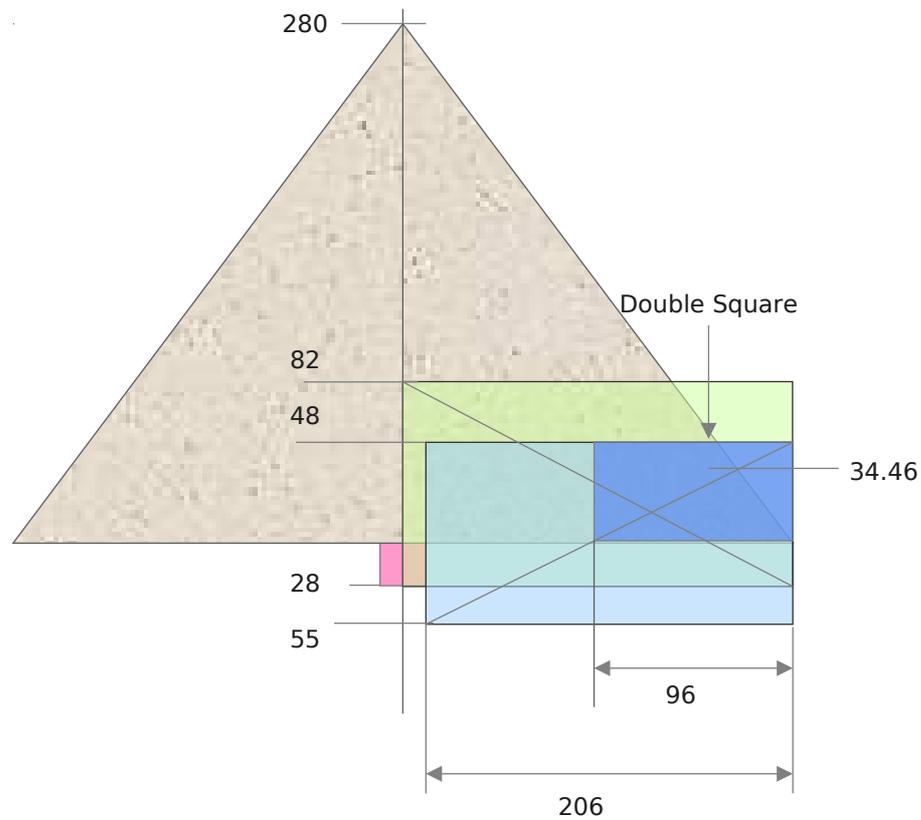
then the horizontal distance would have been very slightly longer. This can be shown on the corridor junction.

The Descending Corridor Junction



The sloping part of the corridor is higher than the horizontal corridor and the type of junction is uncertain. It could have been built in all manner of ways but it does look on the drawings as if 2.29 cubits was maintained on the slope while 2 cubits had run into it on the horizontal. The effect of the two corridor sections coming together in this manner is made clear when seen on a section drawing. The distance measured on the corridor floor from point of change to the north base of the pyramid is around 205 cubits, but because the corridor slopes at Tan 0.5000, the ceiling of the sloping corridor must abut the ceiling of the horizontal corridor 2 cubits high, creating a triangle 2 cubits high and 1 cubit on its base. The tip of that triangle must then be marking the point of change on the ceiling, and the distance between the point of change and the north pyramid base will now become $205 + 1 \text{ cubit} = 206 \text{ cubits}$. That was critical and intentional. The distance will give $220 - 206 = 14 \text{ cubits}$ north of pyramid centre, and 14 cubits can also exist south of pyramid centre to give a distance across pyramid centre of 28 cubits. But a gap of 28 cubits had already been found on the pyramid base coming from the square of sides 308 cubits, and a square of sides 28 cubits now surely exists below the pyramid base. If that were planned, then its height would be controlling the level of the first double square while it's half-base controlled the width of the second double square.

A Square and Three Double Squares



The two diagonals on the corridor ceilings will now cross at the point where the Descending Corridor ceiling intersects the Ascending Corridor floor, and in order to see if that is correct then the level of the entrance point of the Descending Corridor on the north sloping face of the pyramid can be verified. The level of the second double square is 55 cubits below the base of the Great Pyramid and it is 103 cubits high, the level of its topside must therefore be $103 - 55 = 48$ cubits above the base of the Great Pyramid and that is the point where the line of the ceiling of the Descending Corridor would pass through to the upper north corner of the double square that is 96 cubits long.

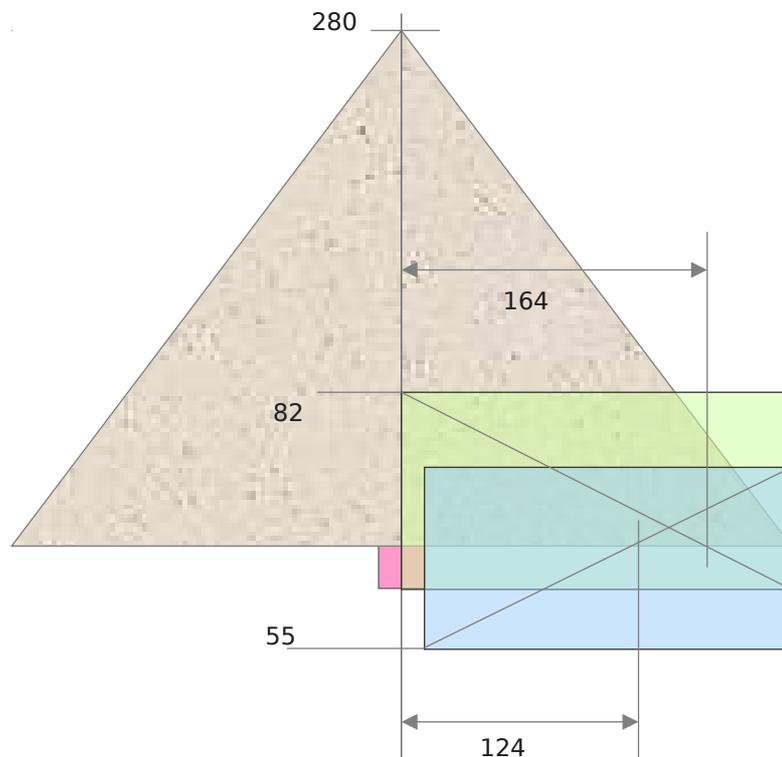
Another double square can therefore exist and it will be 48 cubits high, 96 cubits long, and the line on the ceiling of the Descending Corridor will be its diagonal. The level where the original north slope of the Great Pyramid had passed through the line on the ceiling when the casing stones were in place can now be determined because there are two angles inside the double square, namely $\tan 0.5000$, and $\tan 1.2727$, on a common base of 96 cubits.

$$34.46 / \tan 1.2727 = 27.07 \text{ cubits}$$

$$34.46 / \tan 0.5000 = 68.92 \text{ cubits}$$

It is clear that $27.07 + 68.92 \text{ cubits} = 95.99 \text{ cubits}$ and that is 96 cubits on the base being sought. The original level of the entrance doorway lintel must then have been 34.46 cubits above base on the double square instead of 34.22 cubits by survey. The levels are similar.

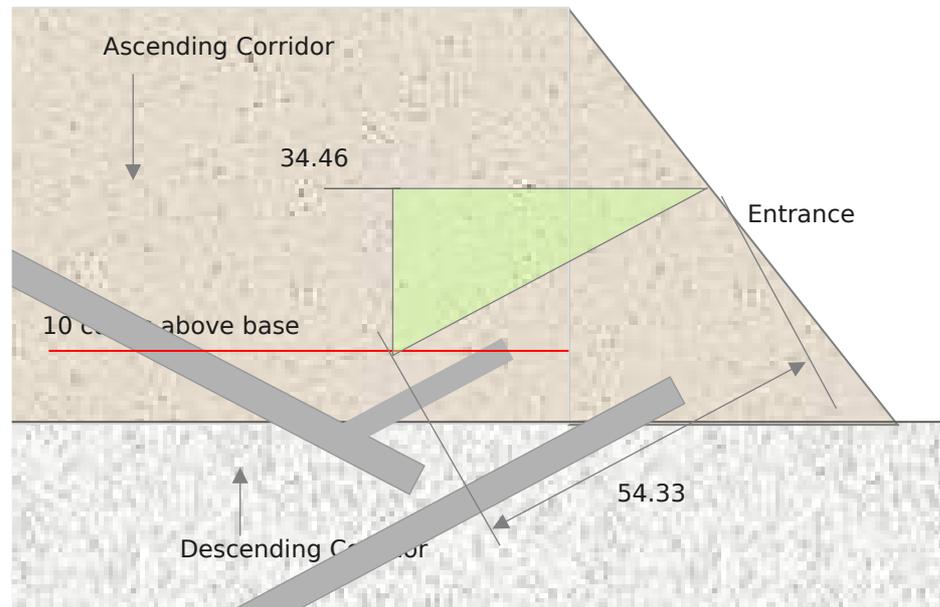
The Level on the Intersection



That gives two double squares superimposed. A level of 82 cubits above base on a double square will give a horizontal distance of 164 cubits north of pyramid centre. Another level of 55 cubits below base on a double square will be another horizontal distance of 110 cubits plus the set back of 14 cubits north of pyramid centre, to give 124 cubits. The difference between 164 and 124 cubits is 40 cubits, which means that the diagonals on the two double squares are 40 cubits apart on the pyramid base, and since both are rising at $\tan 0.5000$ then the level of the intersection on the Descending Corridor ceiling and Ascending Corridor floor must be an incredible $20 \times \tan 0.5000 = \mathbf{10 \text{ cubits}}$ above the base of the Great Pyramid. The number 10 is controlling the corridor junction position and

it is a pyramid number that divides the pyramid height into 28 layers deriving from a square of sides 28 cubits.

The Level on the Shaft Intersection

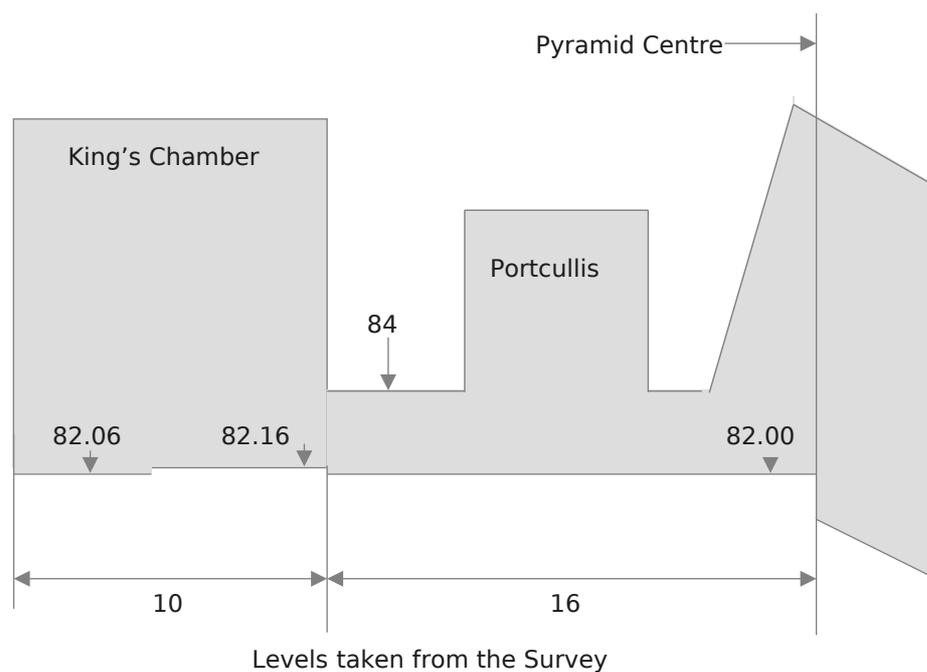


A triangle now exists whose upper level is 34.46 cubits above base and whose hypotenuse will be sloping at $\tan 0.5000$ on the ceiling of the Descending Corridor. The triangle will therefore be $34.46 - 10 = 24.46$ cubits high and $24.46 \times 2 = 48.92$ cubits long, while the length of the hypotenuse will be the square root of $(24.46 \text{ squared} + 48.92 \text{ squared}) = \text{square root of } 598.29 + 2354.19 = \text{square root of } 2952.48 = 54.33$ cubits. How does that compare with the survey? The engineers had given a distance of 28.98 metres, or 53.98 cubits, on the floor of the Descending Corridor from a point where they thought the position of the original entrance casing stones had once existed, to the line where the floor of the Ascending Corridor extends onto the floor of the Descending Corridor. Their survey distance is $54.33 - 53.98 = 0.35$ cubits greater than the geometry says that it should be. Once more, the geometrical result is broadly in line with the survey result and must then be correct.

The Half Area Condition

As with all other aspects of the original Great Pyramid, every part of it was relevant to the whole and no part was arbitrary. This applies especially to the King's Chamber floor, which on first sight seems to be out of place. The walls of this chamber are perfectly true and exact so as to fix for all time a length of 20 cubits exactly, and a width of 10 cubits exactly. The builders had clearly wanted to protect the dimensions down the ages, and in cubits, but the orthodoxy have invariably given these distances in feet, inches, or even metres, and had in doing so denied the numerical truths of 10 cubits and 20 cubits that had remained hidden for countless centuries. The other question was on the floor. Why was it 'out of level' when the walls were perfect? The general assumption has always been that this was some kind of oversight but these clever people did not suffer from oversights. The floor was uneven for two very good reasons and they were strictly mathematical.

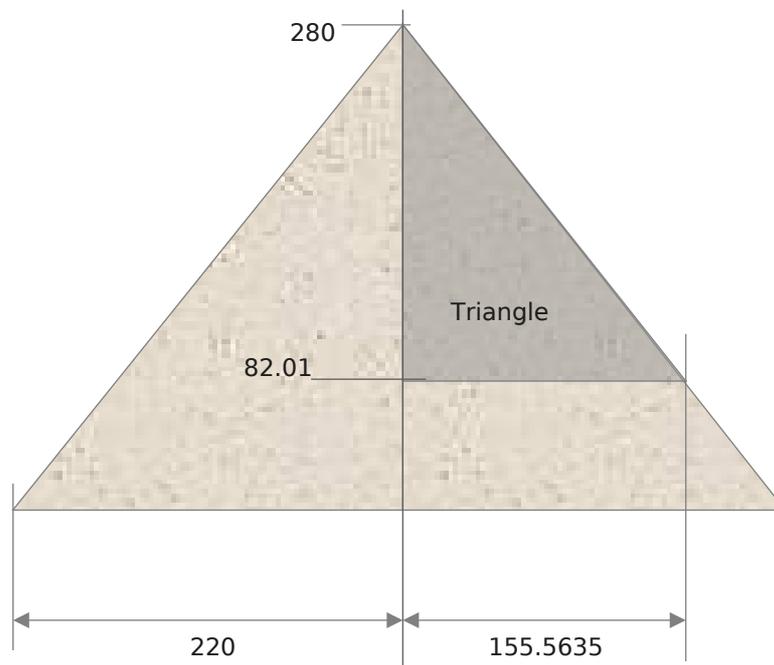
The Uneven King's Chamber Floor



If it had not been for a passing remark made by a commentator during a recent television program about the mysteries of Egypt, it would probably never have been suspected that the King's Chamber was vastly more complex than it appears. The commentator had entered the chamber to the glare of the television lighting crew and made the observation that if the floor of the chamber were extended to the full width of the pyramid, its area would be half that of the Great Pyramid's base. What he meant by 'full width of the

pyramid' was the original pyramid complete with its casing stones in place as it had been designed by the ancients and emphatically not the much-reduced pyramid seen today. That small comment had brought the full significance of the King's Chamber into the light of day. If it ever was a tomb, which seems doubtful, it certainly possessed a reason for its existence here. All that would be required were some simple mathematics and the with appropriate floor levels known from the Rinaldi and Maragioglio survey drawings, the verification could be made.

The Pyramid and the Half Base Area



The area of the base of the Great Pyramid is 193600 square cubits. The area of half the base would be $193600 / 2 = 96800$ square cubits. The side of square would be the square root of 96800 at 311.1270 cubits, and so the half-length of the length of side of square would be $311.1270 / 2 = 155.5635$ cubits. A triangle had existed whose base was 155.5635 cubits long, and whose sloping side was in the tangent of 1.2727 recurring, making it $155.5635 \times \tan 1.2727 = 197.9898$ recurring cubits high. The level on the floor would then have been $280 - 197.9898 = \mathbf{82.01}$ cubits above base, and at a point very close to the top of the Great Step. The survey says that the Great Step is 42.93 metres above base or 81.97 cubits above base, whereas the level on top of the Step has always been seen as $\mathbf{82.00}$ cubits above base. That suggests that some small error could have

resided in the survey and that two decimal places had not been enough. It also suggests that there were really two levels on the Great Step, one at 82.01 cubits above base and the other at 82.00 cubits above base. The first would prove the half-area rule and the second would prove the corridor systems. By any stretch of the imagination that must say that the lower level on the floor was dividing the area of the Great Pyramid base by half! Current thinking would say that no person who lived 5000 years ago could possibly have built the level on the top of the Great Step to such precision without recourse to modern laser leveling technology and it must then have been coincidence. The ancients had placed the Great Step with superhuman accuracy before the pyramid rose high enough to enclose it within the Grand Gallery and it must therefore have been designed. How they had achieved this on crudely formed stone building blocks running to a height of well over 140 feet, (the equivalent of a present day 14-story office block) is really quite beyond comprehension. They had then laid the floor of the King's Chamber with equal certainty and out of level so as to produce certain numbers. In any event, the ancients had used tangents because without tangents and of the original pyramid dimensions in whole number cubits, the chamber floor could not have been located in the right position with any accuracy at all. The builders not only knew trigonometry but were experts in using it as well.

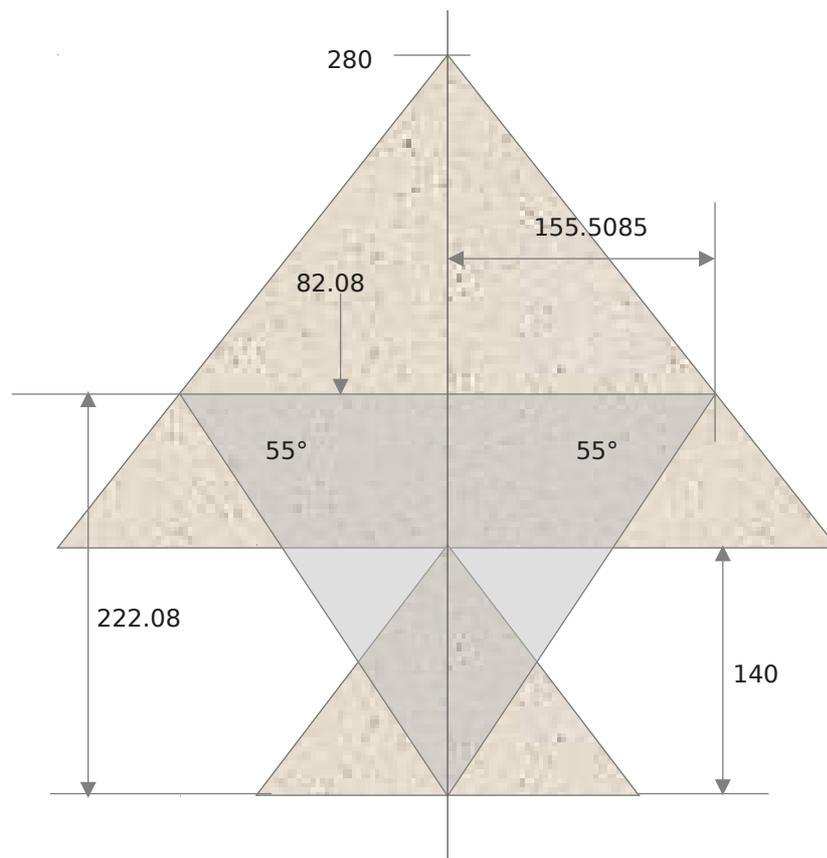
The Half Height Condition

Why then create a level that was going to be able to half the area of the pyramid base on the top of the Great Step? There is one possible answer. They had intended to introduce another halving configuration. They wanted to halve the height of the Great Pyramid through another level, this time on the King's Chamber floor. To do that they had to introduce a pyramid 140 cubits high into the geometry, and they could have logically placed it was with its tip at the centre base of the Great Pyramid.

The obvious answer was then to say that the half area comes from the lowest level on the floor whereas the half height comes from the highest level on the floor. The highest level is 82.16 cubits above base, and a pyramid above that would be $280 - 82.16 = 197.84$ cubits high. The half base distance would be $197.84 / \tan 1.2727 = 155.4457$ cubits. The vertical distance between that level and the base of the half-height pyramid would therefore be $82.16 + 140 = 222.16$ cubits. A right-angled triangle 222.16 cubits high and 155.4457 cubits on its base would give a slope angle of $222.16 / 155.4457 = \tan 1.4291$.

From the Standard Four Figure Tables that is just less than 1 minute of arc greater that **55 degrees** exactly and the number 55 requires no introduction from the geometry known so far. It rather looks then as if that part of the King's Chamber floor that rises upward according to survey was somehow pointing the way towards an angle of 55 degrees on a linking triangle but not quite exactly. Why not quite exactly? The answer to that is even more intriguing.

The Half-Height Great Pyramid



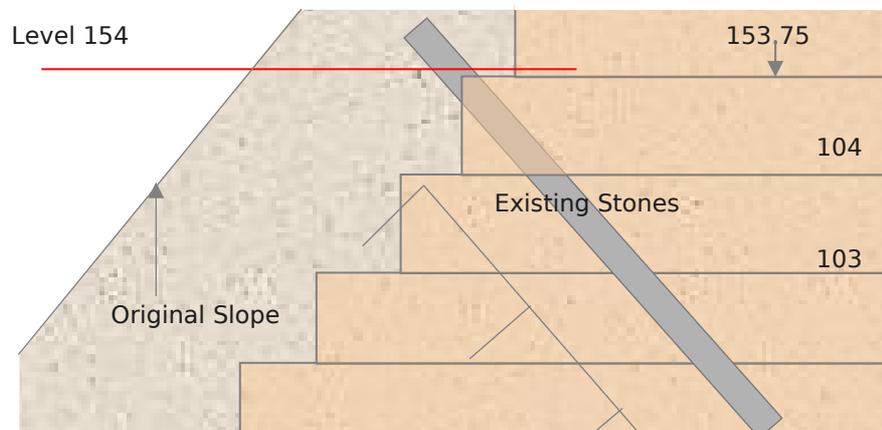
The half height of the actual rising projection on the floor would be $0.16 / 2 = 0.08$ cubits, and that would make the level 82.08 cubits to produce a pyramid that was $280 - 82.08 = 197.92$ cubits high above that level. The half base distance would then be $197.92 / \tan 1.2727 = 155.5085$ cubits long. The vertical distance between the base of the half-height pyramid and the half-height projection on the chamber floor, would then be 222.08 cubits. The slope angles of the inverted linking triangle would be $222.08 / 155.5085 = \tan 1.4281$ and from the Standard Four Figure Tables that is exactly 55 degrees. Then the angle carries meaning of its own because there are 60 minutes in every degree and 60 seconds in every minute to give $55 \times 60 \times 60 = 198000$ seconds of arc. That is strange because the

pyramid height of 280 cubits less the level on the Great Step at 82 cubits is 198 cubits. Was that yet another circumstantial event? It could only have been planned.

THE SOUTH SHAFT, KING'S CHAMBER

Access to the Great Pyramid geometry had long ago been made ready through the South Shaft of the King's Chamber and by the manner in which it was built. The way forward became clear only when it was seen that the shaft was not really a shaft at all but a geometrical line on section. That fact has never before been recognized but it is now, and in order to make the comparisons between the geometry and the stones that exist, it is necessary to know what actually does exist where the shaft leaves the pyramid. The story is illuminating.

Exit level, South Shaft, King's Chamber.



For that there is recourse to the levels and distances within the pyramid given in the Rinaldi and Maragioglio Survey from which the geometry of squares and pyramids will automatically follow. Without that survey, and the use of tangents, nothing more would have been known and nothing more would have followed. The engineers had climbed the existing slopes of the pyramid and had taken the levels on the stone courses where the two upper shafts coming from the King's Chamber had passed out on the north, and south slopes. It was a difficult and perilous operation. Then they had shown the results on their

architectural drawings with cross-sections through the two exit points. For the South Shaft, they had given the levels on the course numbers 102 and 103, at 79.24 metres and 79.88 metres above the base of the pyramid, but not on course number 104.

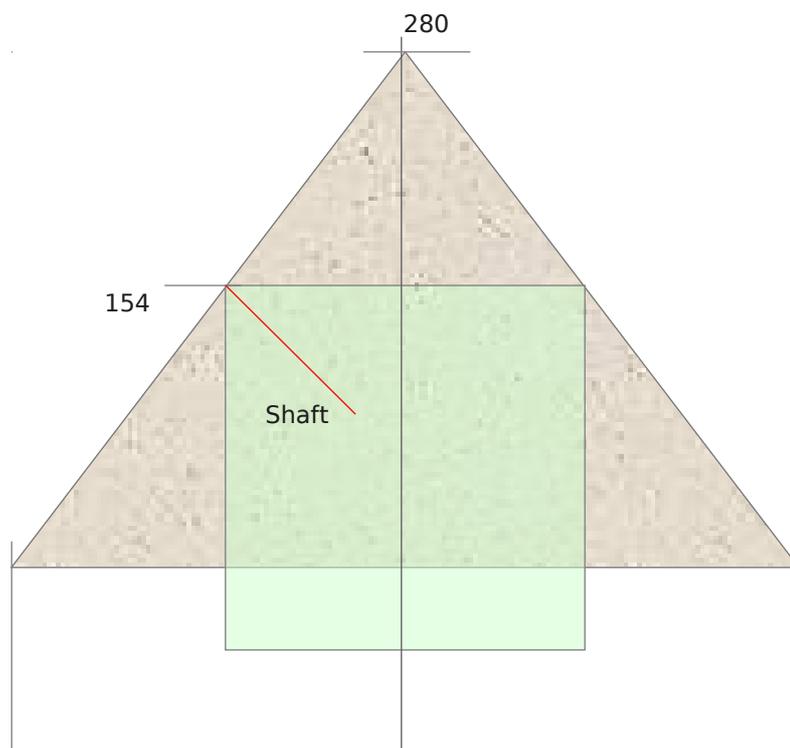
Using the conversion where 1 cubit = 1.7181 feet, these levels transpose into 151.30 cubits and 152.53 cubits respectively and the difference between them is around 1.22 cubits. If the difference is added to the level on course number 103, for course number 104, the level on course 104 is likely to be around 153.75 cubits. But not all courses are the same height and the surfaces of each course upon which these levels were taken would be unfinished, making them slightly uncertain. The engineers had then extrapolated the line where they thought that the original shaft might have emerged on the original pyramid face when the original casing stones were in place. The difficulty with this is to know precisely where that slope would have fallen. It would have to be correct in terms of angle and position, for the position would vary according to pyramid height. They had thought that the original exit point on the would have been in line with stone course level 104 at 153.75 cubits above base, seen on its floor. That would have put the exit point on the upper shaft surface at very close to a level of 154 cubits above the base, seen on its ceiling. That would be an interesting level.

It had been found that a datum exists on the upper surfaces of the shafts at the chamber and where they run horizontally but this level is also on the ceiling of the entrance corridor at 84 cubits above base. It creates a pyramid $280 - 84 = 196$ cubits high above the datum with a half-base of $196 / \tan 1.2727 = 154$ cubits. As a result, there would be a level of 154 cubits on the shaft exit point, and a horizontal distance of 154 cubits on the datum, both points of which are attached to the shaft. The first of those points would be at its exit point and the other would be at its change of direction from horizontal to inclined. That is so unlikely to have occurred by chance that the exit point of 154 cubits on the original stones must have been correct. Then there were 154 rectangles on the Great Pyramid Square by extending the slopes of a pyramid 280 cubits high, and by using tangents. What more could then be found about the slope angle of the South Shaft that had been built in stone?

Flinders Petrie had measured the slope internally from the King's Chamber during his famous two-year survey beginning in 1880. He had found that the inclination was just over 45 degrees, using a clinometer, but he had difficulty with this. The sloping part is remote from the face of the chamber wall by some five feet for a shaft nine inches square. Petrie

whose slopes were in the tangent 1.2727. It would then be possible to find the length of the half-base and to obtain the key to the first stage of the pyramid secrets. The half-base would be $126 / \tan 1.2727 = 99$ cubits long. That is another magical result! The answer is in whole number cubits! Any other number on any other angle but the tangent 1.2727 recurring, no matter how small the change, would never give the answer in whole number cubits, still less divisible by 11, the number of layers found on the Great Pyramid Square. That would mean that the distance across the pyramid at a level 154 cubits, must be $99 \times 2 = 198$ cubits long. A line had once existed across the Great Pyramid at the level of 154 cubits that was exactly 198 cubits long when the casing stones were in place and when the pyramid was complete. It was probable therefore that the Great Pyramid had been deliberately stripped of its casing stones so that the outline would be lost and with it the geometry. The intention might well have been to eliminate 154 cubits and make the shaft exit point non-verifiable. If that were so then 198 cubits would also have been lost. That undeniable truth did not however rest entirely on the missing casing stones because tangents would find them again and that is just what is happening here. They would make it possible to know again after thousands of years of not knowing the implications of 154 through the use of notional pyramids and pyramid squares, and the results are emerging, profound beyond belief. If there exists a Great Pyramid Square of sides 440 cubits then there could also exist another pyramid square of sides 198 cubits and that pyramid square would mark the next stage in the process.

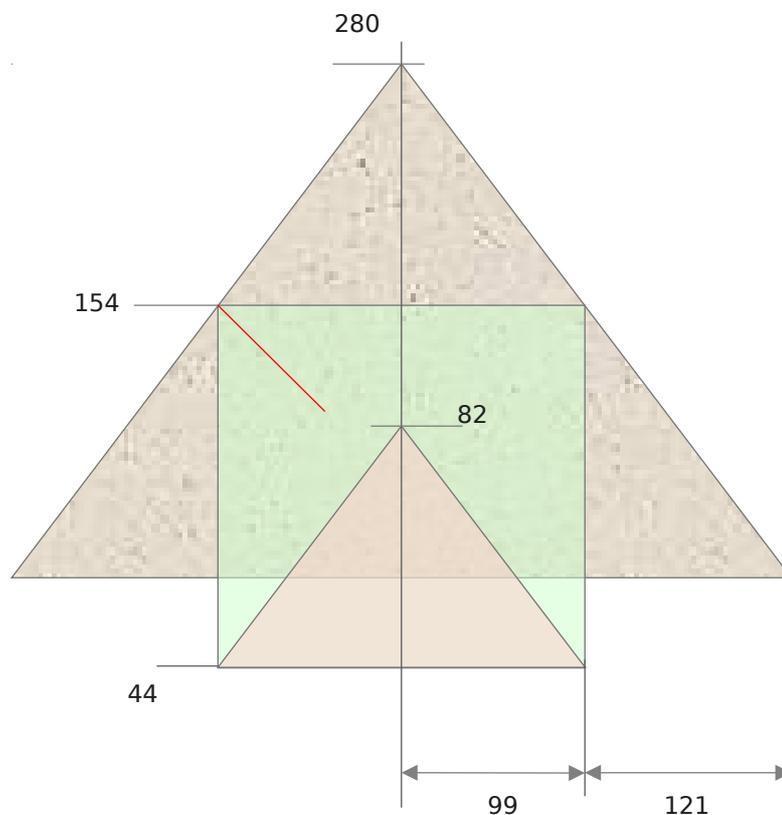
The First Pyramid Square on 154.





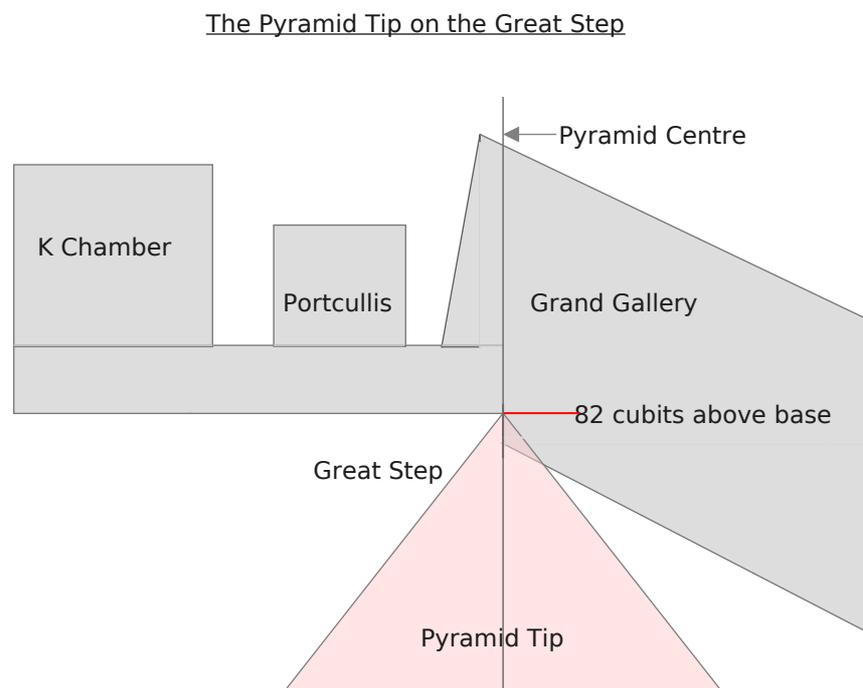
The pyramid square shown below the point where the shaft exits the south slope of the original Great Pyramid will abut the slopes of the pyramid at 154 cubits above base, and the square will extend below the base by $198 - 154 = 44$ cubits. The use of pyramid squares has just revealed another number divisible by 11. The extensions of these squares below pyramid base were important and the projection of 44 cubits will show why.

The Pyramid on the Pyramid Square



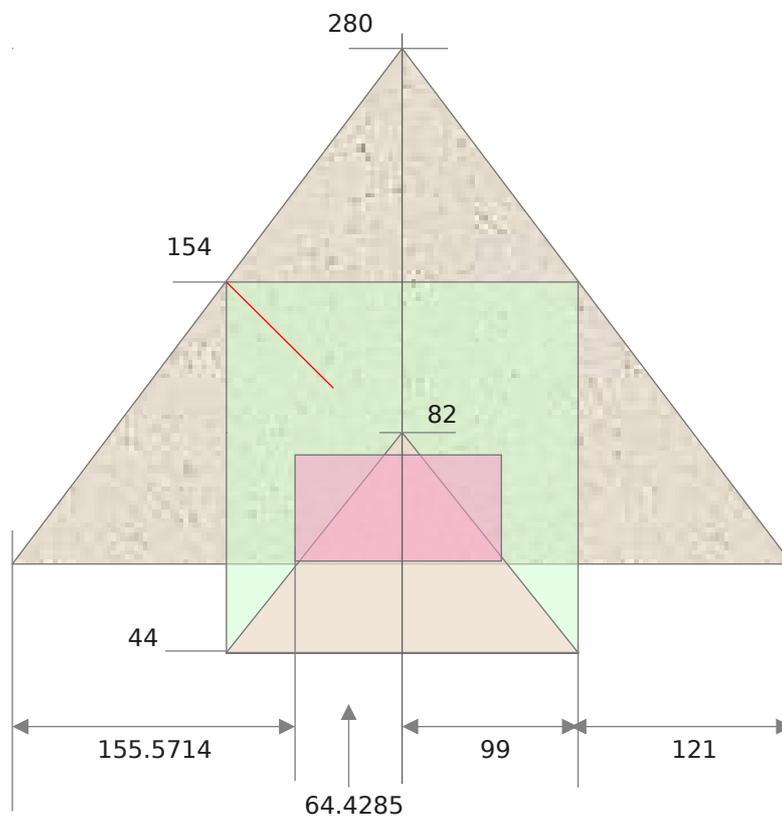
Another pyramid can be constructed on the square $99 \times \tan 1.2727 = 126$ cubits high but because the base of the second pyramid is 44 cubits below the base of the Great Pyramid and is 126 cubits high, then its tip must be $126 - 44 = 82$ cubits above the base. The discovery that the pyramid tip is 82 cubits above the base of the Great Pyramid is already significant to those who know the pyramid interior but it would mean nothing to those who have never seen the drawings produced by Rinaldi and Maragioglio, which, incidentally can be obtained from any public library. The pyramid tip is on the top of the Great Step cast on

stone, which is exactly 82 cubits above pyramid base and on the pyramid centreline! The pyramid inside the pyramid square is confirming the level once more. It was no mistake then that the pyramid centreline was made to coincide with the rising face on the Step.



The level at the top of the Great Step was also confirmed by a paper published by the John Legon, (*number 108 Gottinger Miszellen*) which says that the level is 82.01 cubits above base on the top of the Great Step, but there is a very slight reduction in level as the floor moves towards the top of the step coming from the King's Chamber. That shows that the exit point at 154 cubits above base, and the pyramid tip on the pyramid square was stating that the Great Step was always intended to be 82.00 cubits above base, while taking account of any small error in the physical measurement found by survey.

The Double Square on the Pyramid Base



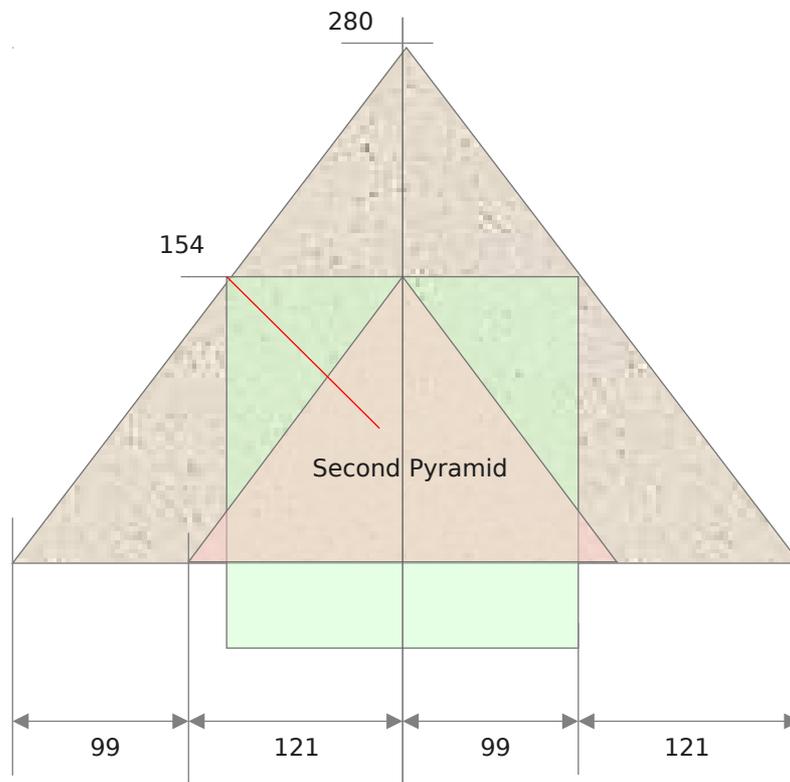
The ancient Egyptians were well aware of the double-square and one of the best examples already exists on the floor of the King's Chamber for its dimensions at 10 x 20 cubits make it a perfect double-square. Then they had sealed those dimensions in the walls of the chamber by lining them for all eternity in hard granite slabs while they created another series of double squares on the corridor systems. Another double square exists on the base of a pyramid 82 cubits high whose half-base will be $82 / \tan 1.2727 = 64.42857$

cubits long. That unlikely number has been found with the benefit of a pocket calculator but the ancients had found it the hard way. If that number is deducted it from the half-base of the Great Pyramid, at 220 cubits it gives an interesting result...

$$220 - 64.42857 = 155.5714 \text{ cubits} = 198 / \tan 1.2727$$

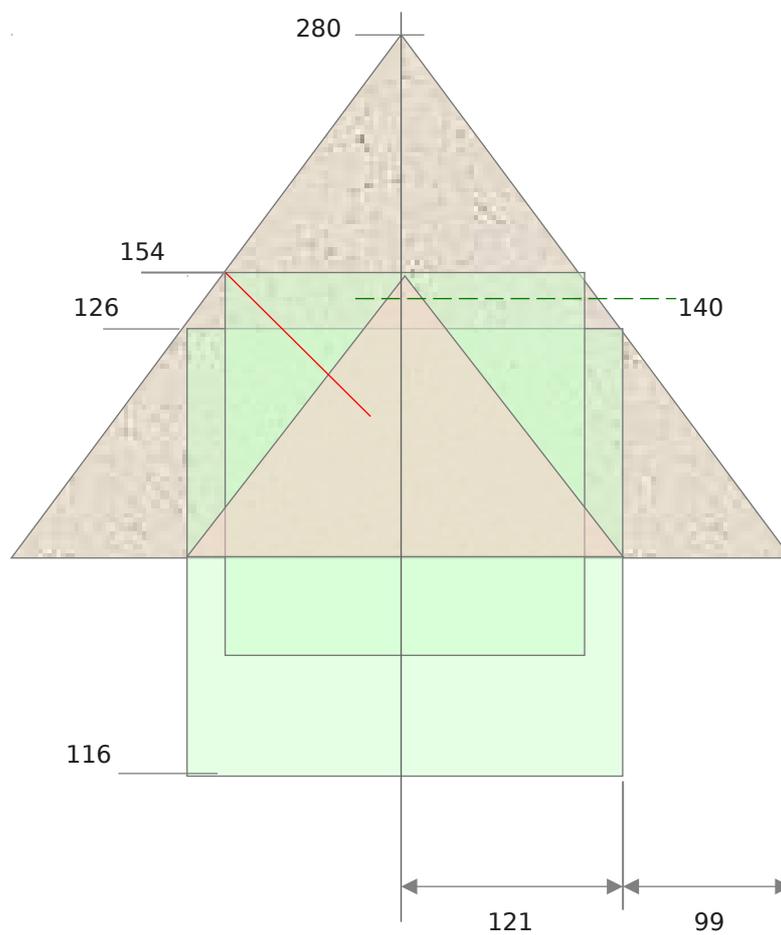
The half base of a pyramid 198 cubits high sloping at $\tan 1.2727$ is identical to the half base of a pyramid 82 cubits high taken from the half base of the Great Pyramid 440 cubits long.

The Pyramid 154 cubits high



Because there exists a level of 154 cubits on the level of the upper surface of the South Shaft exit point there also exists a height of 154 cubits within the pyramid section and that height can create another pyramid of same slope angle at $\tan 1.2727$. The half-base of this pyramid is $154 / \tan 1.2727 = 121$ cubits long and the full base would be 242 cubits, creating a second pyramid square of sides 242 cubits. The two squares when seen together were very important when measured on the shaft exit levels.

The Second Pyramid Square

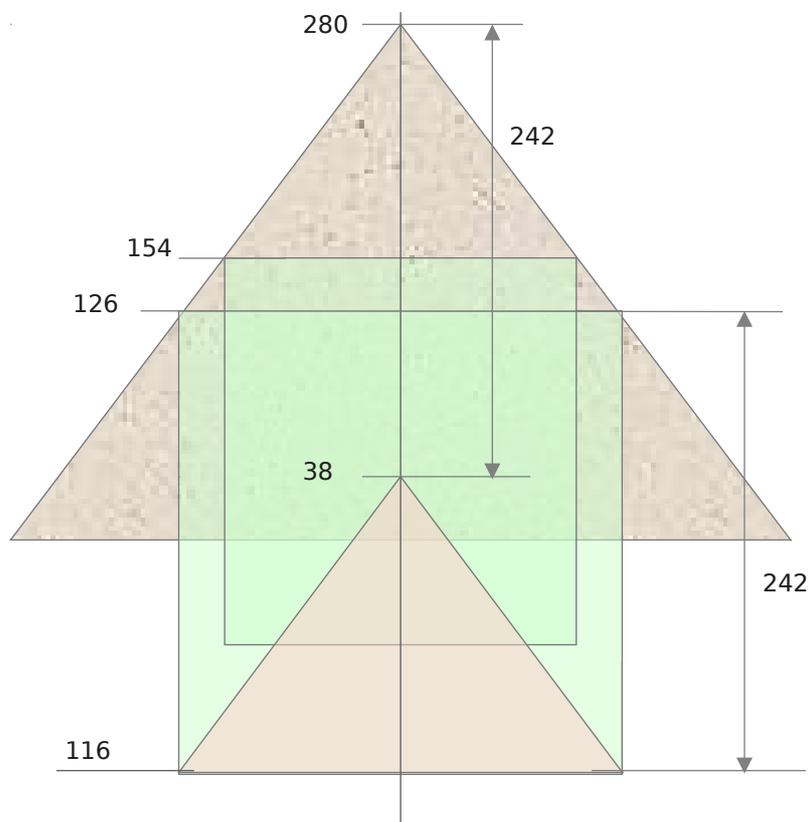


The result by using tangents is once more in whole number cubits and again it is divisible by 11. The numbers on the base of the Great Pyramid are now in the sequence of 99 and 121 cubits, south to north for the second pyramid square, where for the first pyramid

square they had been in the sequence 121 and 99 cubits. The numbers are the same but reversed. That means that the geometry of the pyramids and the pyramid squares is evolving about a mid-point. The second pyramid square will abut the slopes of the original Great Pyramid at a level of $280 - 154 = 126$ cubits above base. The first pyramid square had abutted the slopes of the Great Pyramid at 154 cubits above base. The difference between the two levels is $154 - 126 = 28$ cubits and that is 10 times smaller than 280 cubits, the height of the Great Pyramid and the length of sides of square that controlled the corridor systems. The shaft must then be linked with the full height pyramid that was built in stone.

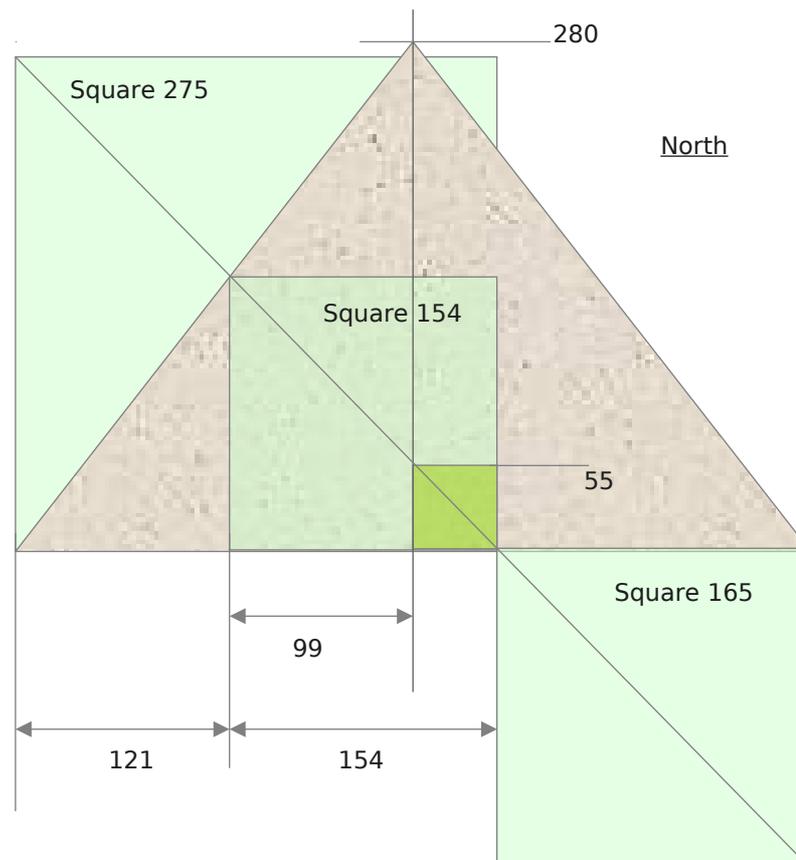
The difference between the two levels on the two pyramid squares is 28 cubits, and half of that is 14 cubits. If then 14 cubits were added to the lower level of 126 cubits it would give 140 cubits, and 140 cubits are half of 280 cubits and the Great Pyramid has been bisected on its height. The distances on the square are evolving around a mid-point and it was the mid-level of the Great Pyramid beginning with 154 cubits above base.

The Pyramid Tip on the Second Square



Another pyramid can now be constructed on the base of the second square of sides 242 cubits at another 154 cubits high, which is the height of the pyramid above the square. The base of the pyramid inside the square will now extend below the of the Great Pyramid base by $242 - 126 = 116$ cubits, and since the pyramid is 154 cubits high, its tip will extend above the base of the Great Pyramid by $154 - 116 = 38$ cubits. But $280 - 38 = 242$ cubits and that is also the length of side of the second pyramid square. Another square of same sides exists between the tip of the inner pyramid and the tip of the upper pyramid. The geometry could continue further than is being shown here since a distance of 242 cubits is becoming relevant in the vertical plane and it might well be moving towards another pyramid height.

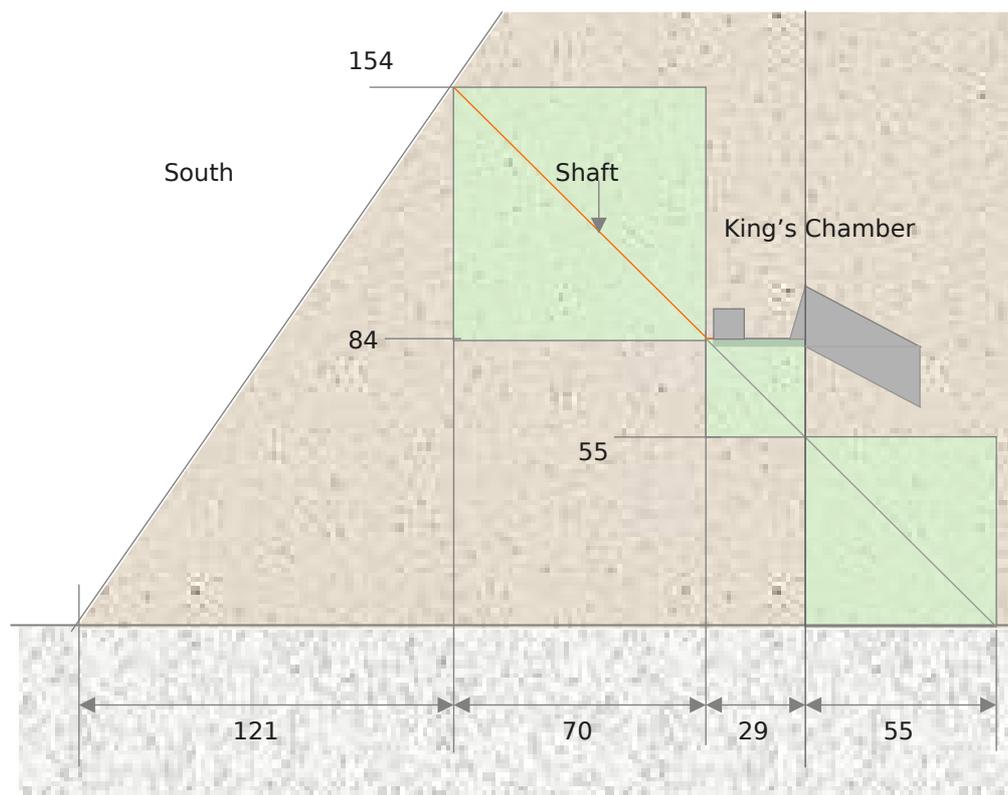
The Shaft at 45 degrees as a Diagonal



The implications of Gantenbrink's 45 degrees can be seen as the diagonal of a whole series of squares, and they too are significant. There is no doubt that if a square of sides 154

cubits exists with a line running through its corners at 45 degrees it is a diagonal of that square. In that event it passes through the shaft exit point at its upper south corner to the base at the lower north corner. The south side exit point was 99 cubits south of the centreline of the Great Pyramid, and the north side must then be $154 - 99 = 55$ cubits north of the pyramid centreline. The Slope on the Diagonal would therefore start on the pyramid base at a distance of $154 - 99 = 55$ cubits north of the pyramid centreline with a square of sides 55 cubits and continue through to another square of sides $121 + 154 = 275$ cubits, and in the opposite direction there would be another square of sides $220 - 55 = 165$ cubits coming off the pyramid baseline. The numbers 275 and 165 are also important pyramid numbers.

The True Position of the South Shaft



It is remotely possible that the Slope on the Diagonal is not the same geometrical entity as the South on Shaft as built in stone. The shaft might be in a different position and if it were then the geometry would not be viable. In order to establish whether or not the two

alignments are in the same position within the pyramid it is necessary to employ the two known fixed points on the shaft, which were the shaft exit point and the point of change of shaft direction as measured on its upper surfaces at the King's Chamber beyond the south wall.

The 1965 survey states that the distance between the south wall of the King's Chamber and the 'change of direction' of the South Shaft from horizontal to the inclined is 1.50 metres, or 2.86 cubits. The chamber width is 10 cubits but the engineers had not given the distance between the north wall of the chamber and pyramid centre. Petrie had given this distance at 330.6 inches (plus or minus 0.8 inches) or a possible 16.07 cubits. The total distance between the change of shaft direction and pyramid centre would then be around $2.86 + 10 + 16.07 = 28.93$ cubits and if the design distance had been 29 cubits then there would be a shortfall of 0.07 cubits. It is likely that 29 cubits was the design distance intended.

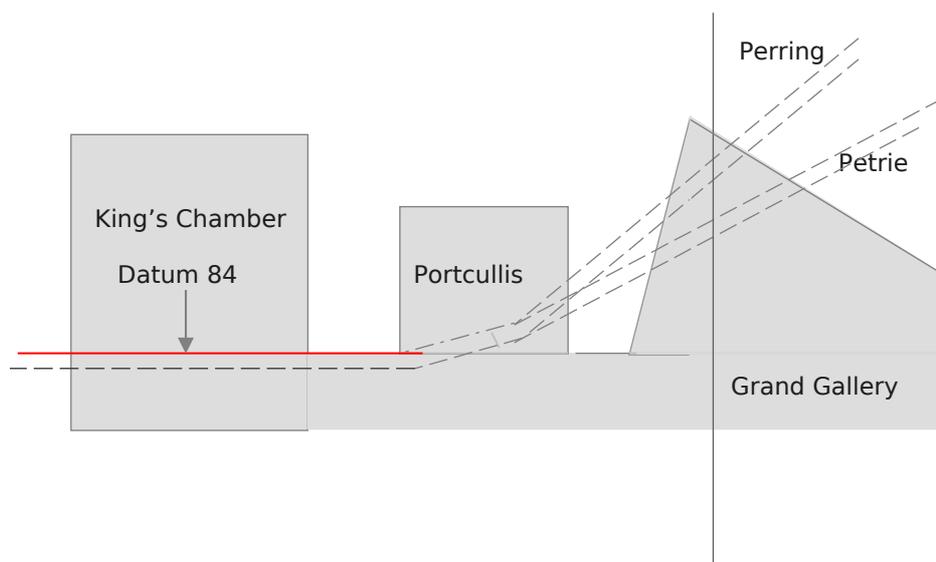
The level to the datum on the upper surfaces of the shaft openings at the chamber is at the same level as it is on the ceiling of the Entrance Corridor at the King's Chamber, at 84 cubits above base. Since the shaft runs at 45 degrees there would exist a square of sides 55 cubits to a level of 55 cubits north of pyramid centre, and another square of sides 29 cubits on level of 29 cubits south of pyramid centre, making a total level of 84 cubits on both squares. The remaining square around the shaft built in stone would then be of sides $99 - 29 = 70$ cubits and it is correct because $154 - 84 = 70$ cubits. The perimeter of that square would then be $70 \times 4 = 280$ cubits and original the pyramid height, demonstrating once more that the shaft belongs to a pyramid 280 cubits high, implying also that there might also be other shafts on other squares within pyramids presently unknown that are not 280 cubits high.

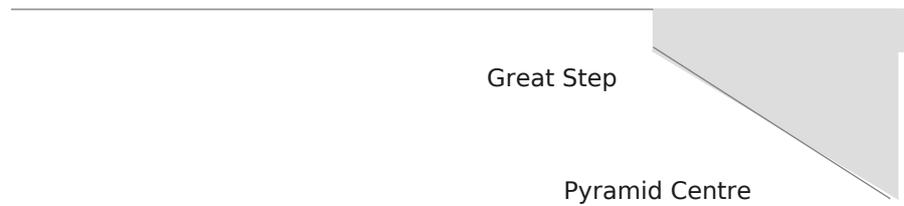
The length of the South Shaft can now be calculated where the square on the hypotenuse is equal to the square on the other two sides. The length would be square root of $(70 \text{ squared} + 70 \text{ squared}) = 98.99$ cubits and would be saying that the shaft is 99 cubits long between its exit point at one end, and its change of direction at the other end, and measured all the while on its upper ceiling surfaces. That is significant. The exit point for this shaft was another 99 cubits from pyramid centre. The South Shaft of the King's Chamber as built, must then be in the correct position in terms of the pyramid geometry.

THE NORTH SHAFT, KING'S CHAMBER

The outlet at chamber level for the North Shaft of the King's Chamber is directly opposite the outlet for the South Shaft in line and level. As a result it carries the same datum level of 84 cubits above base on the upper side of the horizontal part of the shaft before it rises upwards.

The Indeterminate North Shafts



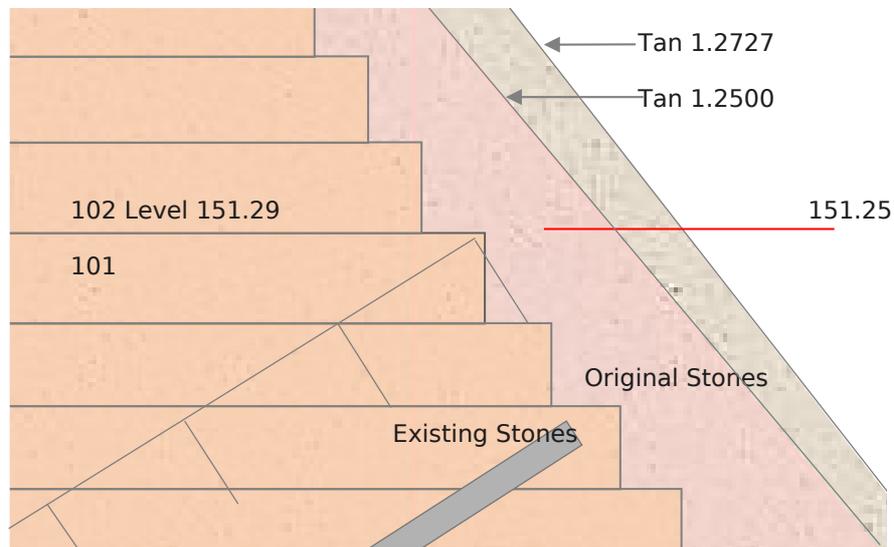


The North Shaft changes direction twice at low level in the vicinity of the portcullis within the entrance corridor before rising upwards, but precisely where within the pyramid it changes or at what angle, is not entirely certain. Until the North Shaft is surveyed with much greater accuracy its true changes in direction cannot be analysed. This shaft does not appear to have acted as another geometrical line on section, but that does not exclude the possibility that the exit point was meaningful. If it was intended to contribute to the geometry then the level itself should explain its role.

John Perring was the first to measure the angle of incline of the North Shaft and this is shown on the drawings by Rinaldi and Maragioglio but without a written angle. The incline scales at around 42 degrees on the second of two changes of direction for this shaft. Petrie had also measured the angle at its second change of direction and he said that it had inclined at 31 degrees 30 minutes. These findings mean very little because one of them must be wrong and without a known and fixed starting point it is impossible to obtain a tangent. The shaft is also known to twist and divert laterally where it passes the Grand Gallery as it progresses upwards and so it is not straight throughout its length or on inclination at low level. There cannot then be any clear direction for the shaft to have been aligned on any particular star to the north, as claimed by Bauval and Gilbert in their book *The Orion Mystery*.

The geometrical purpose of this particular shaft is unknown. It might well have been blocked at its upper extremities but no one knows the truth of this because the casings were removed. Apparently, it was always open at its lower end as was its partner opposite. That seems to say that the lower ends of both shafts were always open and that they were opposite for a purpose, otherwise why build them this way? It is possible that the two shaft inlets were geometrically connected across the chamber floor while maintaining the datum level at 84 cubits above the base of the Great Pyramid, aligned on the entrance corridor ceiling. That would mean that the upper shaft surfaces were relevant to the hidden geometry.

The North Shaft, Exit point



Rinaldi and Maragioglio say that the exit point for the North Shaft was on stone course 102 on the slope of the original casing stones before they were stolen. They give this level at 79.24 metres, which is also 151.29 cubits if the conversion is based on 1 cubit = 1.718181 feet.

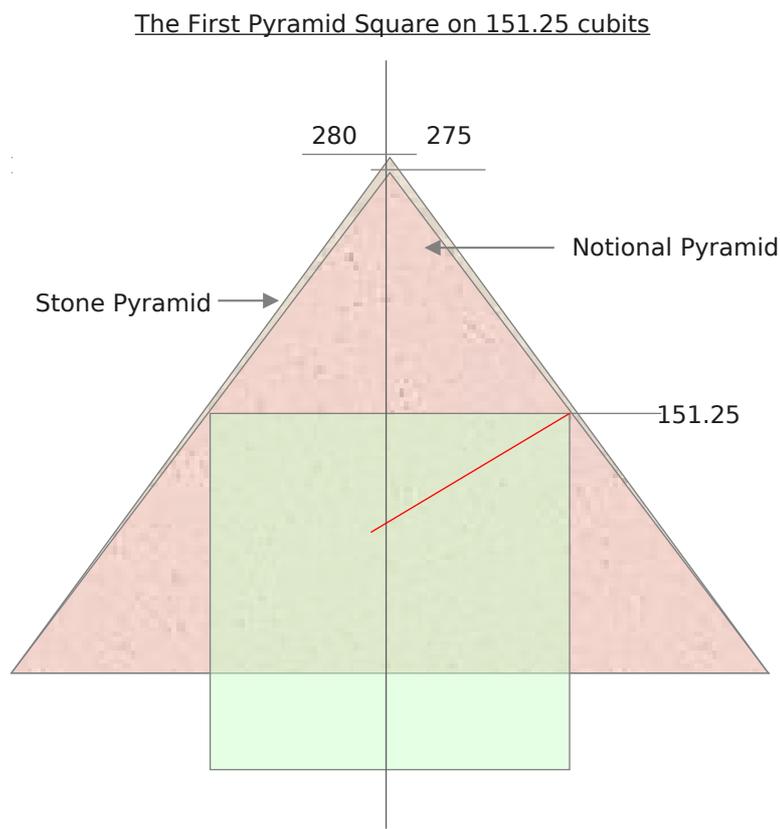
The engineers show that they had thought that the shaft had passed through the original pyramid slope so that the lower shaft surface would give the exit point level instead of the upper surface. It was probably the upper surface that they should have used because it was marking the datum of 84 cubits above base at the chamber position on the upper surfaces of the horizontal shaft sections, and the ceiling of the entrance corridor. They also showed on their section drawing the position where they thought the original pyramid slope would have once existed when the casing stones were in place and quite naturally they had assumed a pyramid 280 cubits high with a base of 440 cubits. They would not have considered that there might be alternative angle of slope on an entirely different pyramid. Why would they? The question of another pyramid height has never been asked and such a pyramid would be invisible, and notional, in just the same way that there were notional pyramids and squares on the South Shaft opposite. The engineers had not used tangents. Even so, their level at 151.29 cubits was interesting when seen in relation with the opposite shaft exit level of 154 cubits that has just been discovered.

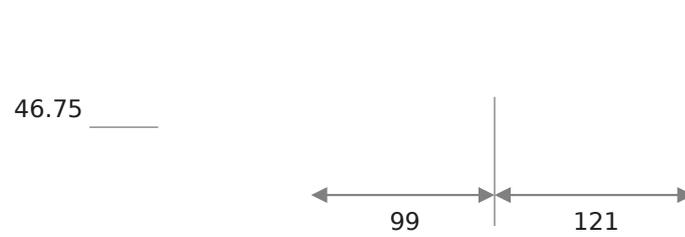
The number 154 had related with a pyramid 280 cubits high on a base angle in the tangent 1.2727 for a shaft at a slope of 45 degrees and the diagonal of a square of sides 275 cubits on the Great Pyramid base. What was the square of sides 275 cubits doing there for the south shaft configuration? The probability is that it was pointing the way to a pyramid 275 cubits high. The tangential value for a pyramid 275 cubits high that on the same base as the Great Pyramid would be $275 / 220 = \text{Tan } 1.2500$. Now that too is curious because the difference between $280 - 275 = 5$ cubits and 1.2500 is divisible by 5. The tangent makes mathematical sense. The next stage then is to see where that might lead! The level of the North Shaft exit point is not obvious but if it were on a slope in the tangent 1.2500 for a pyramid 275 cubits high then the exit point would be slightly less high. If the missing level is Z, then...

$$280 \times Z = 275 \times 154$$

$$Z = 442350 / 280 = \mathbf{151.25 \text{ cubits}}$$

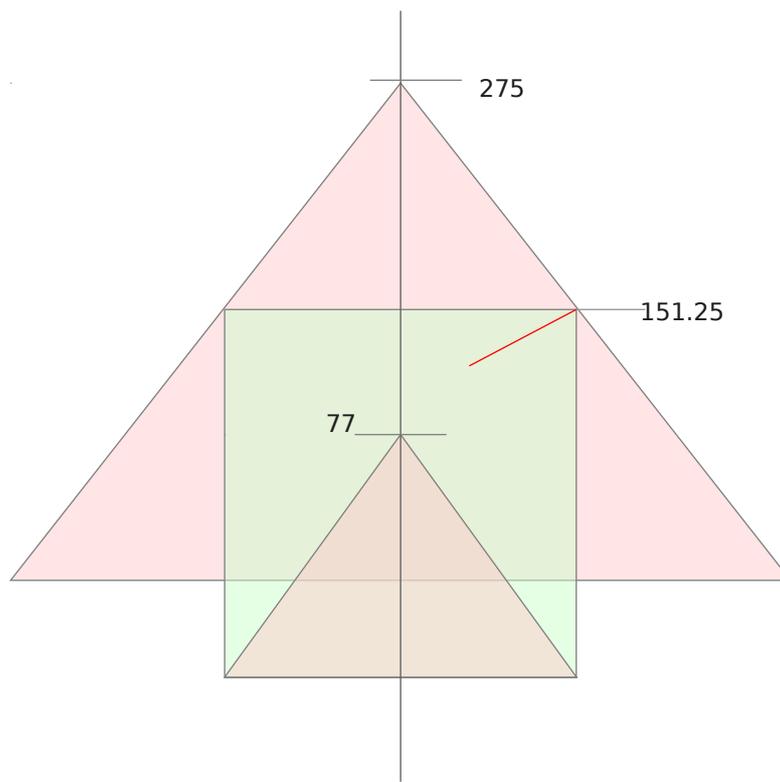
The missing level must then 151.25 cubits above the base of the Great Pyramid and it belongs to a pyramid 275 cubits high on a base of 440 cubits. That already looks promising because the level is $154 - 151.25 = 2.75$ cubits below 154 cubits for a pyramid 275 cubits high.

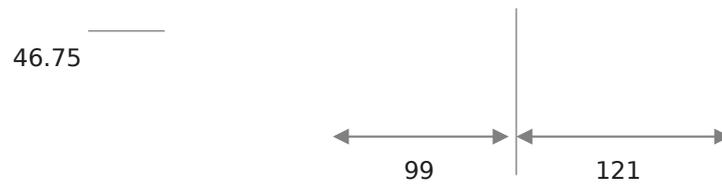




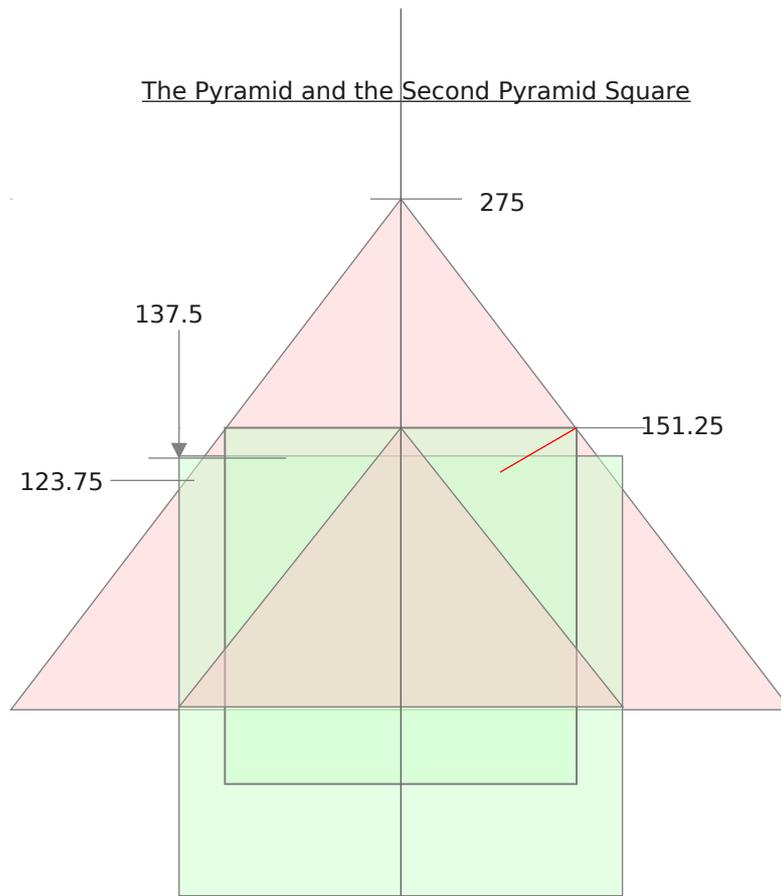
The base angles for the notional pyramid would now be $\tan^{-1} 1.2500$ instead of $\tan^{-1} 1.2727$ and the half-base of a pyramid 151.25 cubits high would be $151.25 / \tan^{-1} 1.2500 = 121$ cubits exactly. That is a surprise because 121 cubits had already been found on the base of a pyramid 280 cubits high with a shaft exit point at 154 cubits above base. This pyramid was 275 cubits high with a shaft exit point at 151.25 cubits, and it is achieving the same result! What might that mean? It would mean that the pyramid square of sides 198 cubits must be common to both pyramids and the second pyramid 275 cubits high must be valid!

The Pyramid Tip 77 cubits above base



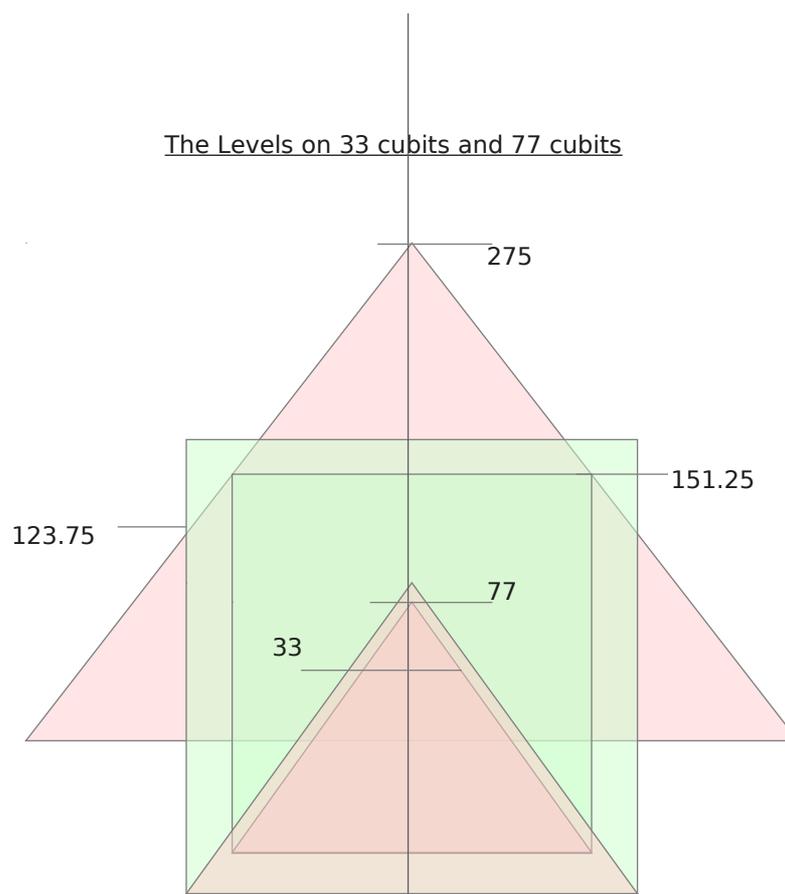


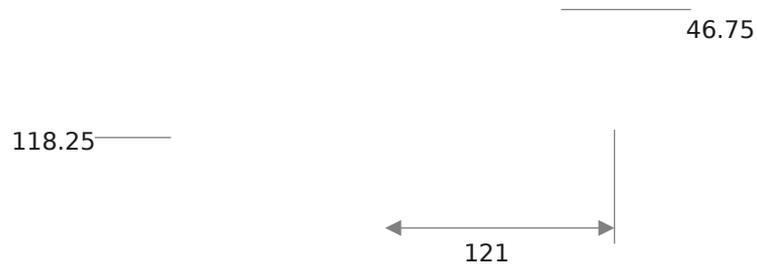
That means that a notional pyramid $280 - 275 = 5$ cubits high might well have existed at the summit before the casing stones were taken and a pyramid 275 cubits high had existed to determine it. Another pyramid square of sides 198 now exists on the exit point and it will extend below the base of the Great Pyramid by $198 - 151.25 = 46.75$ cubits and carry another pyramid inside it using the same slope angle. That pyramid will be $99 \times \tan 1.2500 = 123.75$ cubits high and its tip will extend above the base of the Great Pyramid by $123.75 - 46.75 = 77$ cubits. A number like 77 is very unlikely to be spurious and it would seem that the shaft exit point at 151.25 cubits above base was correct. The uncertain and twisting shaft was not then important, and never had been.



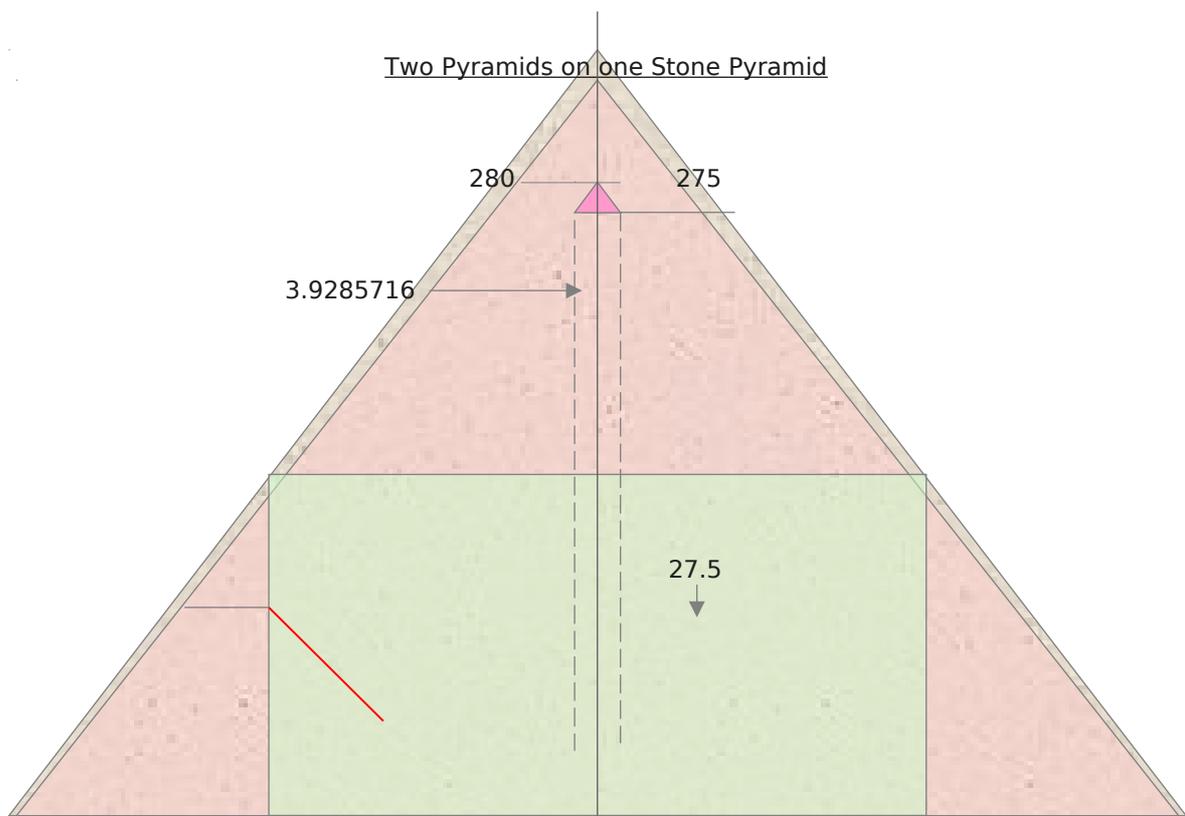


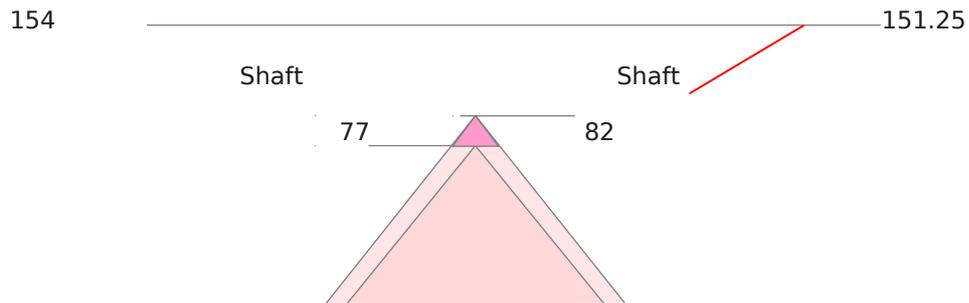
The half-base of a pyramid 151.25 cubits high will be $151.25 / \tan 1.2500 = 121$ cubits long and the full base will be $121 \times 2 = 242$ cubits long, creating once more a pyramid square of sides 242 cubits long that will abut the pyramid slopes at a level of $99 \times \tan 1.2500 = 123.75$ cubits above base and extend below base by $242 - 123.75 = 118.25$ cubits. The difference between the levels is $151.25 - 123.75 = 27.5$ cubits, and 10 times smaller than the height of the pyramid creating them. Half of 27.5 cubits is 13.75 cubits and $123.75 + 13.75 = 137.5$ cubits and that is half of 275 cubits. The pyramid has been bisected on its height in just the same way as had the shaft opposite bisected its pyramid on its height. They are both using the same sequences and that was saying that the original pyramid had been planned.





A pyramid on the second pyramid square will be $121 \times \tan 1.2500 = 151.25$ cubits high and its tip will extend above the base of the Great Pyramid base by $151.25 - 118.25 = 33$ cubits. The previous pyramid on the pyramid square had extended above base by 77 cubits and the difference between these two levels is $77 - 33 = 44$ cubits. These numbers are all divisible by 11, the pyramid number, and they are telling another story because the distance of 44 cubits between the two pyramid tips is the same as the level of 44 cubits above base on the datum level on the corridor ceiling at the Queen's Chamber below.

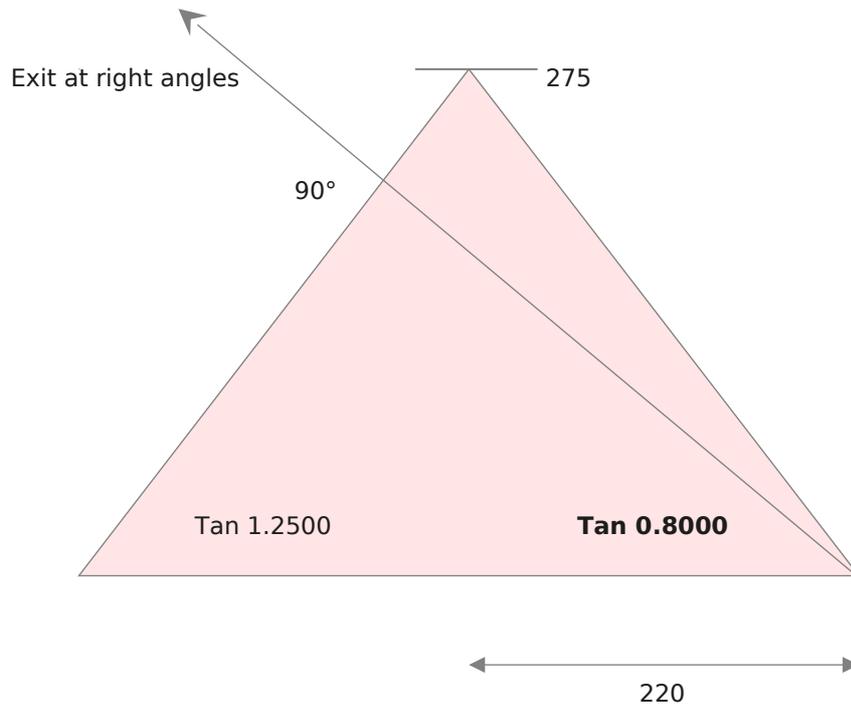




A Tip Pyramid 5 cubits high had been revealed at the summit of the Great Pyramid built in stone between the heights of 280 cubits and 275 cubits and now there is another height of 5 cubits on the Great Step. This is because the South Shaft of the King's Chamber had been able to reveal a level of 82 cubits above base on the top of the Step and now the North Shaft has revealed a level of 77 cubits above base, making a difference of another $82 - 77 = 5$ cubits on the pyramid centreline.

Since that Tip Pyramid would probably have carried a slope of $\tan 1.2727$ it would also carry a half-base of $5 / \tan 1.2727 = 3.9285716$ cubits. That might seem an unlikely value to seven places of decimals but amazingly enough, the half base of 220 cubits / $3.9285716 = 56$ whole number divisions on the half pyramid base of 220 cubits, and then the pyramid height of 280 cubits divided by 5 is another 56 cubits. The number 56 is twice 28 and that is 10 times smaller than a pyramid 280 cubits high. If the notional pyramid 275 cubits high is divided by 3.92857 it gives 70 layers, and in another whole number result. What then was the purpose behind the decision to locate the two shaft exit points on the pyramid slopes at these particular levels? The answer is very clear. The difference between the exit points is $154 - 151.25 = 2.75$ cubits, the difference between the pyramid squares on the North Shaft is $151.25 - 123.75 = 27.5$ cubits, and the enclosing pyramid is 275 cubits high, and 2.75 cubits is 10 times smaller than 27.5 cubits, and 27.5 cubits is 10 times smaller than 275 cubits, the notional pyramid height. The invisible pyramid must now be confirmed as a geometrical fact. The factor being revealed is 10 and that might be symbolically reminiscent of an important spiritual entity at the Great Pyramid because the sum of the numbers from 1 to 10 add up to 55 and there are 8 divisions of 55 cubits on the Great Pyramid base.

The Right Angle on the Pyramid Slope



Then there was one other matter connected with the slope angle of a pyramid 275 cubits high on a base of 440 cubits and that was the slope angle in tangent of a line from one corner base passing out of the opposite pyramid slope at 90 degrees. There is high probability that this angle seen only in tangential form was important for the Queen's Chamber below.

There are 180 degrees inside any triangle, and for a 90-degree triangle there will be another 90 degrees inside the triangle on the two remaining angles. One of those angles is already sloping at Tan 1.2500 and from that it would possible to find the remaining angle, first in degrees, and then in tangential form, but first it would be necessary to convert Tan 1.2500 into degrees, minutes, and seconds.

From the Standard Four-Figure Tables

Right-angle = 90 degrees 00 minutes 00 00seconds

Tan 1.2500 = 51 degrees 20 minutes 22.50 seconds

Difference = 38 degrees 39 minutes 37 50 seconds

38 degrees 40 minutes 00.00 seconds = Tan 0.8002

- 00 degrees 00 minutes 24.00 seconds = Tan 0.0002

38 degrees 39 minutes 36.00 seconds = **Tan 0.8000**

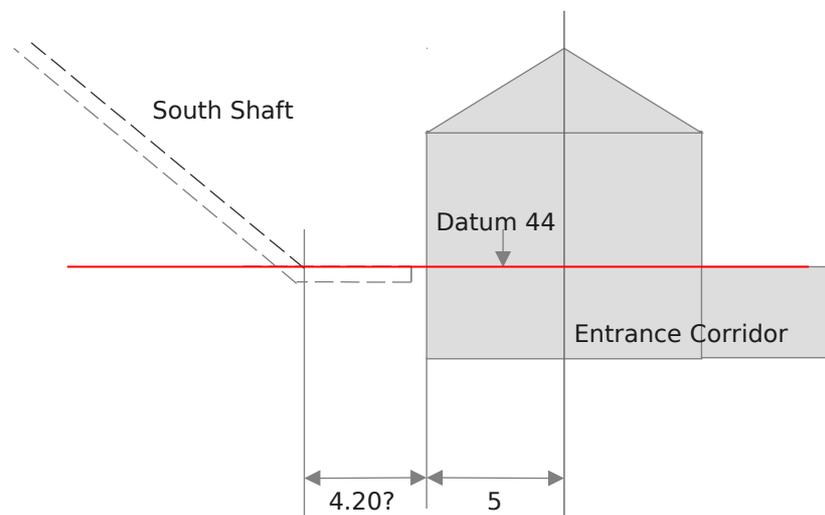
The angle of the slope of the line passing out of a pyramid 275 cubits high is Tan 0.8000 and it is accurate to 1.5 seconds of arc. Now it will be possible to discover if that makes any sense when it is applied to the South Shaft of the Queen's Chamber below where the number 8 on 0.8000 will be identifying the name of Isis for this is her chamber and that is her number.

THE SOUTH SHAFT, QUEEN'S CHAMBER

Here is another place of mystery. The Queen's Chamber raises questions in all directions and one of these is the discovery that the shafts that emanate from the north and south walls were built blocked at both ends. How peculiar that is! They were not blocked by

accident due fallen masonry or something similar but deliberately. This is certain, because when they were at last revealed it was found that the stones that had sealed the lower ends had been cut with great precision. The shafts had been constructed with very great care. Why then build these shafts and then eliminate them from any obvious practical purpose whatever? They become a contradiction in terms but perhaps the answer had always been blurred by the assumption that since they looked like shafts, they must then be shafts. They were something else.

The South Shaft at the Queen's Chamber

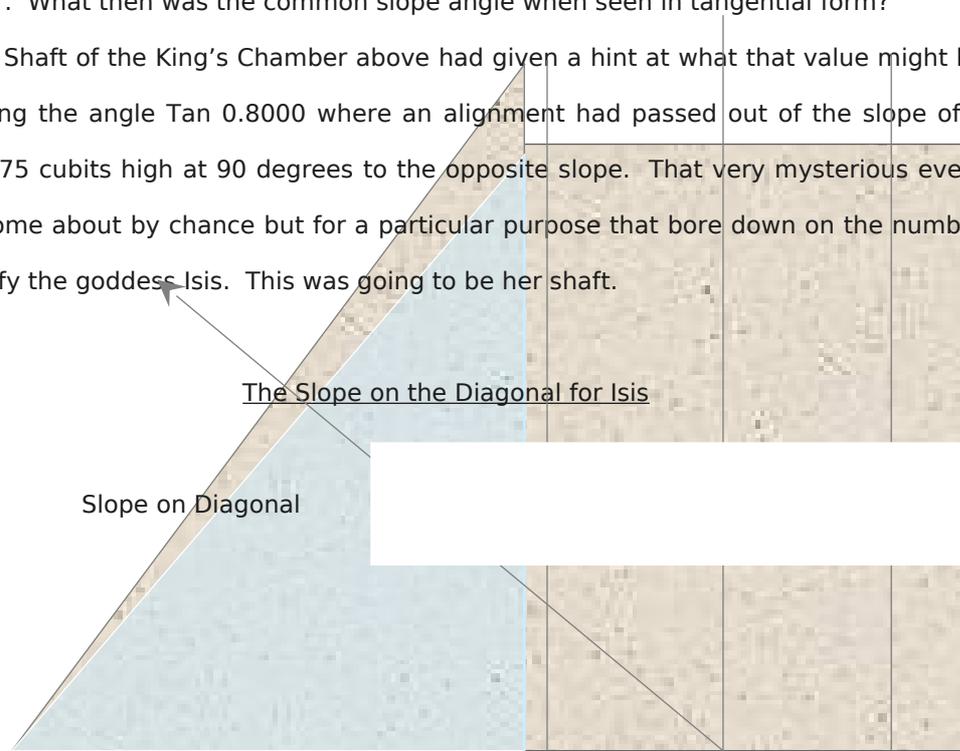


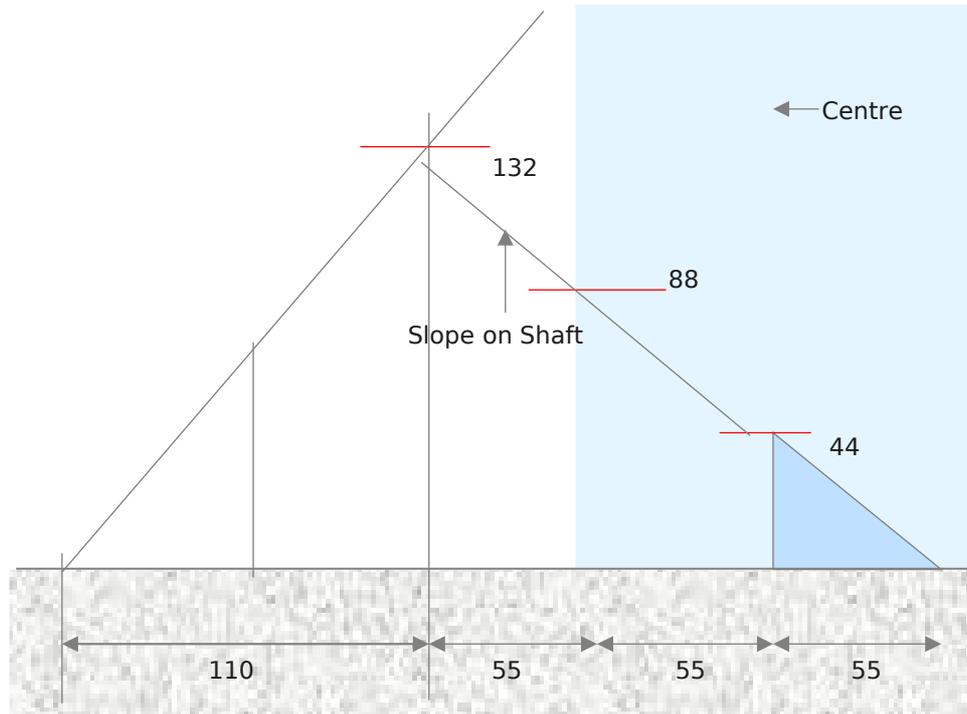
They never were built as shafts in the sense of bringing ventilation into the chamber or even necessarily as alignments for viewing the cosmos, as claimed by some. They were blocked at the pyramid slopes as well as being blocked at the chamber walls. The only way that they could align on stars was in the spiritual sense, never the actual sense! Was that all there was to it, or was there something else? There was something else! The shafts can be interpreted as long square-sectioned spaces, and then as a set of geometrical lines on section seen when looking through the pyramid from east to west. They were for constructional purposes only and that was why they were built closed at both ends. They were also linked geometrically with the north and south shafts of the King's Chamber above, and all four of these lines on section were dedicated to the meaning of the geometry creating the pyramid.

The South Shaft of the Queen's Chamber is shown as it had originally existed before Piazza Smythe had seen his vision, and when the shaft was still concealed behind a portion of stone lining the chamber. The datum of 44 cubits above base found earlier was there on its upper surfaces and on the ceiling of the entrance corridor in just the same manner as had occurred at the King's Chamber above, at 84 cubits above base. A small door, or something that looks like a door, had blocked the upper levels, and because of that there were no external opening on the original pyramid slopes before the casings were taken because such an opening was never needed and did not exist. As a result, there were no levels that could be taken by the engineers Rinaldi and Maragioglio and the tangents could not then be found by measurement. That made it impossible to find the correct mathematical slope angle except by the unwieldy means of direct measurement from the chamber below. The one thing that could be found from the survey was the position of the change of direction on the shaft at its lower extremity, as given in the drawings. That would constitute a starting point, and having established the position of that starting point it might be possible to see where it would lead.

The starting point would be on the change of direction from horizontal to the inclined and it would also be on pyramid centre, but now there were two starting points. It took a very long time to realise that stark fact. In both cases they began at the datum level of 44 cubits above base but the two starting positions were in different positions because of the setback on the shaft from horizontal to inclined. The two inclinations can then be called the Slope on Shaft for the shaft that was built in stone, and the Slope on Diagonal for the alignment on the pyramid centreline at 44 cubits above base on the datum. Both alignments would however slope at the same angle and they would then be parallel to each other. What then was the common slope angle when seen in tangential form?

The North Shaft of the King's Chamber above had given a hint at what that value might be by revealing the angle $\tan 0.8000$ where an alignment had passed out of the slope of a pyramid 275 cubits high at 90 degrees to the opposite slope. That very mysterious event had not come about by chance but for a particular purpose that bore down on the number 8 to identify the goddess Isis. This was going to be her shaft.



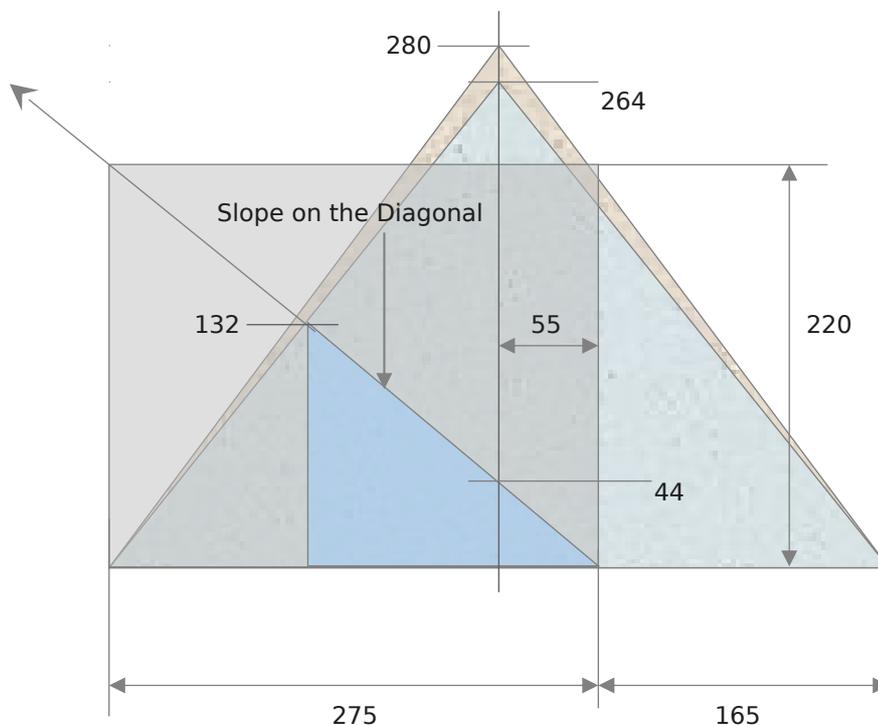


The slope angle $\tan 0.8000$ on the shaft can remain fixed while the angle of the pyramid slope through which it passes, can vary. The fact that it passes through the slope at 90 degrees for a pyramid 275 cubits high means only that $\tan 0.8000$ has been identified. Why then has it been found in this way? It did not belong in stone to the shaft above because it belonged to the opposite shaft below. The line can now be tested on a section through the Great Pyramid where it would pass through the datum of 44 cubits at the Queen's Chamber and on the pyramid centreline. That lays down a condition that instantly connects with $\tan 0.8000$ and the starting point for the South Shaft of the King's Chamber that was 55 cubits north of pyramid centre on the pyramid base. The Slope on the Diagonal for the Queen's Chamber also passes through the Great Pyramid base at 55 cubits north of centre but then it passes through the pyramid centre at 44 cubits above base, and the angle is confirmed because $44 / 55 = \mathbf{\tan 0.8000}$. The Slope on the Diagonal for the South Shaft will then pass through the base of the Great Pyramid at a point 55 cubits north of the pyramid centre, as it does for the South Shaft, King's Chamber above, and then through vertical divisions in steps of 55 cubits on 44 cubits until it reaches the third division going south at $3 \times 44 = 132$ cubits above base. That level can now be assumed as the exit point for the Slope on the Diagonal. The exit point could not then have been built in stone on the Great Pyramid slopes when the casings were in place as

evidenced by the small door found by the Gantenbrink robot. Instead, it was on a notional level on a second notional pyramid height. What then would be the height of that notional second pyramid? It can readily be found.

The Slope on Diagonal has progressed horizontally in three steps of 55 cubits from a point 55 cubits north of pyramid centre, to 110 cubits south of centre, making 165 cubits from a total of 275 cubits to give another 110 cubits on the pyramid base. The level of 132 cubits is the height of a triangle and the base is 110 cubits. The base angle would then be $132 \text{ cubits} / 110 \text{ cubits} = \text{Tan } 1.2000$ and the pyramid would be $220 \times \text{Tan } 1.2000 = \mathbf{264 \text{ cubits}}$ high.

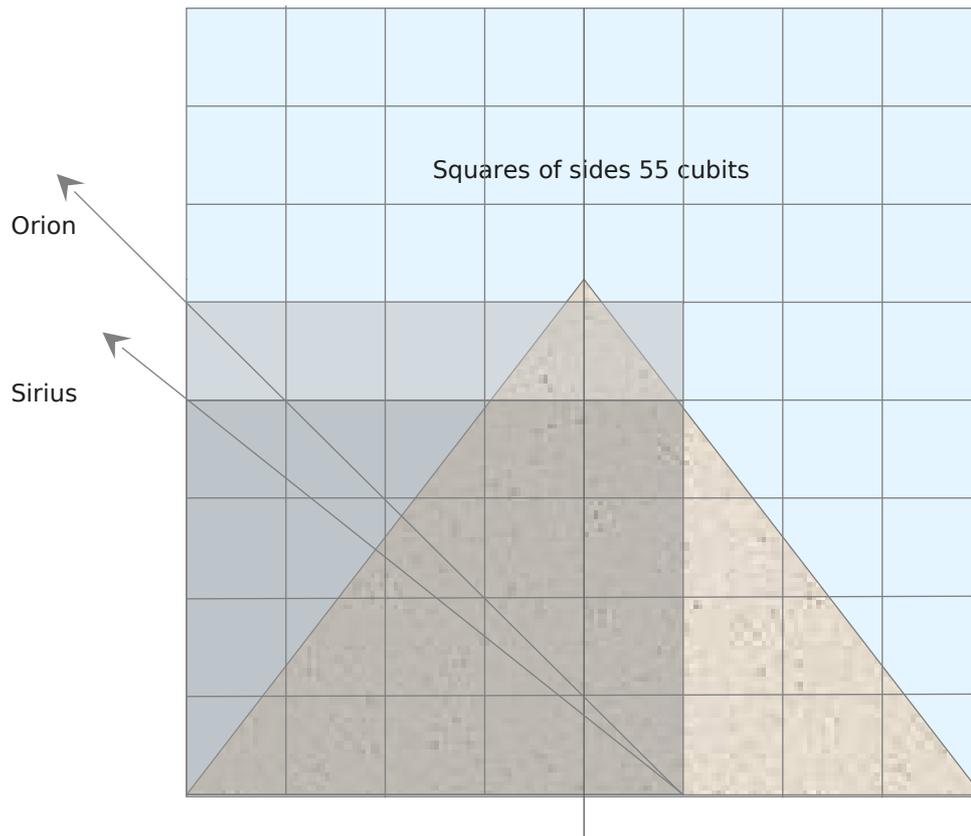
The Slope on Pyramid 264 cubits high



A rectangle can now be created 220 cubits high and 275 cubits wide on the base of the Great Pyramid. The tangential value of the diagonal of the rectangle on its slope would then be $220 / 275 = \text{Tan } 0.8000$ and so the correct slope angle is being maintained on the grid of squares of sides 55 cubits. But the square 275 cubits high had applied to the exit point of the North Shaft, King's Chamber, and now a rectangle is on the same base but 220 cubits high and that would make it correct for the South Shaft, Queen's Chamber.

That must imply a connection between the King and the Queen and their two chambers, and indeed such a connection does in fact exist as can now be seen on the Great Pyramid Square where the two southern alignments might then have reached for the stars.

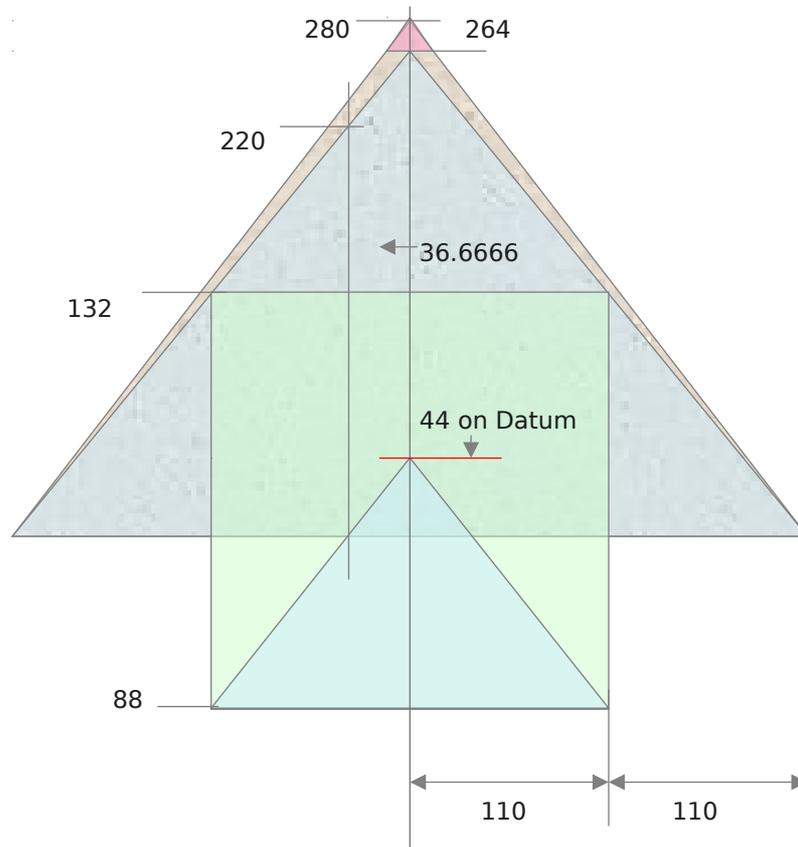
The Two South Shafts aligned on the Stars



The star Orion has long been associated with the Egyptian god Osiris and the star rises on the eastern horizon at Giza followed closely by the star Sirius, the brightest of the stars in the heavens. Sirius has also been identified with Isis, known also as the Dog Star, the dog being Anubis that Isis had rescued from the desert after being cast out by her sister Nephthys because her child had the head of a dog. Bauval and Gilbert in their book *the Orion Mystery* had elaborated on this where they had claimed that the two south shafts of the Great Pyramid were aligned on the star Sirius for Isis, and on the star group Orion for Osiris, some 10500 years ago. There was then a clear geometrical link between the claims made by them and the alignments on two stars emanating from two shafts passing out of the pyramids at 154 cubits and 132 cubits above base for pyramids 280 and 264 cubits

high. There was one slight difference however because the lower alignment had not been built in stone.

A Tip Pyramid 16 cubits high

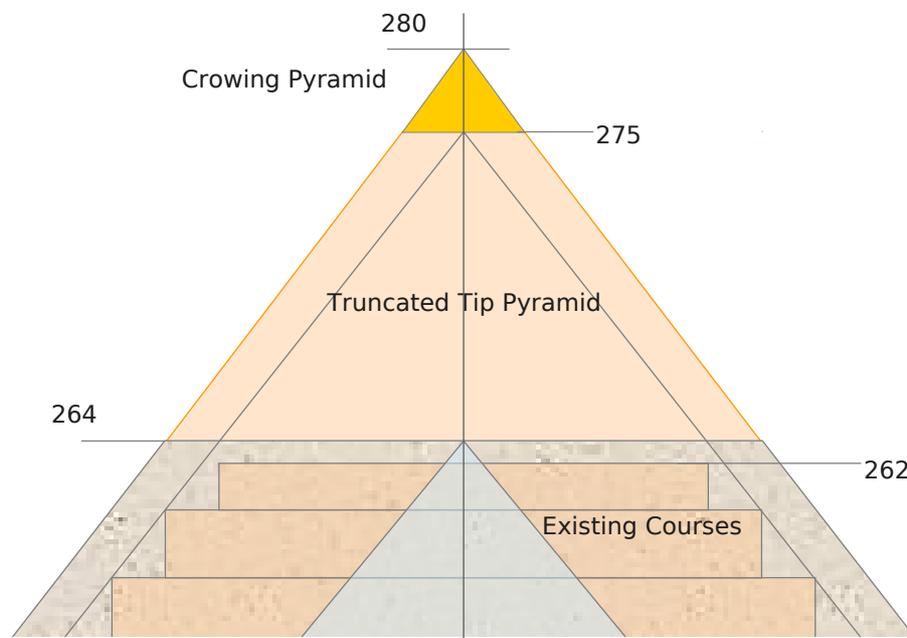


A pyramid above the level of 132 cubits will be $264 - 132 = 132$ cubits high and that means that the pyramid 264 cubits high is already bisected on its height unlike the shafts above that bisected the pyramid only when two pyramid squares appeared. If the pyramid 264 cubits high is already bisected on its height then it is also bisected on its half-base because $132 / \tan 1.2000 = 110$ cubits which is half of 220 cubits. That means that a pyramid square of sides $110 \times 2 = 220$ cubits will exist for this pyramid and a pyramid of same slope inside that square will be another 132 cubits high. But the square will extend below the pyramid base by $220 - 132 = 88$ cubits and that is another number divisible by 11, the pyramid number. But 88 cubits above base is twice level of 44 cubits on the datum at the Queen's Chamber. The pyramid on the square will therefore extend by $132 - 88 = 44$ cubits above the pyramid base and mark the datum level at the Queen's Chamber precisely. The geometry of the Slope on the Diagonal is therefore confirmed and that must

mean that it was on the ceiling level of the entrance corridor and the upper surfaces of the shaft horizontals, as assumed!

There is now another notional pyramid 264 cubits high and it is marking another tip pyramid 16 cubits high because $280 \text{ cubits} - 264 \text{ cubits} = 16 \text{ cubits}$. That would mean that there were two tip pyramids placed at the original summit one above the other. The first was resting on the truncated pyramid 264 cubits above base 11 cubits high and sloping at $\text{Tan } 1.2727$ and the second was the only complete pyramid in stone 5 cubits high sloping at $\text{Tan } 1.2727$. This was the Crowning Pyramid and it might have carried a special significance of its own.

The Original Pyramid Tip

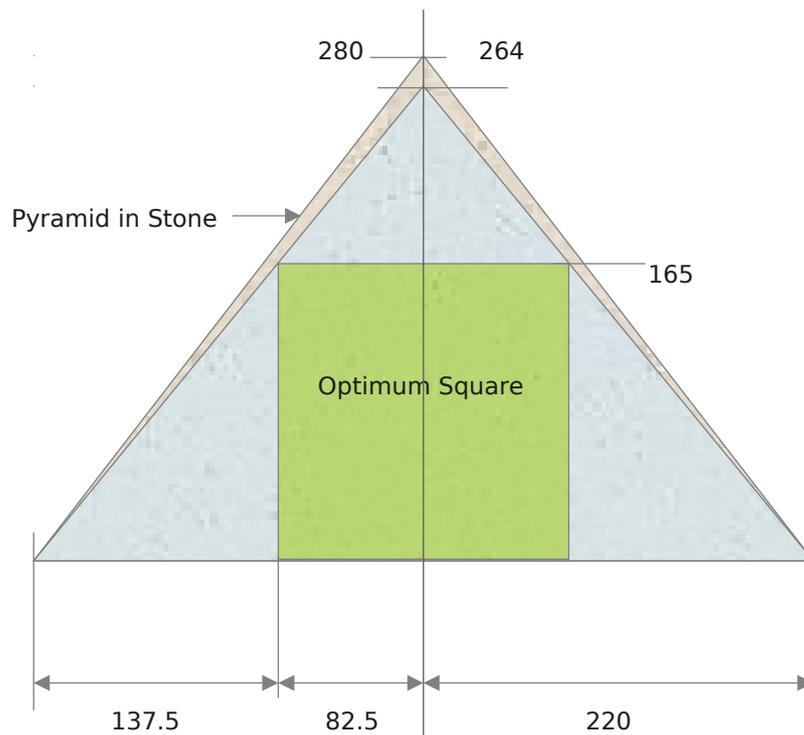


Petrie had unwittingly confirmed that an unknown configuration at the summit of the Great Pyramid had once existed with a Tip Pyramid 11 cubits high and Crowning Pyramid 5 cubits high, during his survey. He too had climbed the pyramid and taken the levels on the existing and remaining stones as seen today. He had reported that on the NE corner the level was 5407.9 inches, and on the SW corner the level was 5409.2 inches above base. They gave an average of 5408.55 inches and that converts to a meaningful 262 33 cubits. Now, if someone in ancient times had climbed to the summit with the express purpose of removing all evidence of any tip pyramids, what would they have done? They would have

prised the Crowning Pyramid loose with a crowbar, and tipped it over the edge. Then they would have broken up the second larger tip pyramid and sent the pieces tumbling over the edge. That second tip pyramid would surely then have been resting on a smooth flat surface if it were indeed marking a level of 264 cubits. If then the unknown assailants had discovered that same smooth finished base they would certainly have decided to demolish that evidence as well. They had no option once the demolition work was in progress. The probability is that the flat level base was fashioned from horizontal slabs around 3 feet thick. When all of the evidence was broken up, what would remain but a mess of uneven stones at a level of around 262 cubits and that is just about right for what exists today! Petrie had given the information necessary to confirm that the two tip pyramids had been a practical possibility because if the existing stone summit had been anything above 264 cubits, the mathematics would have been wrong. Instead there exists a level that makes them not only possible but likely.

Without any knowledge of the hidden geometry, the two tip pyramids would have seemed to those looking up from below as just two faintly discernable bands, or margins, of stone highlights high up on the pyramid, and on the face of it, perfectly innocent. Someone must then have discovered the hidden geometry and decided to erase it from the eyes of man, after which it was lost to history. John Michell, in his *View over Atlantis*, had long ago become convinced that a tip pyramid 5 cubits high had once existed at the summit but his account had not used tangents, and it was never used as a reference by orthodox Egyptologists at the British Museum. If he had used tangents he might have discovered very much more.

The Optimum Pyramid Square.

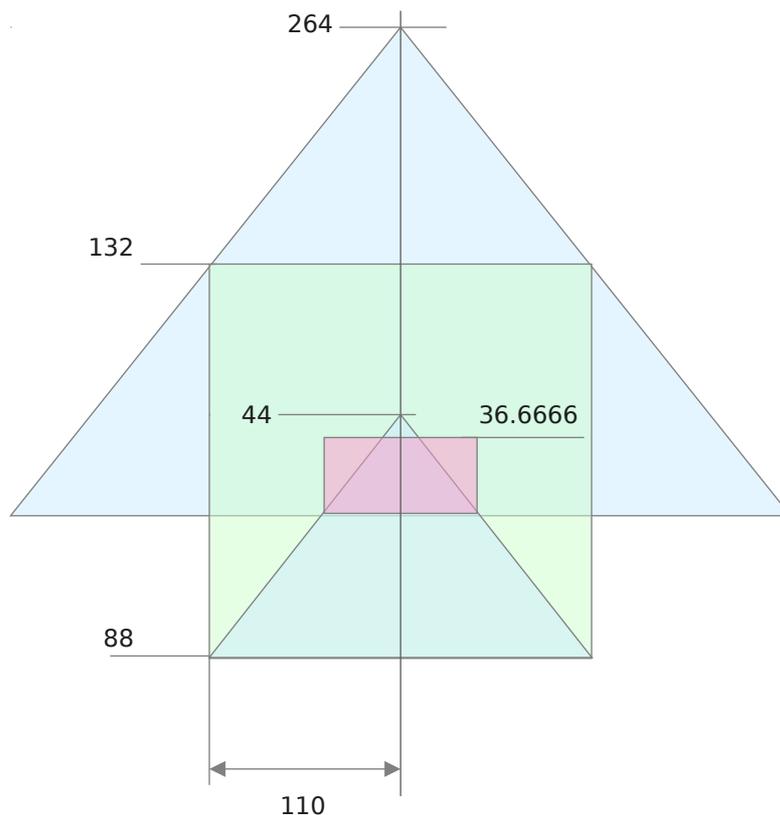


Now another matter comes of interest. The South Shaft, King's Chamber, had revealed that a square of sides 165 cubits had existed on its base, where the diagonal of the shaft slope angle at 45 degrees had passed through the pyramid base. The square had been sending another message this time linking the South Shaft, King's Chamber above with the South Shaft, Queen's Chamber below, through the use of an Optimum Pyramid Square.

An Optimum Square is the only square that fits inside an isosceles triangle (or pyramid) without leaving a gap or a surplus. Out of the three pyramids at the Great Pyramid that have been found so far only one of these will achieve this result in whole number cubits and that pyramid is for a pyramid 264 cubits high! The Optimum Square for a pyramid 275 cubits high would have sides of 169.2312 cubits and for a pyramid 280 cubits high it would have sides of 171.1111 cubits. They are not whole number cubits. If the half-base of the

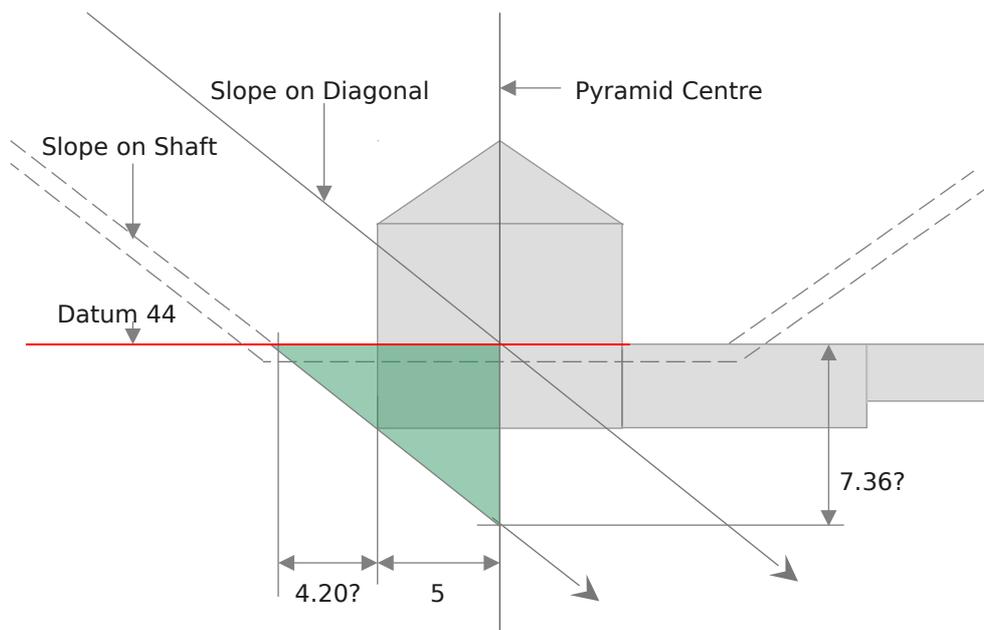
Optimum Pyramid Square is 82.5 cubits long and that is deducted from 220 cubits the half base that will leave 137.5 cubits. But $137.5 \times \tan 1.2000 = 165$ cubits, and the Optimum Square has been found in whole number cubits. The square has the effect of making this particular pyramid unique and therefore of special importance in what is to follow.

The Double Square on 44 cubits



The pyramid on the base of the pyramid square will be another 132 cubits high but since the pyramid on the square extends above the base of the Great Pyramid by 44 cubits it will also carry a half base distance of $44 / \tan 1.2000 = 36.6666$ cubits. A double square resting on the pyramid base can now be created and its length will be $36.6666 \times 2 = 73.3333$ cubits and its topside will occur below the datum level 44 cubits above base by $44 - 36.6666 = 7.3333$ cubits and 10 times smaller. That is surprising indeed.

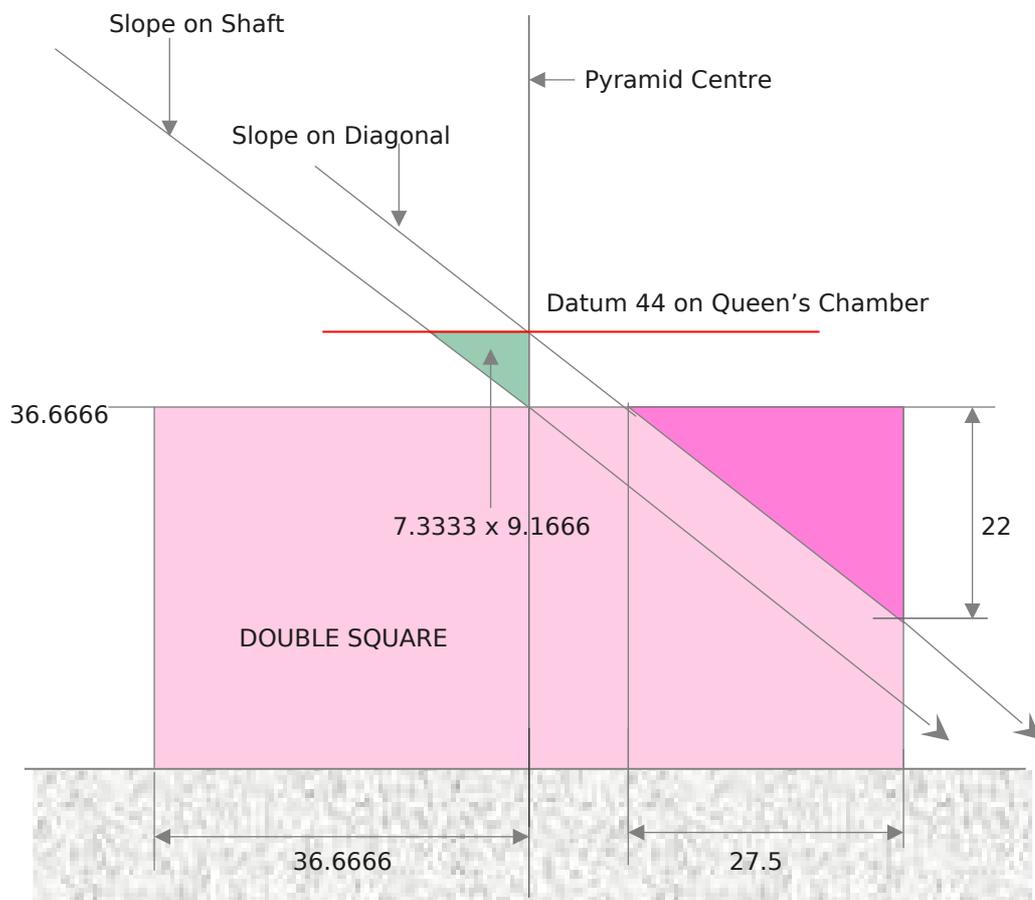
The Two Slopes on the Chamber



There were two alignments emanating from the Queen's Chamber and they were the Slope on the Diagonal and the Slope on the Shaft. The Slope on the Diagonal is the one being aimed on the stars and it crosses pyramid centre at 44 cubits above base. The Slope on Shaft is the one built in stone and its upper surfaces were intended to cross pyramid centre at 36.6666 cubits above base, but if it does that then it must cross pyramid centre on a vertical distance of $44 - 36.6666 = 7.3333$ cubits below the datum on the Queen's Chamber.

A right angled triangle is created 7.3333 cubits high but since the two alignments are parallel and sloping at $\tan 0.8000$, then the triangle will be $7.3333 / \tan 0.8000 = 9.1666$ cubits long. As a result, the Slope on Shaft will align with the hypotenuse of that triangle and the Slope on Diagonal will cross its corner. There was a reason for that and it was because of the existence of another double square rectangle.

The Meaning behind the Double-Square



It takes little imagination to decide that the ancients intended this. If that was true then the triangle 7.333 cubits high and 9.1666 cubits long was integral with the geometry of the two shaft alignments, and behind the reason why the two shafts of the Queen's Chamber began their journey at some distance from the walls before rising upwards. That distance was not the approximate 4.20 cubits from the south wall as derived by survey measured on the shaft floor, but 4.1666 cubits on the shaft ceiling then to give the distance of 9.1666

cubits south of pyramid centre less half the chamber width at 5 cubits. The alignment of the Slope on Shaft would then pass through the double square at 'top-dead-centre' and at 36.6666 cubits above base while the Slope on Diagonal would pass through north of top dead centre by 9.1666 cubits. Another right-angled triangle has now been formed because the Slope on Diagonal enters the topside of the double square at 9.1666 cubits north of centre to create a triangle $36.6666 - 9.1666 = 27.5$ cubits long. But 27.5 cubits are 10 times smaller than 275 cubits and that was the height of the second notional pyramid. Since 27.5 cubits comes off a double square derived from the second notional pyramid 264 cubits high, then the two pyramids heights must be aware of each other and linked through the geometry. Then again, a triangle 27.5 cubits long sloping at $\text{Tan } 0.8000$ will be $27.5 \times \text{Tan } 0.8000 = 22$ cubits high and that is 10 times smaller than 220 cubits, the half base distance of the pyramids. The double square is reaffirming these two pyramid heights without a doubt.

What then happens to the Slope on Shaft that was built in stone? This is where the mystery deepens. The answer might eventually explain the probable meaning behind the small door within the upper reaches of the South Shaft, Queen's Chamber found by Gantenbrink, and perhaps it is now possible to discover why there were two shaft alignments and why the shaft in stone had been built to change direction remote from the chamber wall?

The double square will divide into 5 layers of 7.3333 cubits to make 36.6666 cubits, and the datum of 44 cubits will divide into 6 layers of 7.3333 cubits. This piece of mathematical wizardry would have been impossible if the level of 44 cubits had occurred by chance and so it was no accident that the Slope on Diagonal had managed to create 7.3333 cubits while it rose at $\text{Tan } 0.8000$. How close was then would $\text{Tan } 0.8000$ be to the measured slope angle for this shaft? Flinders Petrie had reported that the South Shaft was inclined at 38 degrees 28 minutes 00 seconds. That makes it possible to show a comparison between Petrie's angle and $\text{Tan } 0.8000$ as found from the Standard Tables.

$$\text{Tan } 0.8002 = 38 \text{ degrees } 40 \text{ minutes } 00 \text{ seconds}$$

$$\underline{\text{Tan } 0.0002 = 00 \text{ degrees } 00 \text{ minutes } 24 \text{ seconds}}$$

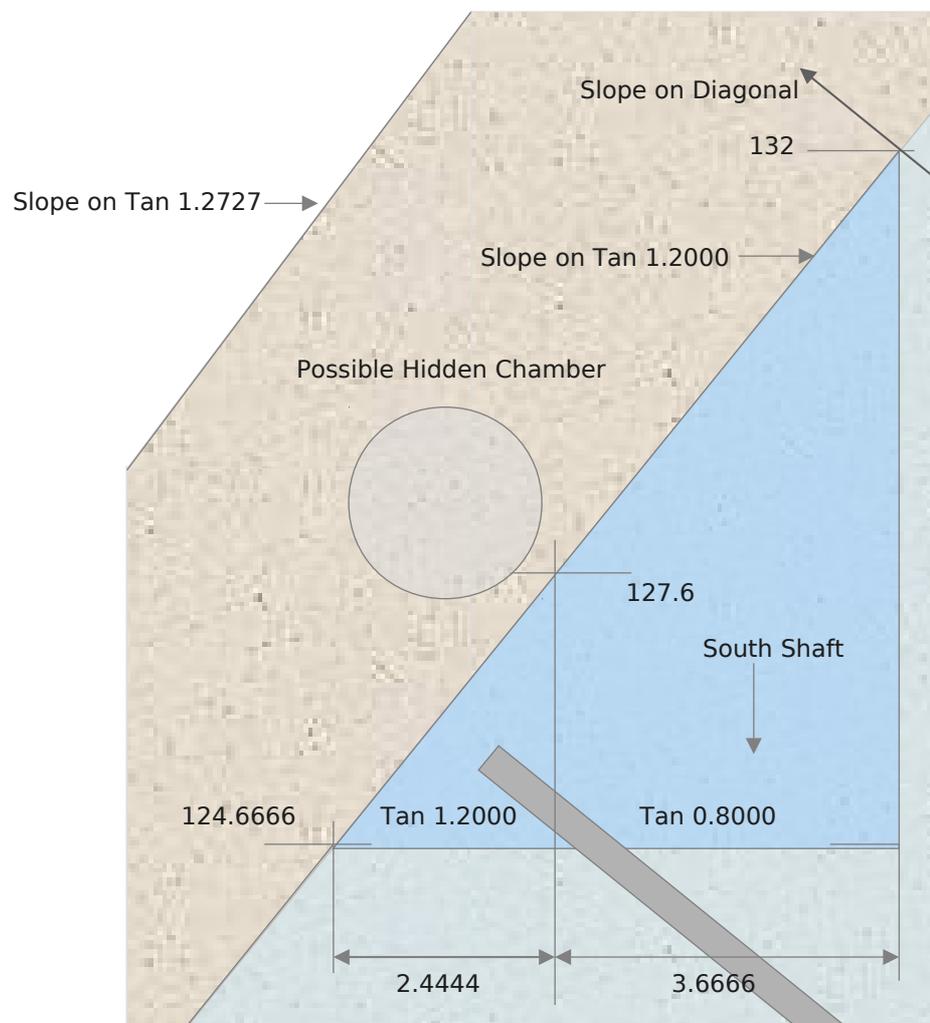
$$\text{Tan } 0.8000 = 38 \text{ degrees } 39 \text{ minutes } 36 \text{ seconds}$$

$$\text{Petrie} \quad = 38 \text{ degrees } 28 \text{ minutes } 00 \text{ seconds}$$

There is a difference of 11 minutes and 36 seconds of arc between the angle as measured by Petrie and the geometrical angle based on the Great Pyramid Square. The angles are so close together that they are almost identical, given that a calculated angle will always be much more accurate than an angle measured physically by whatever means. It can be concluded that Petrie was almost correct.

If then the double square is seen as a three-dimensional 'solid entity' resting on the base of the Great Pyramid at centre, it will also take the form of a 'half-cube'. The perimeter of that cube, as seen from above, would then be $73.3333 \times 4 = 293.3333$ cubits, the sum of the four vertical corners will be $36.6666 \times 4 = 146.6666$ cubits, and the total of all of the edges would then be $293.3333 + 146.6666 = 440$ cubits, the length of the Great Pyramid base seen on section and another incredible finding. If however the half-cube were seen as a full-cube then the remaining perimeter edges would equal two sides of the Great Pyramid, and two full-cubes, the four sides of the Great Pyramid. There would be created a vertical double square 73.3333 cubits wide and 146.6666 cubits high. If then the vertical double square could double itself sideways to become a full square 146.6666 cubits wide, it would become one half of another double square 293.3333 cubits wide. The double square configuration would then be able to resume the process to infinity almost like a living cell imbued with the capacity to divide and reproduce! It must therefore be representing growth, pregnancy, and motherhood and Isis was the Mother Goddess.

The Exit Levels on the South Shaft



The exit point of the South Shaft that was built in stone was always obscured by the fact it terminates within the body of the pyramid, and geometrically, the same point for the Slope on Diagonal was easier to find. The exit point for the Slope on Diagonal was 132 cubits above base, and the shaft that was built in stone was 7.3333 cubits directly below that but this had not determined the exit of the shaft that was built in stone. In order to find that particular level it is necessary to form a triangle on which to calculate this level. It would have a base length 7.3333 cubits below the upper exit point and that would create a length of $7.3333 / \tan 1.2000 = 6.1111$ cubits. The shaft would also pass through the point where exit point above passes vertically on the upper surface of the shaft below. A triangle is then formed whose base is 6.1111 cubits long and whose slopes are in the values of $\tan 1.2000$ for the pyramid, and $\tan 0.8000$ for the shaft. The exit point will be at the level where the two slopes cross. Two triangles are now formed on the common base for each slope angle in a ratio on the base and when the heights are equal, the level will be found. The bases of the triangles have already been calculated at 2.4444 cubits and 3.6666 cubits, adding up to 6.1111 cubits, and the heights of the two triangles will then be...

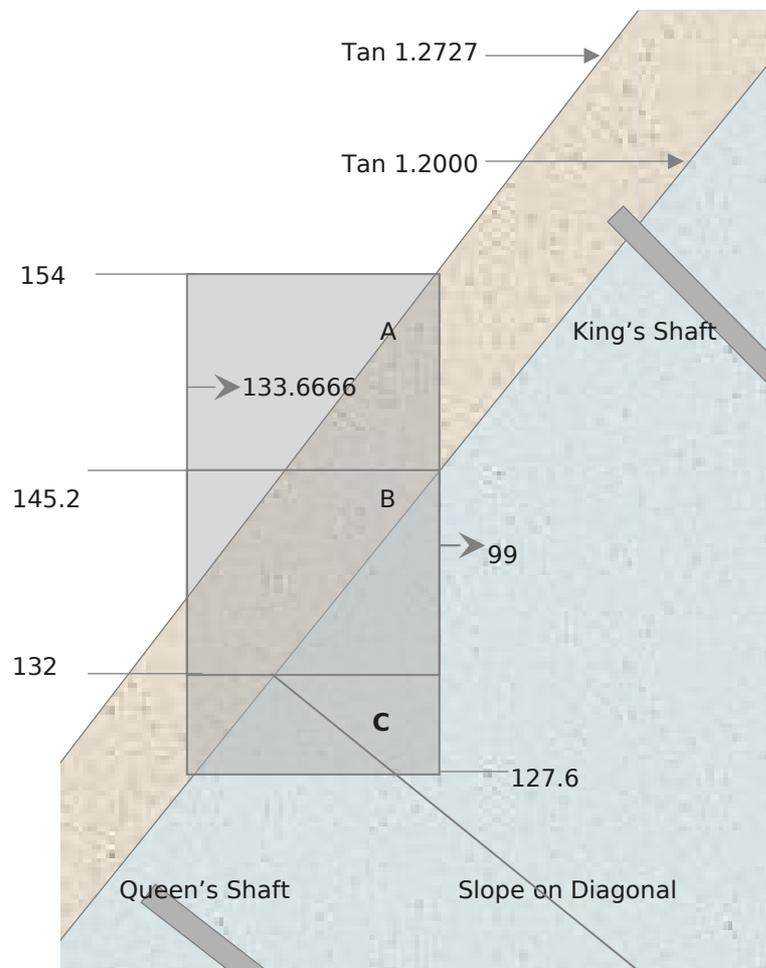
$$2.4444 \times \tan 1.2000 = 2.9333 \text{ cubits}$$

$$3.6666 \times \tan 0.8000 = 2.9333 \text{ cubits}$$

The exit point on the stone shaft is 2.9333 cubits above the base on the first triangle and $7.3333 - 2.9333 = 4.4$ cubits below the upper exit point on the Slope on Diagonal. The exit point for the South Shaft, Queen's Chamber, and built in stone was therefore $132 - 4.4 =$ **127.6 cubits** above the base of the Great Pyramid. A distance of 3.6666 cubits now appears and it is 10 times smaller than 36.6666 cubits, the height of the double square at the chamber position below.

The exit point level of 127.6 cubits above base on a notional pyramid 264 cubits is now the probable position of the Gantenbrink door, and from that position it can be seen that a substantial amount of stone still remains between the original built pyramid 280 cubits high and the position of the door. That would seem to imply that another hidden chamber could well exist between these two locations, even with the missing casing stones on the original pyramid slopes, and it would be around 2 cubits high.

The Rectangle on the Two South Shafts



The credibility of the rectangle based on the two shaft exit points can now be tested to see if it was intended to relate in any way with the two pyramid slope angles $\tan 1.2727$ and $\tan 1.2000$, for pyramids 280 cubits and 264 cubits high. If it makes no numerical sense it can fairly be assumed that such a rectangle was never there for any geometrical purpose, and was incidental. If on the other hand the rectangle does produce meaningful results it could only do so through the areas produced within it and related to something other area at the Great Pyramid. The candidate for that would be the base area that had been common to both pyramids and was $440 \times 440 = 193600$ square cubits. There are three areas within the rectangle determined by the levels of shaft exit points and the crossing points of the rectangle on the pyramid slopes. There are shown as areas A, B, And C.

Rectangle A

$$\text{Height} = 154 - 145.2 = 8.8 \text{ cubits}$$

$$\text{Width} = 14.6666 \text{ cubits}$$

$$\text{Area} = 8.8 \times 14.6666 = 129.0666 \text{ sq cubits}$$

$$193600 / 129.0666 = \mathbf{1500 \text{ times}}$$

Rectangle B

$$\text{Height} = 145.2 - 132 = 13.2 \text{ cubits}$$

The lower level is in the same number as the height

$$\text{Width} = 14.6666 \text{ cubits}$$

$$\text{Area} = 13.2 \times 14.6666 = 193.6 \text{ sq cubits}$$

$$193600 / 193.6 = \mathbf{1000 \text{ times}}$$

Rectangle C

$$\text{Height} = 132 - 127.6 = 4.4 \text{ cubits}$$

$$\text{Width} = 14.6666 \text{ cubits}$$

$$\text{Area} = 4.4 \times 14.6666 = 64.5333 \text{ sq cubits}$$

$$193600 / 64.5333 = \mathbf{3000 \text{ times}}$$

Total Rectangle

$$\text{Height} = 154 - 127.6 = 26.4 \text{ cubits}$$

The height is the same number as the pyramid height

Width = 14.6666 cubits

Area = 26.4 x 14.6666 = 387.2 sq cubits

193600 / 387.2 = **500 times**

These are incredible results! The numbers revealed demonstrate without any doubt at all that the rectangle, which is controlled by the two shaft exits points, gives out a valid and rational message related with the Great Pyramid base area in hundreds, and thousands, of whole number cubit multiples. This could not have occurred on a random basis and so it must be proof positive that the exit points were correct, the pyramid heights were correct, and the factors on the pyramid base area were correct, for none of these conditions could have come about if any part of the geometry had been wrong. That must mean that the notional pyramid 264 cubits high, and the built pyramid 280 cubits high, was correct and that both of these pyramids did exist, even though the smaller cannot be seen and the larger was reduced because the casing stones were taken.

The Length of the South Shaft, Queen's Chamber

The exit point of the definitive South Shaft built in stone and taken off its upper surfaces is 127.6 cubits above base, and this level is quite possibly where the small door found by Gantenbrink is located inside the pyramid. Perhaps the end point marked by the door is not a door at all but a solid marker. If it is a marker then its location high up at the end of the shaft can be found by calculating the shaft itself. The length, measured on the upper surface, will be the hypotenuse of a right-angled triangle and with the exit point and starting point at the change of direction known, the distance can be found.

There would be a right-angled triangle on these two points. The height of that triangle would be the difference between the exit point level at 127.6 cubits above base, and the datum point at 44 cubits above base to give 83.6 cubits. The length of triangle is on the half-base of a pyramid above the level of 127.6 cubits for a pyramid 264 cubits high, to give a pyramid $264 - 127.6 = 136.4$ cubits high, and a base of $136.4 / \tan 1.2000 = 113.6666$ cubits. But the start point of the change of direction had been at 9.1666 cubits south of pyramid centre. The triangle base will then be $113.6666 - 9.1666 = 104.5$ cubits long and the square on the hypotenuse is equal to the sum of the squares of the other two sides.

Shaft Length

$$\text{Side } 83.6 \times 83.6 = 6988.96 \text{ sq cubits}$$

$$\text{Side } 104.5 \times 104.5 = 10920.25 \text{ sq cubits}$$

$$6988.96 + 10920.25 = 17909.21 \text{ sq cubits}$$

$$\text{Square root of } 17909.21 = 133.82 \text{ cubits}$$

$$133.82 \text{ cubits} \times 1.7181 = 229.93 \text{ feet}$$

$$229.93 \text{ feet} / 3 = 76.4333 \text{ yards}$$

$$76.4333 \text{ yards} / 1.0936 = \mathbf{70.08 \text{ metres}}$$

According to Bauval and Gilbert, the robot machine had traversed a distance of some 65 metres before coming to a halt in front of the door at the top of the shaft. Gantenbrink had been measuring slope angles and not lengths of shafts, and there is no record which says that he had taken the machine so that it touched the door, or that he had actually measured the distance between the door and the change of shaft direction at the lower end. If the distance traversed had excluded the door - camera at say 3 metres, and another distance on the horizontal length of shaft - wall of the chamber, say 2 metres, then the shaft length was the required 70 metres.

A metal ball and a claw shaped instrument, along with a small piece of cedar wood, were found resting within the horizontal section when the shaft was first discovered. The ball and claw are now on display in the British Museum but the cedar wood is missing. Another long piece of wood is jammed at the change of direction and claims have been made that it too was there when the shaft was first found. This shaft too had been very carefully constructed and it is probable that it too was intended as a geometrical line on section seen looking through the pyramid from east to west. What is known is that the inclination is very slightly less than that for the shaft opposite. There must have been a reason for that. Rinaldi and Maragioglio had surveyed as much of the shaft that they could reach and they found that the distance from the north wall to the change of direction from horizontal to sloping was 2.25 metres, compared with 2.29 metres for the shaft opposite, or something slightly less if it had been measured on the upper surface at say 2.20 metres. The distance between the face of the wall and the change of direction from horizontal to inclined would then convert to about the same distance as that opposite at around 4.20 cubits measured on the ceiling.

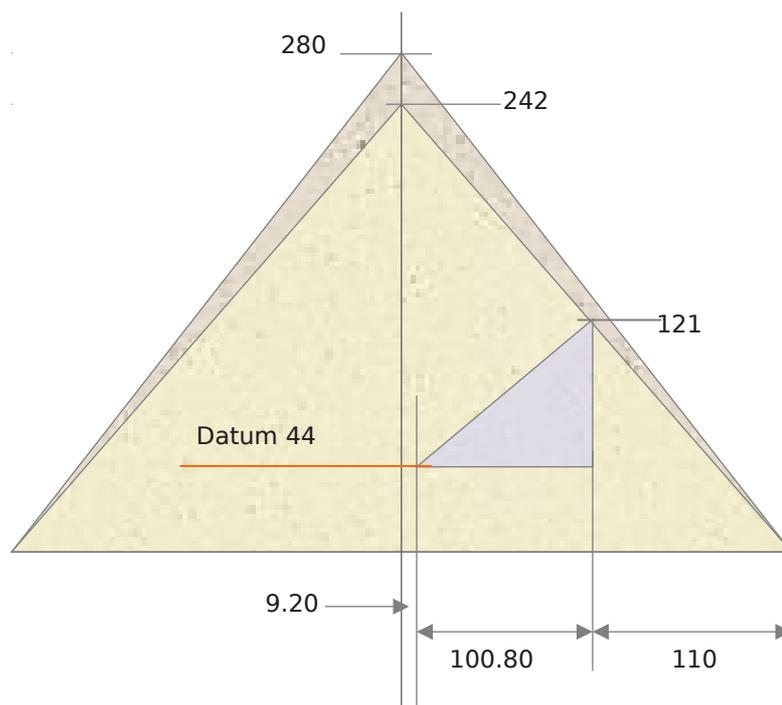
The two shafts openings are opposite on the horizontal plane and because their topsides both align with the ceiling of the entrance corridor, the upper surface of the North Shaft is on the datum level of 44 cubits above pyramid base just as it was for the shaft opening opposite. The start point on its upper surfaces can now be established before it begins to rise upwards and assuming that it does in fact continue upwards in a straight line, seen east to west and where it passes by the Grand Gallery, it might be possible to obtain the missing level of the exit point. But a number of other assumptions have to be made. The first assumption is that the two shafts were inter-related in the same manner as the two shafts of the King's Chamber above were also inter-related.

The angle of inclination of the South Shaft was at $\tan 0.8000$ and that for the North Shaft inclination has been found to be slightly less than that at around $\tan 0.7600$. The exit point for the South Shaft was at 132 cubits above base at a level of half the height of its related pyramid at 264 cubits. Perhaps therefore a similar relationship exists for the North Shaft with a similar half-base of 110 cubits on its pyramid square.

The pyramid slope angle for the South Shaft was $\tan 1.2000$ and the pyramid slope angle for the North Shaft would then be slightly less and $\tan 1.1000$ would seem a logical next

step. The ancients had adopted rational numbers when they created Tan 0.8000 using the number 8 and if the missing pyramid height is also on a half-base of 220 cubits and it rose on a slope angle of Tan 1.1000, it would be $220 \times \text{Tan } 1.1000 = 242$ cubits high. That is an interesting result because the second pyramid square on the King's Chamber shaft exit points had both been of sides 242 cubits. It is unlikely that a vertical distance of 242 cubits would appear on the shaft above and then on the shaft below, combined with Tan 1.1000, by chance and that looks to be the correct slope angle for its associated notional pyramid height. If then the exit point were at half the pyramid height as it was for the shaft opposite then it would be 121 cubits above the base. That too looks logical. Now it can be adopted to see if it makes rational geometrical sense and the resulting numbers would soon show why the Queen's Chamber was 10 cubits wide and centrally located inside the original Great Pyramid section.

The Pyramid on Tan 1.1000



A triangle whose hypotenuse is also the line of North Shaft can now be added and it would therefore be $121 - 44 = 77$ cubits high. The change of direction of the shaft was $4.29 + 5.00 = 9.20$ cubits from pyramid centre and that gives $110 - 9.20 = 100.8$ cubits for the base of that triangle. The preliminary value for the Slope on Shaft would then be around $77 / 100.8 = \text{Tan } 0.7638$ coming from a pyramid 242 cubits high and with base angles Tan

1.1000 where such a result seems to be going in the right direction. But is it anywhere near to the correct shaft slope angle when measured in degrees? Petrie had measured the angle of inclination and he reported that it rose at 37 degrees 28 minutes 00 seconds. Were the angles the same when the geometrical angle was taken from the Standard Four Figure Tables?

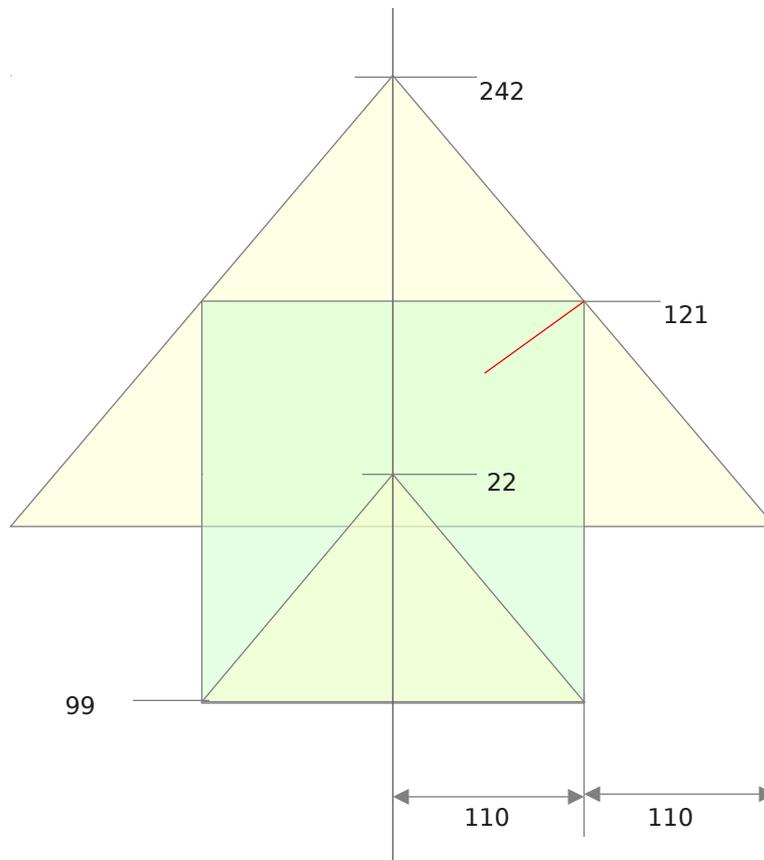
$$\text{Tan } 0.7627 = 37 \text{ degrees } 20 \text{ minutes } 00 \text{ seconds}$$

$$\text{Tan } 0.0011 = 00 \text{ degrees } 02 \text{ minutes } 30 \text{ seconds}$$

$$\text{Tan } 0.7638 = 37 \text{ degrees } 22 \text{ minutes } 30 \text{ seconds}$$

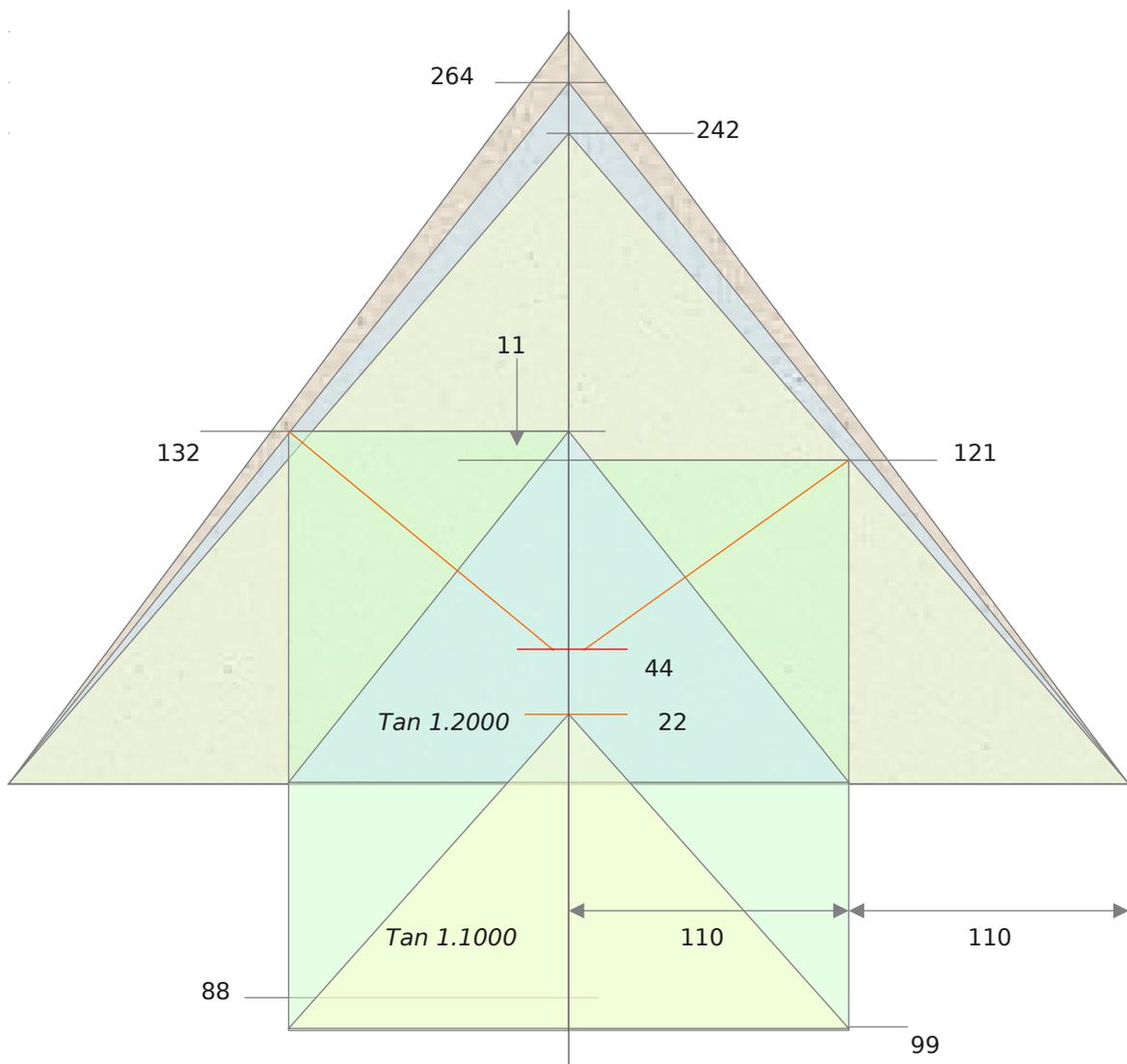
Bauval and Gilbert, in their *Orion Mystery* say that it was 39 degrees and there remains some doubt about that. The pyramid geometry however, declares that it is within 6 minutes of arc of Petrie's finding and almost the same angle. That would say that the shaft slopes at close to Tan 0.7638 but would that be the correct design angle as originally intended?

The Pyramid 242 cubits high



A pyramid above the shaft exit level of 121 cubits, for a pyramid 242 cubits high, will be another 121 cubits high and its half base will be $121 / \tan 1.1000 = 110$ cubits, which is half the length of the Great Pyramid half base at 220 cubits. The pyramid 242 cubits high is making rational sense and that says that **Tan 1.1000** is correct. The pyramid square would carry sides of 220 cubits and its corners would abut the slopes at 121 cubits above base. The square would extend below base by $220 - 121 = 99$ cubits. That too is a rational number. A pyramid inside the square would be 121 cubits high and its tip would extend above the base by $121 - 99 = 22$ cubits, another rational answer. The datum level on the Queen's Chamber was 44 cubits above pyramid base and the tip terminates at a point midway between.

The Two Pyramids and the Two Slopes on Diagonal

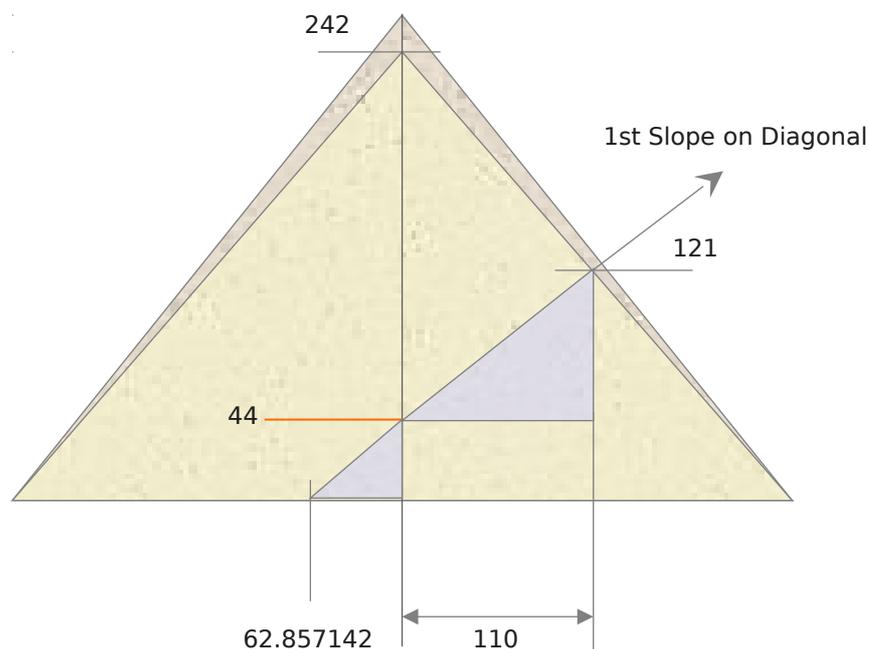


At the two lower shaft exit points there is a difference between levels of 132 and 121 to give 11 cubits and any pyramid between those levels will have a half base $11 / \tan 1.2000 = 9.1666$ cubits long. That was also the length of base of the triangle between the Slope on Shaft and the Slope on Diagonal for the South Shaft opposite. The half base must be a connecting link between the two shafts and the two exit levels.

A pyramid 132 cubits high has a half base of $132 / \tan 1.2000 = 110$ cubits and a pyramid 121 cubits high has a half base of $121 / \tan 1.1000 = 110$ cubits. Because of that there can be no second pyramid square for either of the Queen's Chamber pyramids whereas there were for the King's Chamber pyramids. The process has been brought to a geometrical halt.

All vertical distances between the two pyramids are in multiples of 11 cubits, the pyramid number and these results show that a notional pyramid 264 cubits high was viable.

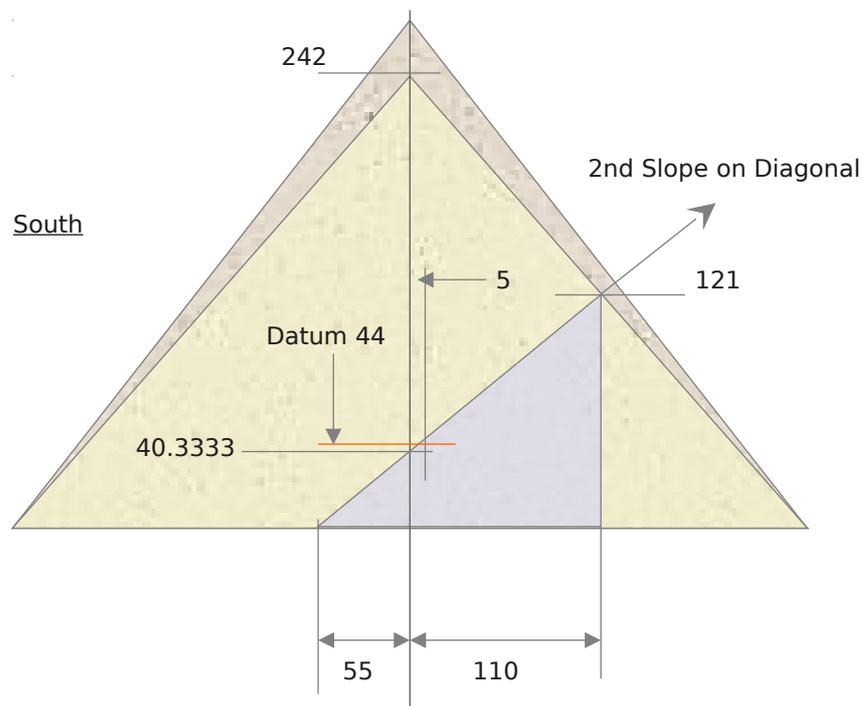
The First Slope on Diagonal



There was a slight difference between this shaft and the one opposite because instead of one Slope on Diagonal this shaft carries two of them and they converge on one exit point instead of running parallel with the built shaft for the shaft opposite.

The First Slope on Diagonal passes through pyramid centre at level 44 cubits on the datum and ends at level 121 cubits on the north slope of the notional pyramid 242 cubits high. The difference between levels is 121 cubits - 44 = **77 cubits**. The exit point is 110 cubits from the pyramid centre and that determines a slope angle of $77 / 110 = \mathbf{\text{Tan } 0.7000}$. That is hugely meaningful in terms of the spiritual entity. It must be the answer! It represents the number 7 instead of 8 in the same way as Tan 0.7000 occurs here as had Tan 0.8000 occurred for the opposite Slope on Diagonal. If the Slope on the Diagonal were extended to the baseline of the Great Pyramid it will cross the pyramid baseline at a position $44 / \text{Tan } 0.7000 = 62.857142$ cubits from pyramid centre and south of pyramid centre. The base is 440 cubits long and there will be $440 / 62.857142 = 7$ divisions on the base, a slope angle of Tan 0.7000, an exit point 77 cubits above datum, and now there is a base divided by 7. This is the Egyptian god Set whose number was 7. There is no doubt about it.

The Second Slope on Diagonal

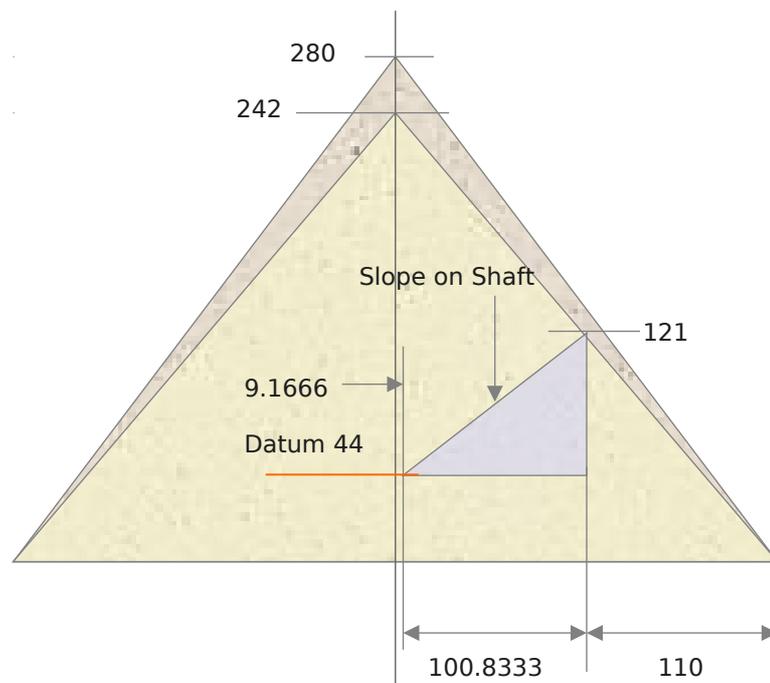


The Second Slope on Diagonal is based on the supposition that it would pass through the base of the Great Pyramid at 55 cubits south of pyramid centre in the same manner that the Slope on Diagonal opposite had passed through the base at 55 cubits north of pyramid centre. If that were true then another triangle would exist with a base length of $55 + 110$

= 165 cubits and a height of 121 cubits at a slope angle of $110 / 165 = \mathbf{Tan\ 0.7333}$. That is extraordinary because the triangle on the base of the Queen's Chamber floor below the datum of 44 cubits was 7.3333 cubits high for the shaft opposite. The identical number has now appeared as a tangent instead of a distance. That would be logical because the adjacent side of that triangle was 9.1666 cubits long sloping at Tan 0.7333. The triangle will therefore cross pyramid centre at $55 \times \text{Tan } 0.7333 = 40.3333$ cubits above base and that is 3.6666 cubits below the datum at 44 cubits where the double square for the shaft opposite had been 36.6666 cubits high and 10 times greater.

A triangle 3.6666 cubits high sloping at Tan 0.7333 will be $3.6666 / \text{Tan } 0.7333 = 5$ cubits long exactly! That is precisely the half width distance between pyramid centre and the north wall of the Queen's Chamber. That is extraordinary! The chamber is 10 cubits wide and half of that is 5 cubits! The Second Slope on Diagonal therefore passes through the chamber on pyramid centre at a level of 40.3333 cubits above base, and that was clearly why the Queen's Chamber was built 10 cubits wide and why it was placed on pyramid centre. The reason for the Second Slope on Diagonal has now been found. It was to reveal the vertical distance of 7.3333 cubits on the triangle and to decide the half-width distance for the Queen's Chamber. What then was the angle for the Slope on Shaft?

The Slope on Shaft



The distance of 9.20 cubits as used earlier was only a rough estimate and it was probably not exactly correct. Since a triangle 7.3333 cubits high and 9.1666 cubits long has emerged on the North Shaft as well as the South Shaft it is almost certain that 9.1666 cubits was the correct distance for both shafts from pyramid centre to the change of shaft direction as seen on its upper surfaces. If 9.1666 cubits is used instead of the measured 9.20 cubits then the slope angle in tangent will change by a very slight amount, but that amount will comply with the hidden geometry and make all the difference.

A triangle that is $121 - 44 = 77$ cubits high will carry a base $110 - 9.1666 = 100.8333$ cubits long and the design angle for the shaft that was built in stone will then have been in the value of $77 / 100.8333 = \mathbf{\text{Tan } 0.7636 \text{ recurring}}$. That is the answer! It is a number typical of the Great Pyramid recurring in tangential form. The inclination for the Slope on Shaft of the North Shaft at Tan 0.7636 can now be converted into degrees...

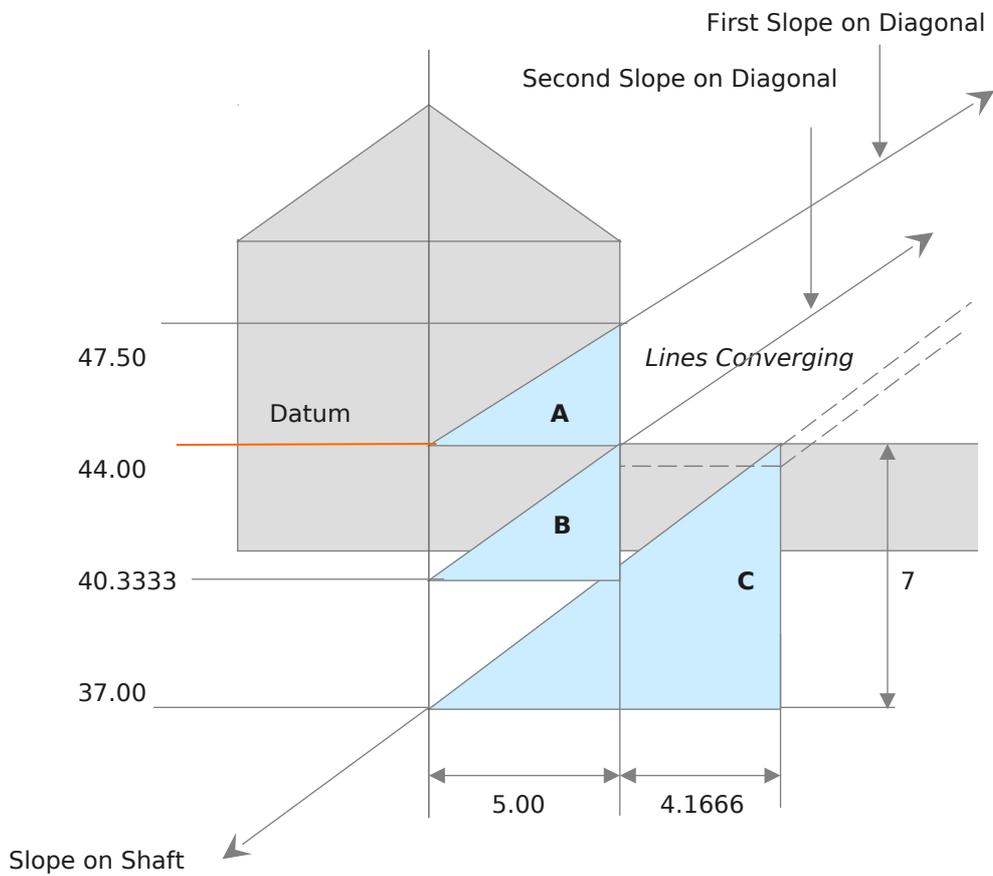
Tan 0.7627 = 37 degrees 20 minutes 00 seconds.

Tan 0.0009 = 00 degrees 02 minutes 00 seconds.

Tan 0.7636 = 37 degrees 22 minutes 00 seconds.

Petrie had measured the angle at 37 degrees 28 minutes and he was just 6 minutes in excess of the angle designed by the ancients for this shaft. The geometry is correct. There were no parallel lines on the two Slopes on Diagonal, and the Slope on Shaft will therefore converge with them on the exit point at 121 cubits above base for a pyramid 242 cubits high. This can be seen where the three alignments pass through the Queen's Chamber.

The Three Slopes at the Queen's Chamber



The Upper Slope on Diagonal A

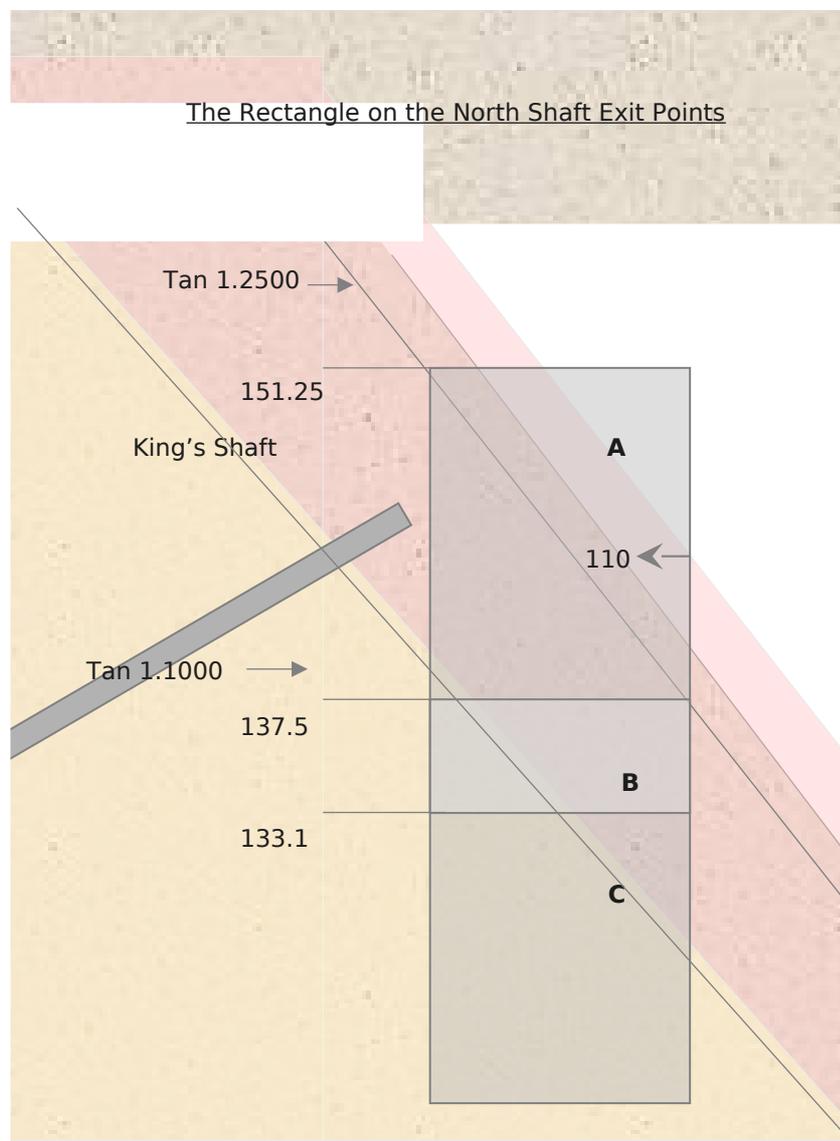
It had to carry the less steep angle of Tan 0.7000 in order to converge on the exit point. The triangle is 3.5 cubits high on a base of 5 cubits and $3.5 / 5 = \text{Tan } 0.7000$. It fits exactly.

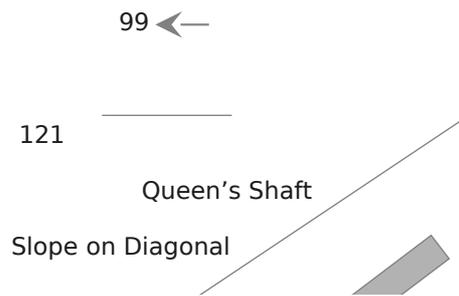
The Lower Slope on Diagonal B

It had to carry a slightly steeper angle in order to converge on the exit point and the triangle is 3.6666 cubits high on a base of 5 cubits to give a slope of $3.6666 / 5 = \text{Tan } 0.7333$. That angle is correct.

The Slope on Shaft in stone at C

The angle had to be steeper still if it was to converge on the exit point and its length must comply with the change of direction on the upper surfaces of the horizontal shaft section. The triangle will be 9.1666 cubits long and 7 cubits high to give $7 / 9.1666 = \text{Tan } 7636$ recurring.





The rectangle encompasses slopes of pyramids 275 cubits high and 242 cubits high at slope angles $\tan 1.2500$, and $\tan 1.1000$, and it falls between the shaft exit levels of 151.25 cubits and 121 cubits above base, making it 30.25 cubits high. The half-base distances on the two pyramid squares for these shafts were at 99 cubits and 110 cubits north of pyramid centre, making the rectangle 11 cubits wide. The areas of the sub-rectangles can now be found to see how they will divide into the area of the Great Pyramid base at 193600 square cubits.

Rectangle A

$$\text{Height} = 11 \times \tan 1.2500 = 13.75 \text{ cubits}$$

$$\text{Width} = 11 \text{ cubits}$$

$$\text{Area} = 13.75 \times 11 = 151.25 \text{ sq cubits}$$

$$\text{Upper level} = 151.25 \text{ cubits}$$

$$\text{Lower level} = 151.25 - 13.75 = 137.5 \text{ cubits}$$

The height is in the same number as the lower level

The area is in the same number as the upper level

$$193600 / 151.25 = \mathbf{1280 \text{ times}}$$

Rectangle B

$$\text{Height} = 137.5 - 133.1 = 4.4 \text{ cubits}$$

$$\text{Width} = 11 \text{ cubits}$$

$$\text{Area} = 4.4 \times 11 = 48.4 \text{ sq cubits}$$

$$\text{Half of } 48.4 = 24.2 \text{ the number in the pyramid height}$$

$$193600 / 48.4 = \mathbf{4000 \text{ times}}$$

Rectangle C

$$\text{Height} = 11 \times \tan 1.1000 = 12.1 \text{ cubits}$$

$$\text{Width} = 11 \text{ cubits}$$

$$\text{Area} = 12.1 \times 11 = 133.1 \text{ sq cubits}$$

$$\text{Upper level} = 121 + 12.1 = 133.1 \text{ cubits}$$

$$\text{Lower level} = 121 \text{ cubits}$$

The area is in the same number as the upper level

The height is in the same number as the lower level

$$193600 / 133.1 = \mathbf{1454.5454 \text{ times}}$$

Total Rectangle

$$\text{Height} = 151.25 - 121 = 30.25 \text{ cubits}$$

$$\text{Width} = 11 \text{ cubits}$$

$$\text{Area} = 30.25 \times 11 = 332.75 \text{ cubits}$$

$$193600 / 332.75 = \mathbf{581.8181 \text{ times}}$$

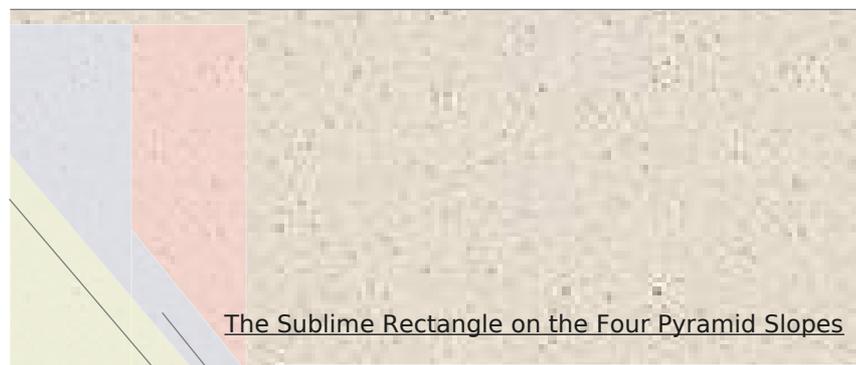
If the number of times that the rectangle on the south slopes had divided into the Great Pyramid base at 500 times is deducted from the rectangle on the north slopes at 581.8181 times, the answer is 81.8181. But 818181 could also be read as 181818 and there were 1.718181 feet to a cubit where 1818 appears again. The difference is in the number 18 or 1 and 8. These are significant numbers in the context of the deities because **1818** looks very much like **1S1S** who was the predominant Egyptian goddess. This appears to be saying that the lower exit point south and the upper exit point north were connecting the Great Pyramid with the goddess Isis. Then there is some more of the mathematical mind games.

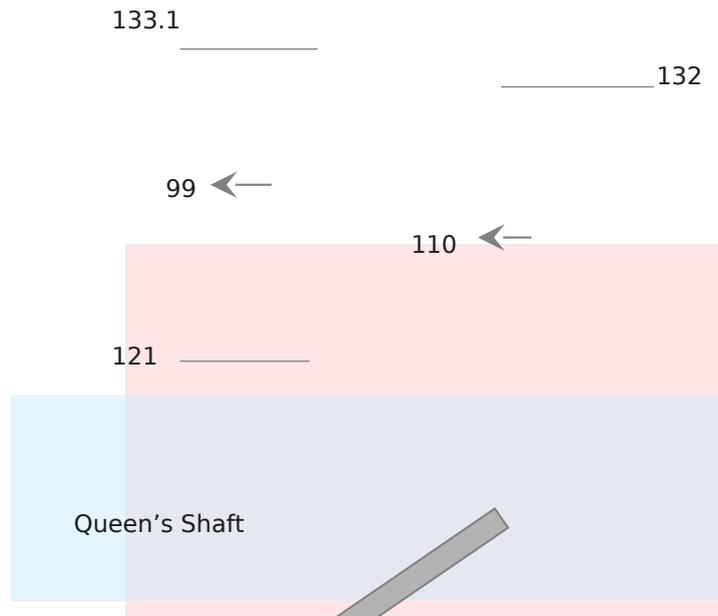
The area of 133.1 square cubits is 2.75 times the area of 48.4 square cubits and 2.75 is ten times less than the pyramid 275 cubits high on the upper exit point on the North Slope.

The total rectangle area 332.75 square cubits is 6.875 times the area of 48.4 square cubits, and $6.875 \times 2 = 13.75$ and ten times less than 137.5 cubits, which is half of 275 cubits.

The total rectangle area 332.75 square cubits is 2.5 times the area of 133.1 square cubits on sub-rectangle C, and 2.2 times the area of 151.25 square cubits on sub-rectangle A, where 151.25 linear cubits was the level of the exit point for the upper shaft.

There is absolutely no doubt that the rectangle on the south pyramid slopes produces results that in no way whatsoever could be construed as being random. The unavoidable corollary of that is that they were accurately planned. If they were planned, then they were intended to carry messages down the centuries and those messages were in the language of number.





Having discovered that the area of the rectangle on the north and south shaft exit points and their related slopes, divides into the Great Pyramid base in rational numbers, it appears very likely that something similar occurs when all four of the shaft exit points were represented by rectangles on the slopes. Quite possibly, they could be seen in any number of permutations perhaps using the mathematics that would extend far beyond the limited confines of this account.

A rectangle that encloses all four of the shaft exit levels can be shown on any of the four pyramid sides but the north slopes are now shown here together at their respective slope angles of Tan 1.2727, Tan 1.2500, Tan 1.2000, and Tan 1.1000. Then the shaft exit levels at 154 cubits, 151.25 cubits, 132 cubits, and 121 cubits are also shown.

Total Rectangle

$$\text{Height} = 154 - 121 = 33 \text{ cubits}$$

$$\text{Width} = 110 - 99 = 11 \text{ cubits}$$

$$\text{Area} = 33 \times 11 = 363 \text{ sq cubits}$$

$$193600 / 363 = \mathbf{533.3333 \text{ times}}$$

The levels of the crossing points between the two vertical sides of the sublime rectangle and the four sloping sides that had been derived from the four shaft exit points can be calculated, using tangents with the number 11 that appears to have been deliberately

included. If it were deliberately intended, and there is no doubt that it was, then the number 11 had been part of the pyramid as a whole before it was even planned or built. It was part of the concept. The series can then be shown from the lowest level and working upwards.

North Shaft, Queen's Chamber

Lower Level = 121 cubits above base

Height = $11 \times \tan 1.1000 = 12.1$ cubits

The lower level is in the same number as the height

Upper level = $121 + 12.1 = 133.1$ cubits above base

Area covered = $12.1 \times 11 = 133.1$ square cubits

The upper level is in the same number as the area

South Shaft, Queen's Chamber

Lower level = 132 cubits above base

Height = $11 \tan 1.2000 = 13.2$ cubits

The lower level is in the same number as the height

Upper level = $132 + 13.2 = 145.2$ cubits above base

Area covered = $13.2 \times 11 = 145.2$ square cubits

The upper level is in the same number as the area

North Shaft, King's Chamber

Upper level = 151.25 cubits above base

Height = $11 \times \tan 1.2500 = 13.75$ cubits

Lower level = $151.25 - 13.75 = 137.5$ cubits above base

The lower level is in the same number as the height

Area covered = $13.75 \times 11 = 151.25$ square cubits

The upper level is in the same number as the area

South Shaft, King's Chamber

Upper level = 154 cubits

Height = $11 \times \tan 1.2727 = 14$ cubits

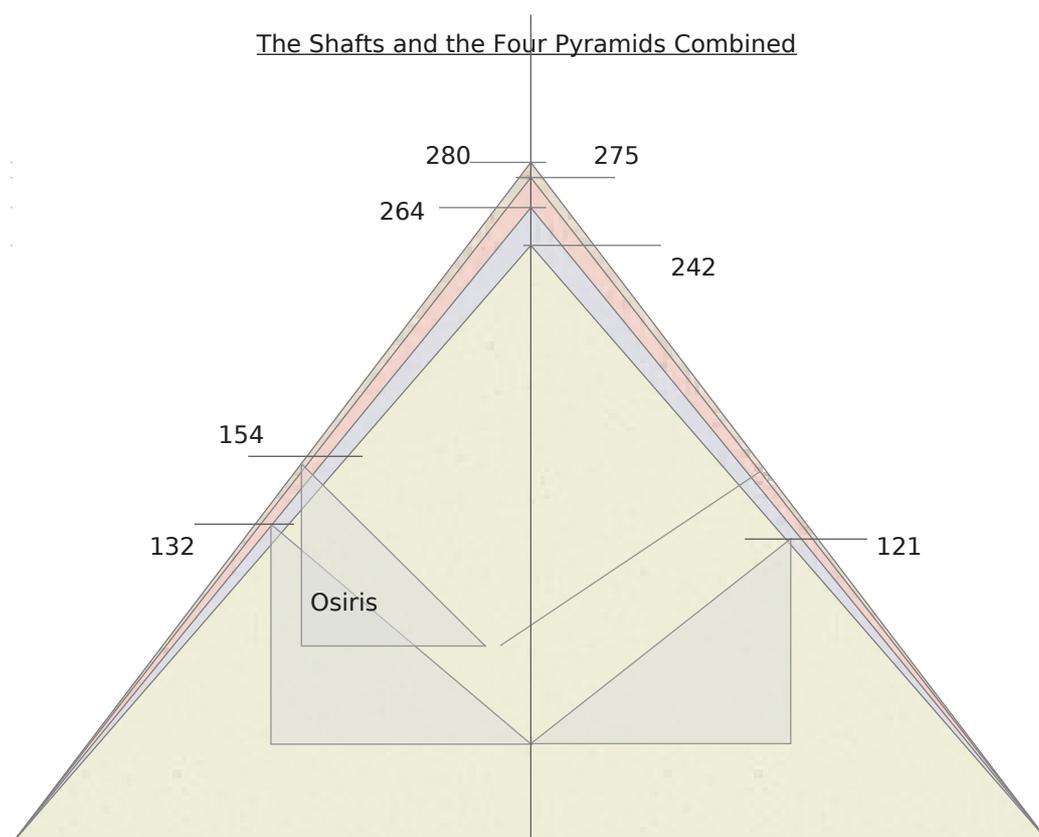
Lower level = $154 - 14 = 140$ cubits above base

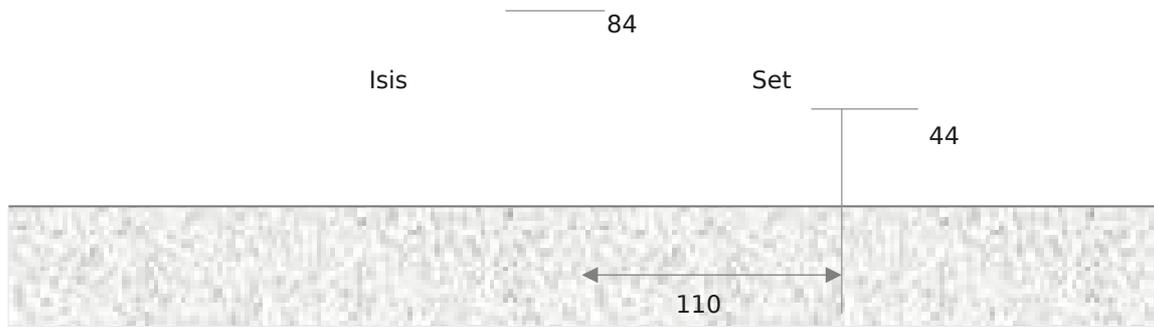
The lower level is in the same number as the height

Area covered = $14 \times 11 = 154$ square cubits

The upper level is in the same number as the area

There cannot be any doubt that the sublime rectangle is a viable mathematical entity that proves the four shaft slope angles at the positions of the four shaft exit points on their relative slopes of the diagonal. There is no real possibility that this could have come about by some obscure circumstance or by any incredibly devious manufacturing process. That says that this had been planned and that the pyramid was mathematical. There is no doubt at all.





The south lower shaft would therefore slope at $132 - 44 / 110 = \text{Tan } \mathbf{0.8000}$ for Isis whose number was **8** and the north lower shaft would slope at $121 - 44 / 110 = \text{Tan } \mathbf{0.7000}$ for Set whose number was **7**. These were not the slope angles of the shafts built in stone but they represented the slopes on diagonals from which the shafts would be built. That is to say that there were three invisible pyramids and one built in stone along with four shafts emerging from two chambers.

THE MISSING QUEEN'S CHAMBER FLOOR

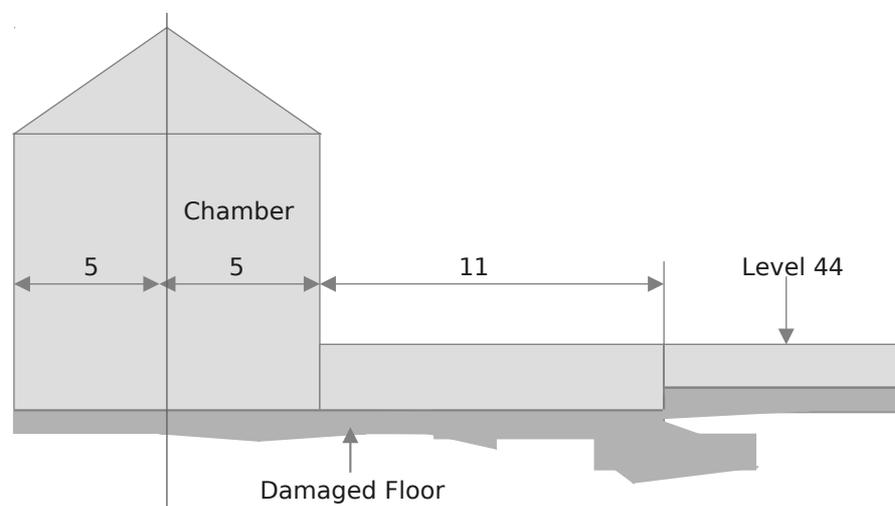
It has long been known that the overall condition of the stonework of the floor of the Queen's Chamber is very poor indeed. Because of that it has always been assumed that the builders had gone about constructing the chamber as if they did not know what they were doing. However, if they were in any doubt about whether or not this chamber was to be the tomb for a pharaoh, they were certainly the first to build any chamber inside any pyramid of the Nile that was placed above ground level. This was because previous pyramids of the 3rd dynasty all carried tombs below ground level. It was not until the 4th

dynasty that pyramids began to contain burial chambers at ground level but never had there been any above ground level. Then came the Great Pyramid, built perhaps during the middle of the 4th dynasty with its Queen's Chamber substantially above ground, the first ever. That does not sound as if the builders had not known what they were doing.

The present dating says that the Djedefre pyramid had followed the Great Pyramid and had collapsed. It was followed in turn by the Khafre Pyramid, located next to the Great Pyramid, and its burial chamber was once more at ground level. The remaining pyramids to the 6th dynasty either had none or possessed chambers at ground level. The Queens Chamber was unique by being the first to be built well above ground until it was later superseded by the King's Chamber built higher still within the pyramid. This presupposes that it was intended as a tomb but that particular logic had derived from earlier pyramid logic, for if tombs then, why not tombs now?

Rinaldi and Maragioglio show the dire condition of the sub-floor within the corridor in one of their cross-section drawings where it gives the impression of having been at the Battle of the Somme. Clearly, the floor had been taken up at one time, and further, there had been some tunneling under the floor presumably in search of treasure. This might well have been part of Caliph Ma Mun's operations for he was known to have excavated behind the recess in the east wall and there is no reason to suppose that he not attacked the floor as well. The level of the base of the hole in the recess could actually be indicating the level of an original floor as he had found it because the lower level of the hole is higher than that of the existing damaged floor, indicating that something was at one time at that level, a floor.

The damaged Queen's Chamber floor



The engineers had given a distance of 5.70 metres from the north wall of the chamber to the mysterious 'step down' in the entrance corridor and that translates into 10.885 cubits or 0.1 of a cubit short of exactly 11 cubits. The probability is that the original design distance was 11 cubits and the engineers had experienced some difficulty in finding any clear surface against which to take their 5.70 metres as seen from the dire state of surrounding surfaces.

The 'Theory of the Change of Mind

Doctor I.E.S. Edwards, late curator of the British Museum, had been to the pyramid and been moved to observe that *'there are many indications that work on the Queen's Chamber was abandoned before it was completed. The floor, for instance, is exceedingly rough; and if the chamber had been finished it would probably have been paved with finer stone'*.

That small observation had come directly from his book entitled *The Pyramids of Egypt* and he was a man who was highly regarded by his peers. The Department of Egyptian Antiquities at the British Museum continues the unlikely theme by displaying a notice against a very large and impressive photograph of the Great Pyramid and saying; *'The Pyramid of Knufu (The Great Pyramid) had an unusual internal design, the result of alterations as it was being constructed'*.

Egyptologists have long advocated that the Great Pyramid was never designed in detail at all but rather that it had been begun as a vague concept approximating to a pyramid shape just as the many other pyramids had done. This was in support of the tomb theory because no other reason for the existence of the Great Pyramid, and certainly not one as complex as that being put forward here, was considered possible. The opinion that the chamber was a mistake was made in the belief that the chamber had first to be a tomb for the pharaoh, but had not been built to a high enough standard for the pharaoh, whoever he was. The floor was a contradiction in terms and in a desperate effort to explain it away, the only other reason for this anomaly was to advocate the 'change of mind' theory. It would seem that the people who were able to construct this wonder with such precision, were also too stupid to know where they were going. The mathematics demonstrates that these people were not stupid at all and they certainly did know where they were going.

The idea that the roughly finished floor was as the builders had intended was wrong, and the evidence for that can be found.

The two shafts rising upwards from the chamber were built with great care, before they were sealed at both ends. More importantly, the south shaft extends to a height well above the level of the King's Chamber, and that might well apply to the north shaft as well once it is fully investigated. Why then, if the builders had reached the level of the Queen's Chamber floor and had changed their minds, but built the recess, built the ridged ceiling, built the lower shaft openings, and built the chamber to the exact dimensions, before they decided that it was not to a high enough standard? Why had they continued to build the shafts until they reached a level that was substantially above the King' Chamber level? That would not make sense if the chamber that they came from had by then been abandoned!

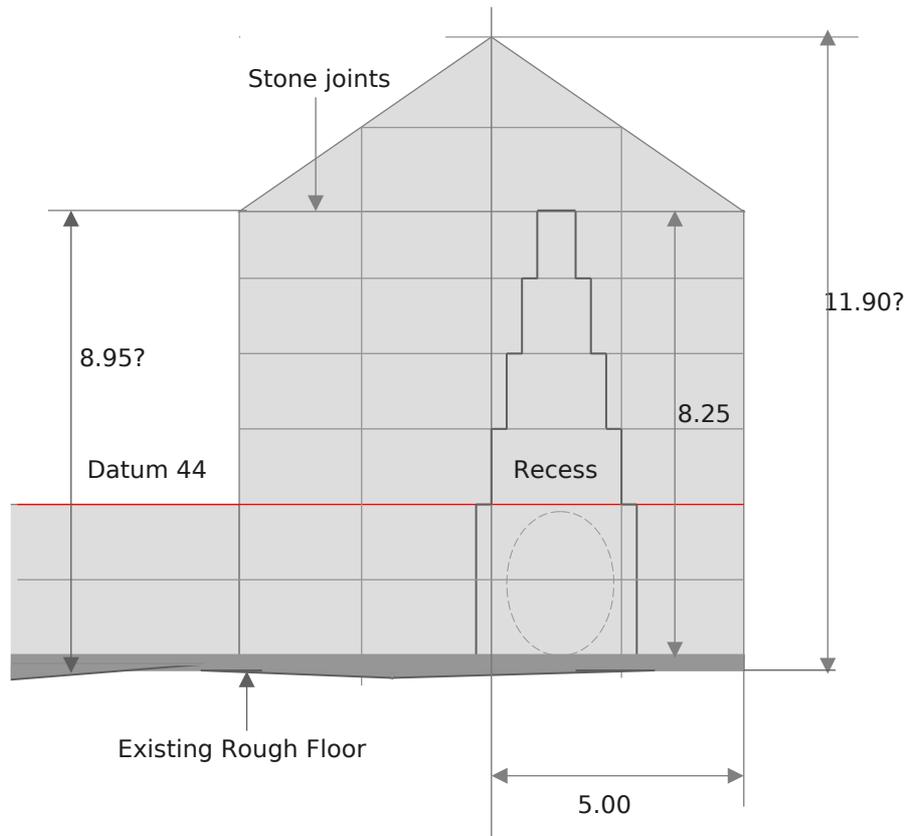
The hidden geometry says that the Queens Chamber had been built with a finished floor to a specific level above base, and to dimensions that were related with the pyramid as a whole. The lateral positions of the walls were determined through the hidden geometry of the north and south shafts related to a sacred double square, both of which dictated that the walls were to be 5 cubits from pyramid centre, a dimension confirmed on the engineer's drawings, but the chamber was also intended to be 11 cubits long and 10 cubits wide, as built.

The Numbers on the Chamber Walls

The number 2.75 had figured in the difference between the levels of 154 cubits and 151.25 cubits on the shaft exit points of the King's Chamber and 27.5 cubits was also the difference between the levels of the two pyramid squares acting for a pyramid 275 cubits high. These two vertical distances will be seen again at the Queen's Chamber and in profound manner. The pitched ceiling was provided because it too carried a geometrical purpose but before that can be seen it is necessary to look again at the so-called unfinished floor levels.

Because the original floor is missing the height of the chamber cannot be measured from the existing sub-floor and any interpretation of that height will be meaningless. This is because the dimensions taken were on the damaged floor that remaining after it was vandalised.

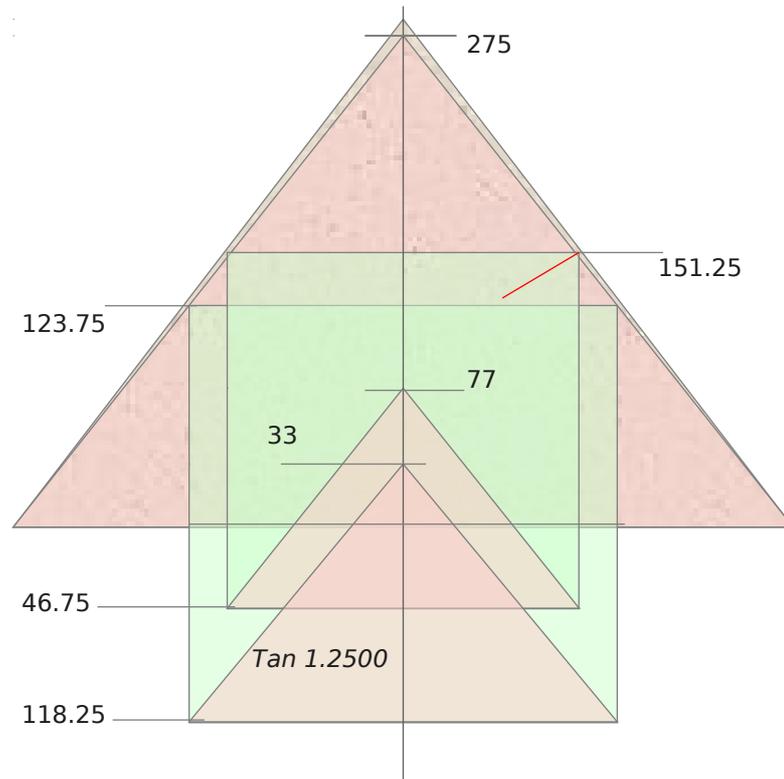
The East Wall and the Recess



According to the drawings, a horizontal stone joint-line occurs at the same level as that of the entrance corridor ceiling and the upper surfaces of the two shaft openings. That says that the coursing of the stones was originally intended to comply with the datum level of 44 cubits above base. But that was not all. The levels of the courses seen on the walls above that datum level and going upwards are given by the survey as 0.82 metres, 0.71 metres, 0.73 metres, and 0.72 metres to the top of the walls converting to 1.56 cubits, 1.35 cubits, 1.39 cubits, and 1.37 cubits. These distances were very similar suggesting that the walls were built to follow particular course lines and levels. The height to the ridge from the top of the existing sub-floor is also given at 6.23 metres, or 11.90 cubits according to the survey. The difference between that and a possible design height of 11.75 cubits is around 0.15 cubits and that would be correct for the thickness of an original stone floor if it had been hacked up with chisels. Another level of 21.19 metres on the uneven sub-floor converts to 40.46 cubits. From that level they give the height to the tops of the wall around the recess at 4.69 metres, or 8.95 cubits, making a level of 49.41 cubits above base

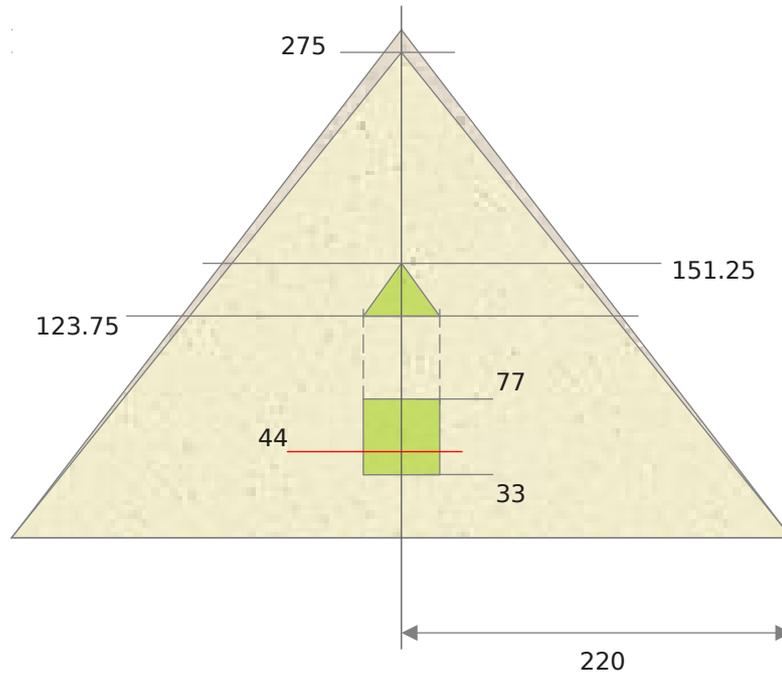
to the tops of the walls. That was the survey level but taken off the sub-floor it was certainly not the original design height.

The Levels of 33 and 77 cubits



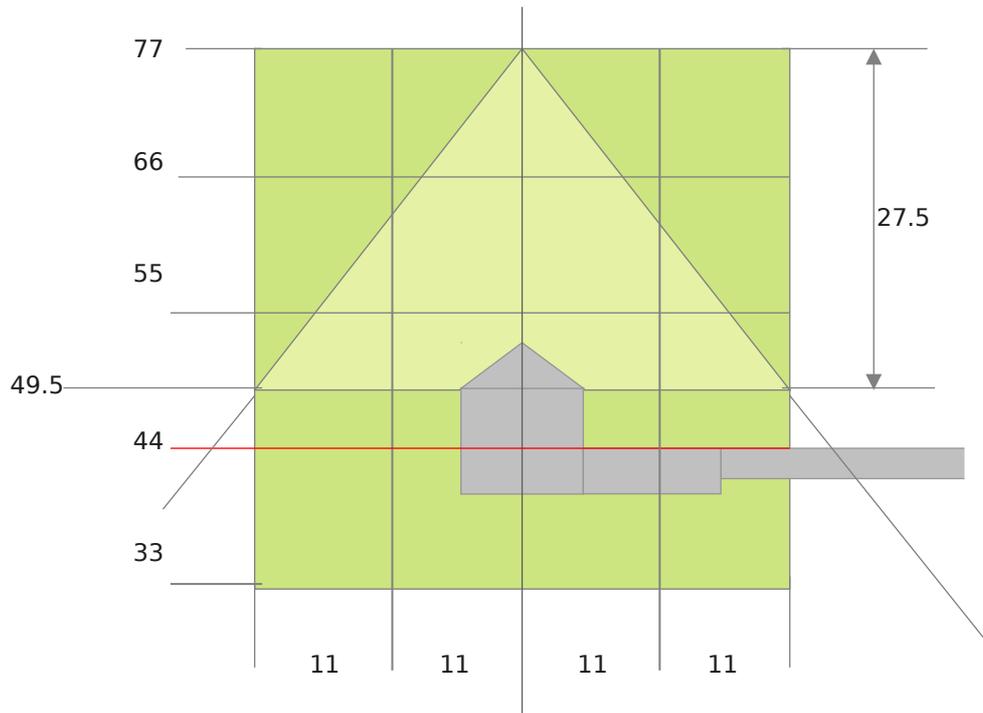
The Queen's Chamber had related with a pyramid 275 cubits high as found on the exit point of the north shaft of the King's Chamber at 151.25 cubits above base, and through the slope that had passed out of the pyramid on $\text{Tan } 0.8000$ for a pyramid 275 cubits high. The levels of the pyramid squares were 151.25 cubits for the first, and 123.75 cubits for the second and on the pyramid squares there had been two pyramids. The pyramid coming off the first pyramid square had been 123.75 cubits high with a tip height of 77 cubits above base, and the pyramid on the second pyramid square was 151.25 cubits high with a tip height of 33 cubits above Great Pyramid base. The result was that there were levels of 77 cubits and 33 cubits above base and a vertical distance of $77 - 33 = 44$ cubits on pyramid centre that was also extending over, and around, the Queen's Chamber.

The Square of sides 44 Cubits



The reason behind the two pyramid squares and their respective sub-pyramids is becoming clear. The levels were creating a square of sides 44 cubits with the datum level of 44 cubits passing through the Queen's Chamber. The difference between the levels of 151.25 cubits and 123.75 cubits is 27.5 cubits for a mini-pyramid whose half-base would then be $27.5 / \tan 1.2500 = 22$ cubits and whose full base would be $22 + 22 = 44$ cubits. That creates the square! It gives the width of the square combined with the vertical distance of 44 cubits just found. The square exists located around the Queen's Chamber, and it has a very good reason for being there.

The Square around the Queen's Chamber

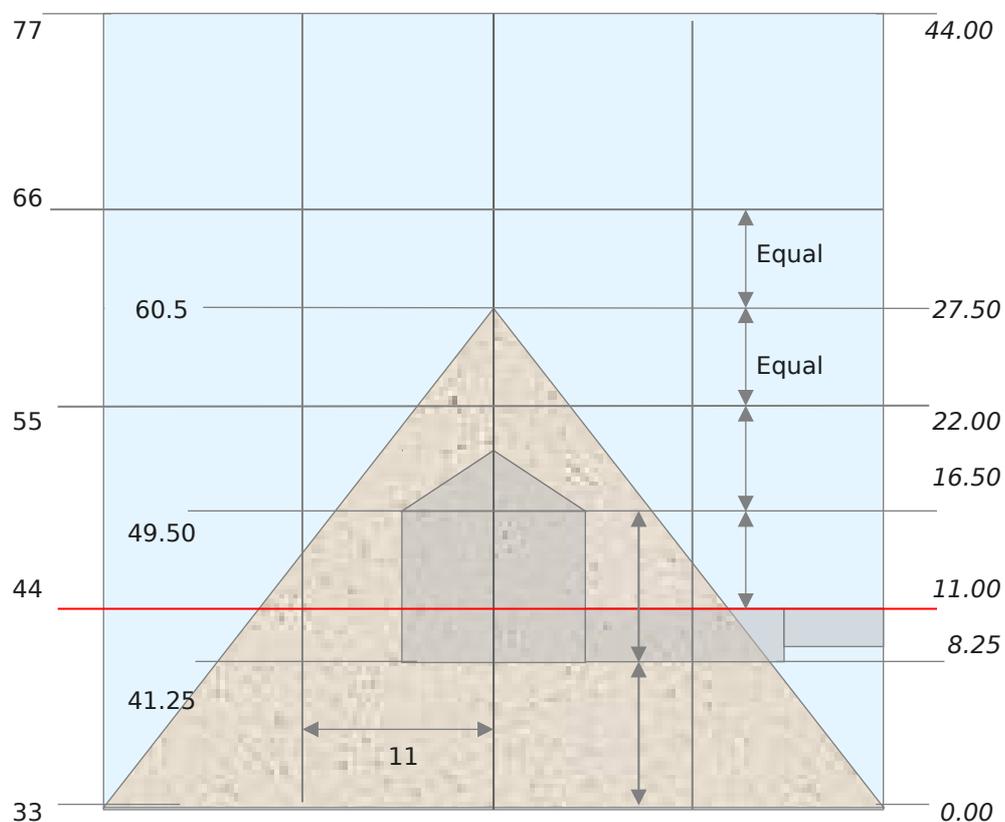


Suddenly everything becomes clear. The square decides the section on the Queen's Chamber. There is a pyramid on the square sloping at Tan 1.2500 and if a pyramid exists inside the square its tip will be at the level of 77 cubits. The height is 27.5 cubits as found between the levels of 151.25 cubits, and 123.75 cubits above base, and the base will therefore be at the level of $77 - 27.5 = 49.5$ cubits above pyramid base to the tops of the chamber walls. But the survey had said that the level from the tops of the chamber walls was 49.41 cubits. That is so close to 49.5 cubits that the two results must be referring to the same thing. There is no other feature in the vicinity. The level of 49.5 cubits would then be marking the level of the chamber taken off the tops of the north and south walls! But the findings were not quite the same and there was a reason for that. The engineers show that the levels on the tops walls are not the same along their length and that there is a slight incline downwards on their upper top surfaces as the walls go westwards. It is not by very much but enough to show where an error of some 0.09 cubits might occur. This would also depend on where exactly the engineers had taken their measurement. In that event the original floor level was probably $49.5 - 8.25 = 41.25$ cubits above base and the walls were $49.5 - 41.25 = 8.25$ cubits high.

Then again, $8.25 / 3 = 2.75$ cubits, and $2.75 \times 2 = 5.5$ cubits, all pyramid numbers. The distance above the datum level of 44 cubits above base to the tops of the walls was therefore $49.5 - 44 = 5.5$ cubits high, and $5.5 / 4 = 1.375$ cubits, which was the height of

the original stone courses. The vertical distance above the datum in cubits according to the survey adds up to give a total height of 5.67 cubits and 5.5 cubits are being sought. But the total of the courses are around 8.46 cubits where 8.25 cubits are being sought. There are 6 courses over a height of 8.46 cubits to give a height for each course at 1.41 cubits where 1.375 cubits are being sought. There are 4 courses above the datum level and they are all equal at around 0.72 metres, or 1.37 cubits, where 1.375 cubits are being sought. These are all in the same numbers. The geometry has found another secret on the Queen's Chamber walls.

The Miniature Great Pyramid Square



Now the pyramid inside the square can be seen in another way. The pyramid depicted inside the square, and around the Queen's Chamber, can also be portrayed as a full sized pyramid standing the desert and surrounded by another pyramid square in just the same way as the Great Pyramid had done inside its pyramid square.

There had existed another obvious truth because the vertical distance on the square at 44 cubits is 10 times smaller than 440 cubits, which is the length of side of the Great Pyramid

Square and also the length of base of the Great Pyramid. The square around the Queen's Chamber was intended to act as a miniature version of the Great Pyramid Square but 10 times smaller. In that event, the levels coming off the bottom of the square are all 10 times smaller than they would be if they were seen at the built pyramid. When these values are transposed into how they would appear at the Great Pyramid they tell an interesting story.

The level of 55 cubits above base at the Great Pyramid is 5.5 cubits above the level of 49.5 cubits on the tops of the chamber walls, and 49.5 cubits is another 5.5 cubits above the datum level of 44 cubits above base.

When seen on the scale of the enclosing square, the level of 55 cubits above base becomes a level of 22 cubits inside the square, and that is 5.5 cubits above the level of 16.5 cubits on the tops of the walls.

On the actual Great Pyramid scale that becomes 165 cubits, the level of the Optimum Pyramid Square for a pyramid 264 cubits high, which of course relates with the Queen's Chamber.

The level of 49.5 cubits on the tops of the walls is also 8.25 cubits above the probable level of the original floor at 41.25 cubits above base, which is another 8.25 cubits above the level of the base of the enclosing square.

The two vertical distances are the same and that leads to the view that the original floor level was indeed at 41.25 cubits above base.

The datum level of 44 cubits above base is the same as 11 cubits above the enclosing square and it is also $11 \times 10 = 110$ cubits above base at the Great Pyramid proper.

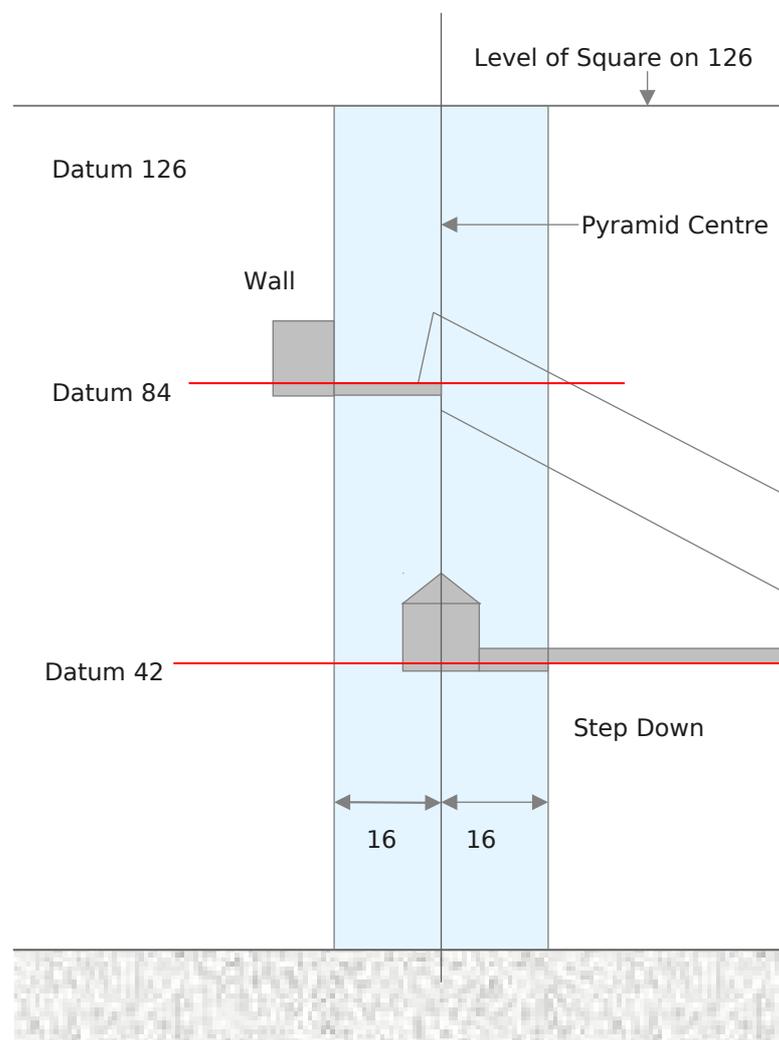
A distance of 110 cubits halved is 55 cubits, halved is 27.5 cubits, halved is 13.75 cubits, and 13.75 cubits is 10 times greater than 1.375 cubits, the height intended on the courses on the walls as already on the east wall around the recess.

The reason for the Corridor Step

The distance between the face of the peculiar step and the north wall of the Queen's Chamber had been found by survey to be just short of 11 cubits exactly, and if that had been the design intention then the distance from the step-down to the centre of the chamber would have been $5 + 11 = 16$ cubits. If the step-down had created a height of 2.75 cubits inside the corridor at that point then the area of the section to the chamber centre would then be $16 \times 2.75 = 44$ square cubits, the level of the datum of 44 cubits

above base in linear cubits that makes the topside. The distance of 11 cubits between the north wall of the chamber and the face of the mysterious step down in the corridor must then have been intended. There are 16 cubits from chamber centre to the step in the corridor, and that must mean that the purpose of the step was for it to act a geometrical marker seen on section through the Great Pyramid. Then the north wall of the King's Chamber above follows that with another 16 cubits from its north wall and again to pyramid centre. There was a reason for that.

The Corridor Levels on 42 cubits



There were 16 cubits at the summit of the Great Pyramid, broken into 5 cubits and 11 cubits when seen vertically. The same condition occurs at the Queen's Chamber where there are 5 cubits and 11 cubits seen horizontally. The step on the corridor floor was

intended to mark a horizontal distance about centre at $16 + 16 = 32$ cubits on the pyramid base. What then had been the vertical height of the entrance corridor before it had reached the step?

There are levels already available on the second pyramid squares of the two upper shafts at 126 cubits and 123.75 cubits above base. The levels are also heights and in the case of the first pyramid square at 126 cubits above base, it will divide by 3 to give 42 cubit divisions and the first of these will fall on the entrance corridor floor to the Queen's Chamber.

The second level will fall on the datum of 84 cubits above base at the King's Chamber. That says that the first pyramid square is confirming the entrance corridor floor at 42 cubits above base when it is already known that the ceiling is 44 cubits above base, and the survey data says that it is exactly 2 cubits wide. The entrance corridor would then be 2 cubits high and wide and it was originally square on section before it was attacked.

The level at 42 cubits can be verified for the survey says that it is 21.71 metres, or $(21.71 \times 1.0936 \times 3) / 1.7181 = 41.45$ cubits above base, but that was on the hacked-up floor. If the finished floor had been 42 cubits above base that would allow $42 - 41.45 = 0.55$ cubits for the thickness of the missing stone. Such a thickness would be about right for the limited corridor area. The two levels must then have been correct.

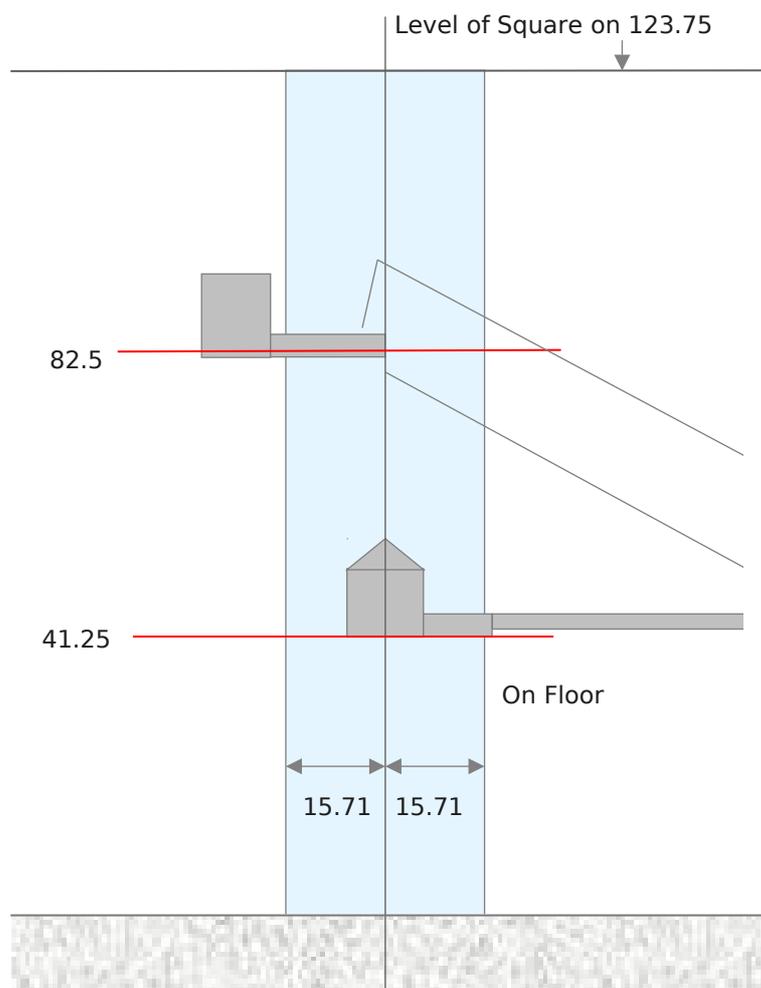
The ratios of the heights to widths are also revealing. On the first pyramid square 126 cubits high, the ratio of 126 to 32 = 3.9375 cubits to 1, but if that is applied to the second pyramid square 123.75 cubits high, then the width would become $123.75 / 3.9375 = 31.428571$ cubits to 1. That number has been seen before because it was the pyramid base 440 cubits divided by 14 and the value of pyramid π times 10. Here it is again. The first pyramid square must then have been dedicated to Osiris along with the levels 42 cubits, and 84 cubits above pyramid base.

The drawings say that the existing level of the unfinished floor of the Queen's Chamber is 21.19 metres above base. That is also $(21.19 \times 1.0963 \times 3) / 1.7181 = 40.46$ cubits above base. If the original level of the floor had been 41.25 cubits above base then that would give a difference of $41.25 - 40.46 = 0.79$ cubits, or some 16 inches for a thickness of any missing stone that had once made up the floor. That thickness would have been perfectly reasonable for the chamber floor area and the existing level confirms this. It is very unlikely that a level of 41.25 cubits above base so happened to suit the existing levels on

the rectangle by some very strange coincidence, and so it was almost certainly the correct original level, but the level was correct for another reason.

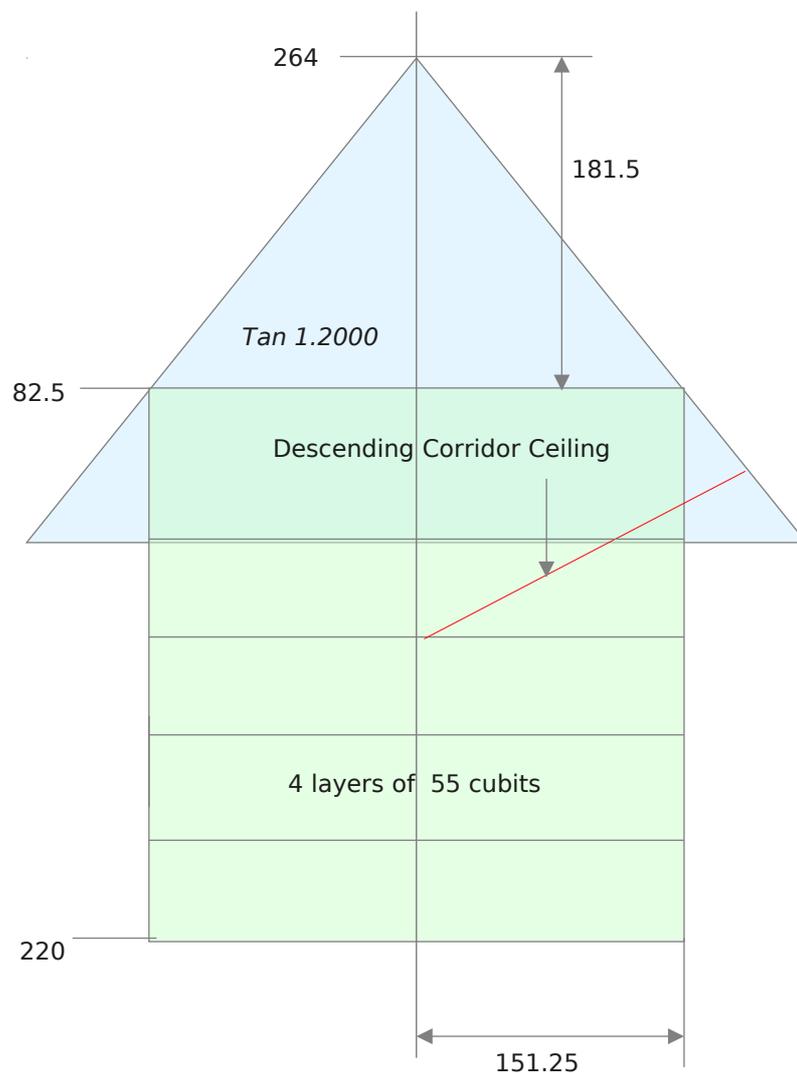
A level of 41.25 cubits is 2.75 cubits below the level of the ceiling of the entrance corridor at 44 cubits above base, and 2.75 cubits was in harmony with the horizontal courses of stones on the east wall of the Queen's Chamber. The second ratio on the height to base of the vertical rectangle 123.75 cubits high is 31.428571 to 1 and the difference between the value of 31.428571 cubits and 32 cubits is 0.571429 cubits, where $32 / 0.571429 = 56$. There are 56 layers of 5 cubits on the Great Pyramid height at 280 cubits and the number 280 therefore belongs to Osiris, as does the built pyramid. Then there are 14 divisions of 31.428571 cubits on the base of 440 cubits, and the number 14 is once more the Osiris number.

The Chamber Levels on 41.25 cubits



Then the next level up from 41.25 cubits is 82.5 cubits above base at the King's Chamber and that is 10 times greater than 8.25 cubits, the height of the Queen's Chamber walls. This was also the level found on the miniature pyramid 27.5 cubits high, inside the square of sides 44 cubits, and that shows that 8.25 cubits and 82.5 cubits exist over the King's Chamber floor.

The Datum over the King's Chamber Floor



The level of 82.5 cubits relates with Isis and with the South Shaft of the Queen's Chamber for a pyramid 264 cubits high. In that event, a pyramid above that level will be $264 - 82.5 = 181.5$ cubits high, and because the pyramid base angles were $\text{Tan } 1.2000$, the half-base was $181.5 / \text{Tan } 1.2000 = 151.25$ cubits! That is a wholly unexpected and incredible result

for that is the level of the exit point of the North Shaft of the Kings Chamber and now it is the half-base distance for a pyramid coming off a level of 82.5 cubits at the King's Chamber but on a slope of Isis at the Queen's Chamber. The two chambers are integrated! A square exists of sides $151.25 \times 2 = 302.5$ cubits at the level of 82.5 cubits, and it will extend below the base of the Great Pyramid by an amazing $302.5 - 82.5 = 220$ cubits, the pyramid half-base! Because the square extends below base by 220 cubits it divides into 4 layers of 55 cubits. But the ceiling level of the horizontal part of the Descending Corridor is already 55 cubits below the base of the Great Pyramid as found by survey. The level on the corridor ceiling had therefore been determined by the square that came from the King's Chamber at a level of 82.5 cubits above base, which in turn had derived from 151.25 cubits above base for the level of the first pyramid square and 41.25 cubits above base, which was the original level on the Queen's Chamber floor.

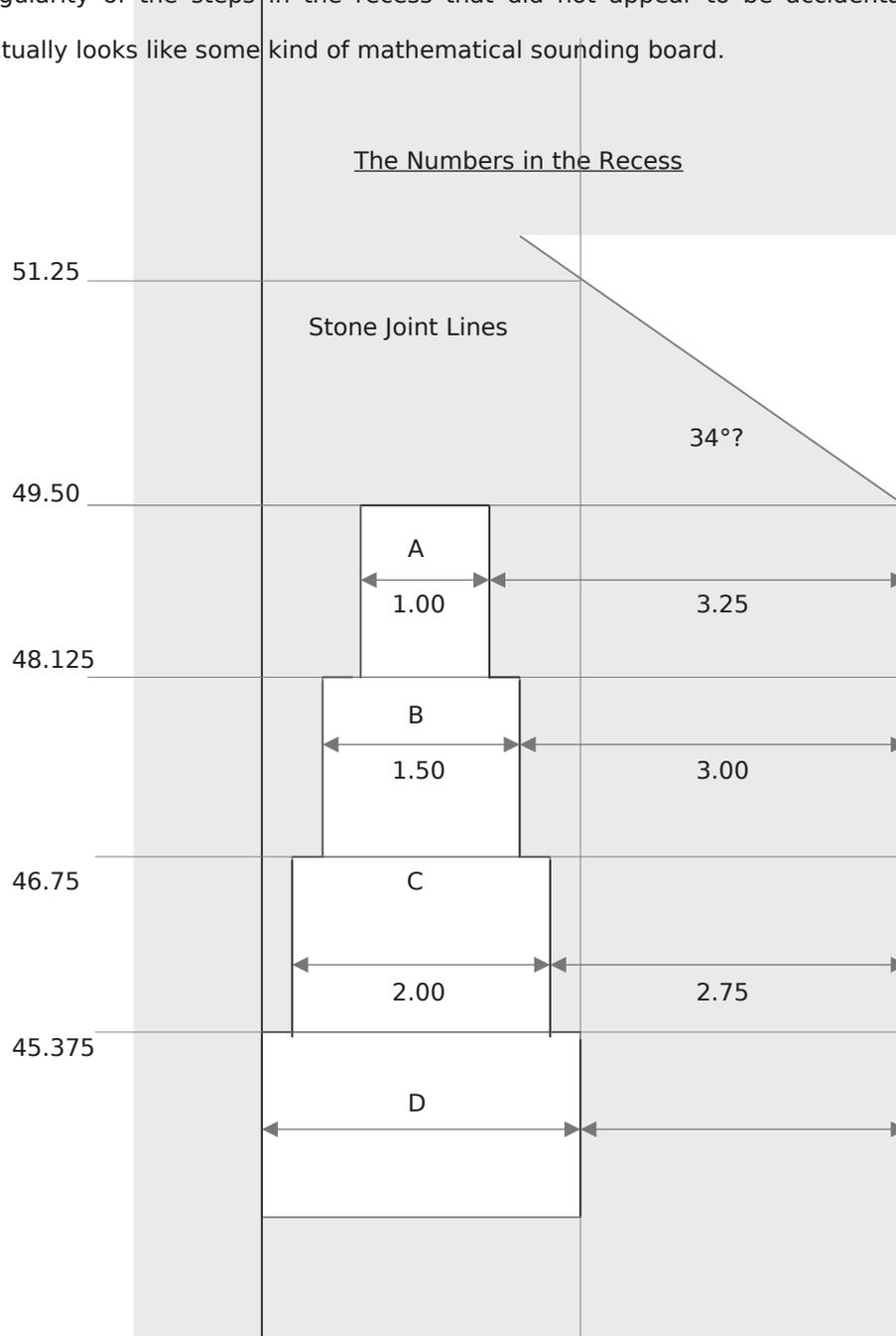
From what has now known, the Queen's Chamber could never have been a mistake or even the subject of a change of mind and nor was it ever intended as a tomb for a pharaoh. It was a geometrical profile seen on section looking east to west and there might be more to follow when the chamber is seen again on plan because it is 10 cubits wide and 11 cubits long.

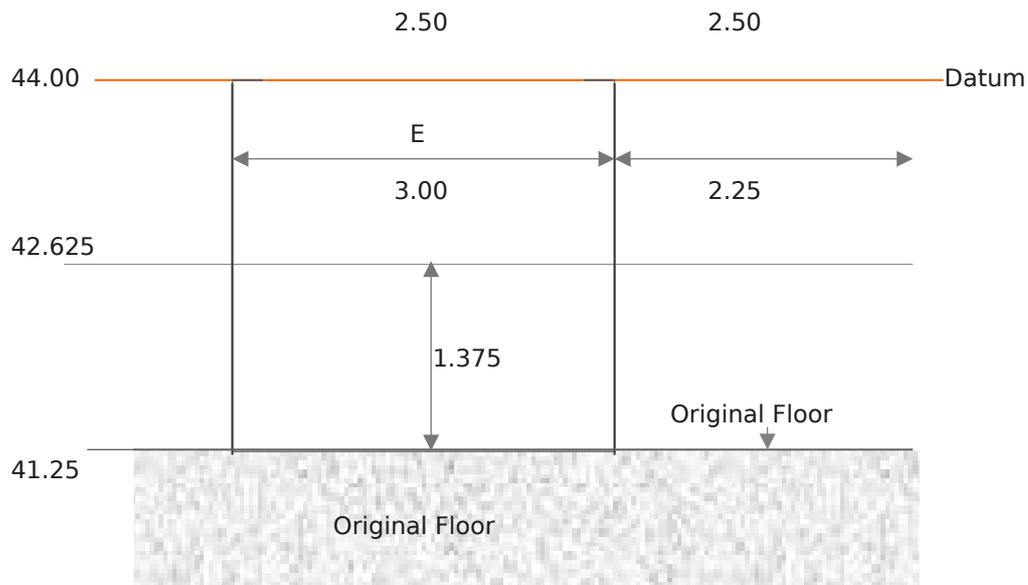
The Recess in the East Wall

Of all the mysteries of the Great Pyramid, this one is probably the most enigmatic and the most difficult to solve, if indeed it is possible to solve it at all. The most obvious interpretation put on it was that it was built to house a statue of some kind. One recently published book had seriously asserted that it was a statue of Osiris although why Osiris was chosen was not explained. This is the Queen's Chamber and so the statue would more logically have been for the Queen. Why then would the builders wish to proclaim a statue when it was not going to be seen by anyone and would remain in perpetual darkness for all time. It does not make any rational sense to say that a statue was here but not content with asserting one to Osiris, the author had added that the heart of Osiris statue was somehow linked to the dimensions of the pyramid as a whole. Another had asserted that it contained the entrails of Osiris in a pot. These were ridiculous ideas and so what was the reason for the recess?

The shape and the disposition of the recess around the chamber centreline, which is also the pyramid centreline, leads to the view that it was connected in some way with

centrelines. But it was also offset on this centreline to the south, and also at points where the changes in the widths occurred. That would mean that it was also marking levels in much the same way as other elements of the pyramid interior were marking levels. That would have an effect on the recess at base now that the original floor level is known and since the level on the tops of the east wall is also known, then the height is known. The dimensions involved were 49.5 cubits above base on the tops of the walls, and 41.25 cubits above base on the floor, to give a height overall of 8.25 cubits. These dimension are in the same family as 2.75 cubits because $2.75 \times 3 = 8.25$ cubits and that implies a pyramid 275 cubits high. The dimensions were again conformed with the coursings on the walls of the chamber at $2.75 / 2 = 1.375$ cubits, where 137.5 cubits was the level of the second pyramid square coming off the exit point of the North Shaft of the King's Chamber but 100 times smaller. A connection seemed to exist between the height of 8.25 cubits and the regularity of the steps in the recess that did not appear to be accidental. The recess actually looks like some kind of mathematical sounding board.





The Recess Widths by Survey and Interpretation

- A 0.51 metres = 0.97 cubits for 1.0 cubits
- B 0.77 metres = 1.47 cubits for 1.5 cubits
- C 1.06 metres = 2.02 cubits for 2.0 cubits
- D 1.34 metres = 2.55 cubits for 2.5 cubits
- E 1.57 metres = 2.99 cubits for 3.0 cubits

The trend is un-mistakable. The widths are increasing in stages of 0.5 cubits as the levels go downwards to make the steps at each side of the recess 0.25 cubits long. This is taken from an interpretation of the survey when seen in cubits, starting with 1 cubit and ending with 3 cubits. From the survey drawings, the recess depth appears to be 2 cubits, and when seen on plan that can be compared with the entrance width adjacent at another 2 cubits. The heights of each step are seen to follow the existing stone courses, and they are nominally 1.375 cubits high except for the lowermost recess at 2.75 cubits high when the original floor was in place and that would make up 2 further courses of 1.375 cubits.

The volumes of each space level on the steps

- A. $1.0 \times 1.375 \times 2 = \mathbf{2.750}$ cubic cubits
- B. $1.5 \times 1.375 \times 2 = 4.125$ cubic cubits
- C. $2.0 \times 1.375 \times 2 = \mathbf{5.500}$ cubic cubits

$$\begin{aligned}
 \text{D. } 2.5 \times 1.375 \times 2 &= 6.875 \text{ cubic cubits} \\
 \text{E. } 3.0 \times 2.750 \times 2 &= \underline{\mathbf{16.500}} \text{ cubic cubits} \\
 \text{Total.} &= 35.75 \text{ cubic cubits}
 \end{aligned}$$

The numbers 2.75, 4.125, 5.5, 6.875, and 16.5, are all familiar pyramid numbers where the first reflects a pyramid 275 cubits high, the second reflects the chamber floor level, the third reflects the grid at 55 cubits, the fourth reflects half of 13.75, and the fifth reflects the optimum square 165 cubits high. That must be saying that the recess is part of the pyramid geometry and was never just a place to hold a statue as many Egyptologists believe.

If spaces B, C, and D, are added together they give another 16.5 cubic cubits and once more the optimum square for a pyramid 264 cubits high is being revealed. The recess marks that particular pyramid height, and at the Queen's Chamber, where it has already been found that the South Shaft exit point at this chamber leads to a pyramid 264 cubits high.

The total volume of spaces A, B, and C, is 12.375 cubic cubits, and that is 10 times smaller than 123.75 cubits above base, the level of the second pyramid square coming off the North Shaft of the King's Chamber for a pyramid 275 cubits high. The total volumes of spaces C and D are another 12.375 cubic cubits and with the same result.

Then space A, at 2.75 cubic cubits, implies a pyramid 275 cubits high, and space B at 4.125 cubic cubits confirms the level of the chamber floor at 41.25 linear cubits above base but 10 times smaller. So much for the recess! What then of the walls adjacent to the recess?

The areas of the wall south of the recess

$$\begin{aligned}
 \text{A. } 3.25 \times 1.375 &= 4.46875 \text{ square cubits} \\
 \text{B. } 3.00 \times 1.375 &= 4.125 \text{ square cubits} \\
 \text{C. } 2.75 \times 1.375 &= 3.78125 \text{ square cubits} \\
 \text{D. } 2.5 \times 1.375 &= 3.4375 \text{ square cubits}
 \end{aligned}$$

$$E. 2.25 \times 2.75 = \underline{6.1875 \text{ square cubits}}$$

$$\text{Total.} = 22 \text{ square cubits}$$

That is an amazing result. It is in whole number cubits. The total area of the wall south of the recess is 22 square cubits and 10 times less than 220 linear cubits, the half base distance for the Great Pyramid, and another pyramid number. Wall area B is 4.125 square cubits and recess B is 4.125 cubic cubits where 41.25 cubits above base was the level on the floor. Why then would an area exist next to an identical volume unless that height was implying another volume not yet found for the Queen's Chamber?

$$\text{Area of chamber floor} = 10 \times 11 = 110 \text{ square cubits}$$

$$\text{Volume of chamber} = 110 \times 8.25 = 907.5 \text{ cubic cubits}$$

$$907.5 / 22 = \mathbf{41.25} \text{ cubic cubits}$$

$$\text{Level of the floor} = \mathbf{41.25} \text{ cubits above base}$$

That is even more extraordinary! The volume of the chamber divided by the area of the wall have produced the number 41.25 cubits, which is the level above base of the original Queen's Chamber floor before the conspirators had been at it with hammers and chisels. What then of the wall area between the chamber centreline and the recess?

$$A. 0.75 \times 1.375 = 1.03125 \text{ square cubits}$$

$$B. 0.50 \times 1.375 = 0.68750 \text{ square cubits}$$

$$C. 0.25 \times 1.375 = \underline{0.34375 \text{ square cubits}}$$

$$2.06250 \text{ square cubits}$$

$$- E. 0.25 \times 2.75 = \underline{0.68750 \text{ square cubits}}$$

$$= \mathbf{1.375} \text{ square cubits}$$

Another amazing result! The area of 1.375 square cubits is 100 times smaller than 137.5 in linear cubits and that is half of 275 linear cubits, the height of the first invisible pyramid at the Great Pyramid. The reason for the recess is now clear. It was identifying a pyramid

275 cubits high and to a lesser extent it was reacting to a pyramid 264 cubits high, where both were already relevant to the Queen's Chamber and its two shafts. What then of the levels that might have been relevant to the full sized pyramid?

<u>Levels on Steps</u>	<u>Half base distances on Pyramids above Step Levels</u>			
	<u>280</u>	<u>275</u>	<u>264</u>	<u>242</u>
51.250	178.73	<u>179.00</u>	177.29	173.40
<u>49.500</u>	181.11	180.40	178.75	<u>175.00</u>
48.125	182.18	181.50	179.89	176.25
46.750	183.26	182.60	181.04	177.50
45.375	184.34	183.70	182.18	178.75
<u>44.000</u>	185.42	184.80	183.33	<u>180.00</u>
42.625	186.50	185.90	184.47	181.25
<u>41.250</u>	187.58	<u>187.00</u>	185.62	182.50

A number of calculations were made in order to discover if there was any connection between the levels on the steps, and the pyramids inside the pyramid squares as had been adopted in the pyramid geometry. If there were any connection it would probably show up on the half base distances across the pyramid. A pyramid 280 cubits high does not appear to figure at all in the recess dimensions but that is not un-expected because this is the Queen's Chamber and her numbers do not comply with 280. Of all the half base distances on the four pyramid heights, the ones that stand out here are on pyramids 242 cubits and

275 cubits high, and that seems to be saying that pyramids inside pyramid squares were operating here. Strangely enough the most likely pyramid at 264 cubits high does not appear in whole number cubits when seen on the half base distances.

The conclusion must be that the recess was mathematical, something long suspected, but it had not been possible to verify this until Rinaldi and Maragioglio had measured the levels on the steps within the recess, and the recess widths, enough to find the hidden logic of the original number dimensions. Only by this means could the complete picture be revealed. The resulting disposition would not have been found if the measured dimensions had been taken literally any more than 756 feet would have been found if the original corner stones distances of the Great Pyramid had been taken literally. The secret was in being able to envisage the planner's intention, not the weight of stone in one's hand.

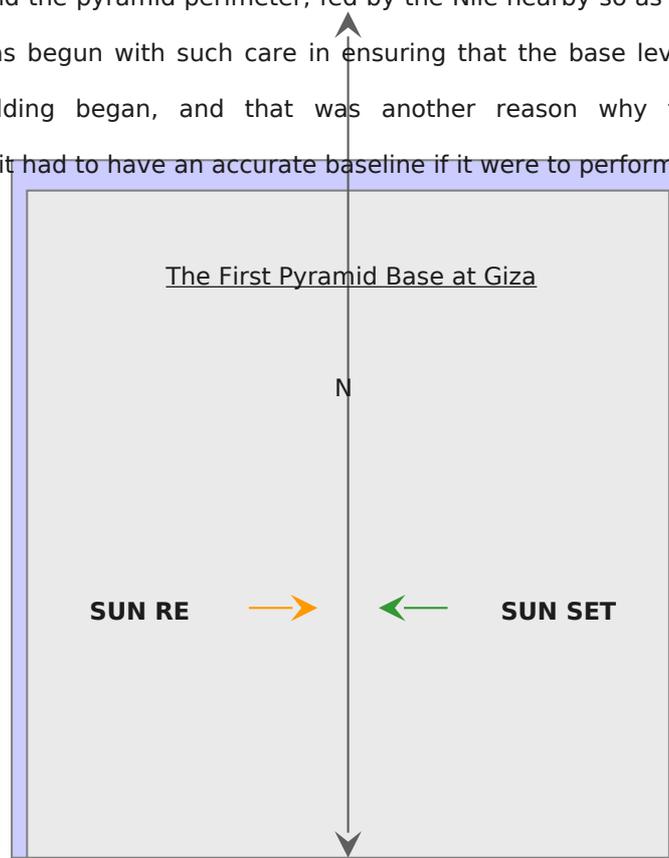
SUNRISE FOR RE, SUNSET FOR SET

It is well known that, but for a few minutes of arc, the Great Pyramid was once orientated so that its north face was aligned east to west and on due north. That says that the ancients planners were perfectly aware of the invisible terrestrial lines of latitude and longitude of earth, but the reason why they had orientated the pyramid in this way has never yet been fully understood. There was of course a reason. The Great Pyramid might once have marked the prime meridian of earth and if it had then this would have accounted for the orientation of all pyramids on the Giza Plateau, all on due north with the meridian passing through the Great Pyramid on its centre as the Transit of Venus Party would show.

Because of Napoleon's campaign in Egypt and the enormous amount of information that he brought back to Paris, France has always been aware of things connected with Egypt and the Great Pyramid. In fact, France had suggested that the prime meridian should pass through the Great Pyramid at the time when the matter of world meridians was being discussed at the 1884 International Meridian Conference held in Washington. France had made this proposal only when it knew that its own Paris Meridian would fail in the face of

its rival, the British Meridian at Greenwich. Another suggestion that France made at that time was that they would accept defeat and the Greenwich Meridian, if England would accept the French metre. England had declined the offer, certain in the knowledge that the World Prime Meridian would in anycase be the line running through the observatory at Greenwich.

The French suggestion that the prime meridian should pass through the Great Pyramid came at a time before the pyramid corner stones were discovered in 1925 showing how accurately the pyramid had been in fact been aligned on due north. The accuracy might have been even more dramatic in times passed before earth precession had changed the direction. It can be reasonably assumed therefore that there was an imaginary geographical line of longitude that had passed through the north and south poles of earth, and onto the Giza Plateau in Egypt. The area was very probably used a platform for making astronomical observations. Here, the ancient astronomers would have studied the rising and setting sun, and the polar star, the one that they could see from the northern hemisphere. This was the star that never changed its position during the night or during the year, as all the other stars passed across the horizon from east to west. That was because it was perfectly aligned on the north-south earth axis. This was the anchor star upon which the north-south alignment was laid down on the Giza Plateau. The footings to the Great Pyramid must then have been set out on the plateau and aligned with its north slope facing due north, and its east slope facing due east towards the rising sun. The square would have to be completely level, and it is believed that a water channel had been constructed around the pyramid perimeter, fed by the Nile nearby so as to ensure this. No other pyramid was begun with such care in ensuring that the base levels were true and level before building began, and that was another reason why the pyramid was mathematical for it had to have an accurate baseline if it were to perform such a role.



The probable answer lies in the slope angles, because with pyramids laid flat on the ground the slope angles would be two-directional and able to give any coordinates needed over the square. The positions might have determined the size and orientation of the King's Chamber already offset south of the east-west centreline. If pyramids had determined this then which ones were they?

A check with the known pyramids show that pyramids higher than the Pyramid for Set would carry slope angles that missed the chamber altogether. But the slope angles for the Pyramid of Set at Tan 1.1000 would pass through the chamber along with any other pyramid with similar base angles like Tan 1.0900 or even Tan 1.1111. If that were the case then the Pyramid of Set would have been on the eastern side of the square with the tip facing towards the setting sun. Had the term 'sunset' actually come about because of this? It was referring to the sunset whose sun was setting.

The corollary is the opposite of the rising sun and how could that be but the Egyptian sun god Re? It must then be his pyramid that was on the western side of the square with its tip facing towards the rising sun for the sun-re. What could be more logical? If that were so, then the base of the Pyramid of Re would have occurred on the western side of the square foundation and the tip would have extended into the square. What then was the correct slope angle of the Pyramid of Re when seen in tangent? It would be hidden away somewhere.

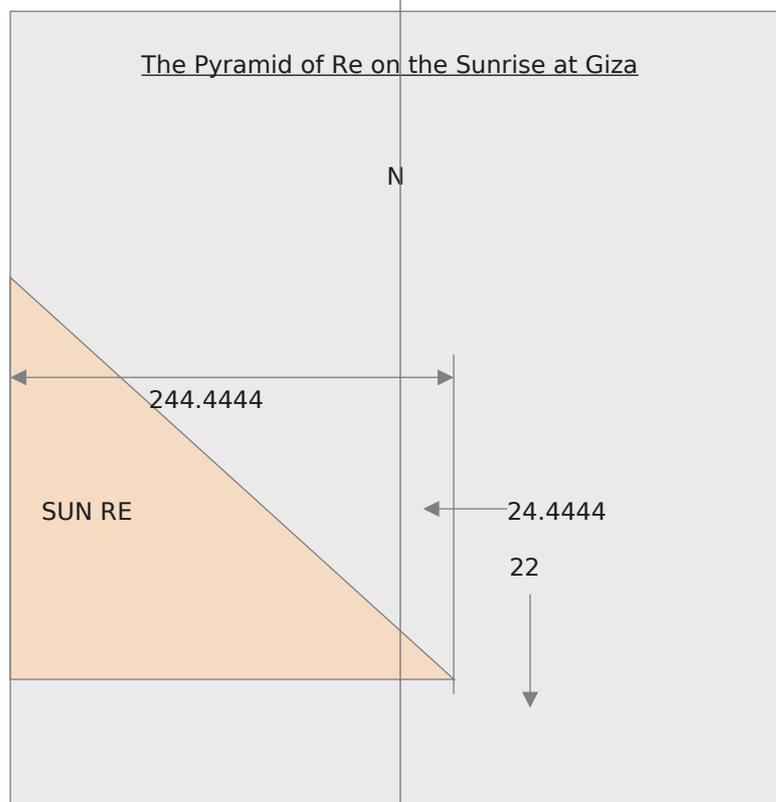
The existence of magical squares has been known since the dawn of antiquity. They appear to have come to the attention of Pliny the Elder who mentioned them in his *Natural History* of circa AD 79. They may well have reached the western world through the writings of the Arab scribe Thabit ben Kurra in the 9th century. The magic squares appeared again in 1533 with *Occulta Philosophia* written by Cornelius Agrippa who listed the Seven Wonders of the World along with their solar and planetary references.

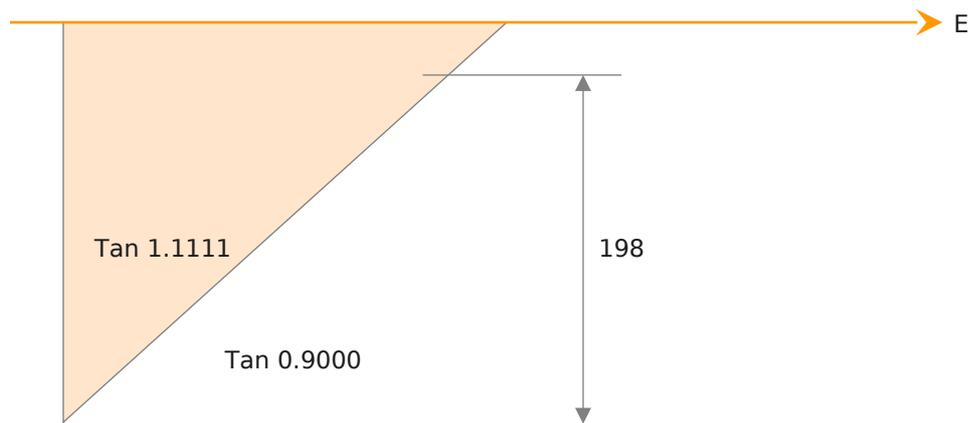
The Sun = 6 rows of 6 each 111	The Colossus of Rhodes
The Moon = 9 rows of 9 each 369	The Temple of Diana
Mercury = 8 rows of 8 each 260	The Pyramids of Egypt
Venus = 7 rows of 7 each 176	The Tomb of Mausoleus
Mars = 5 rows of 5 each 65	The Hanging Gardens of Babylon
Saturn = 3 rows of 3 each 15	The Temple of Solomon
Jupiter = 4 rows of 4 each 34	The Statue at Mount Olympus

The Square on the Sun

6	32	3	34	35	1
7	11	27	28	8	30
19	14	16	15	23	24
18	20	22	21	17	13
25	29	10	9	26	12
36	5	33	4	2	31

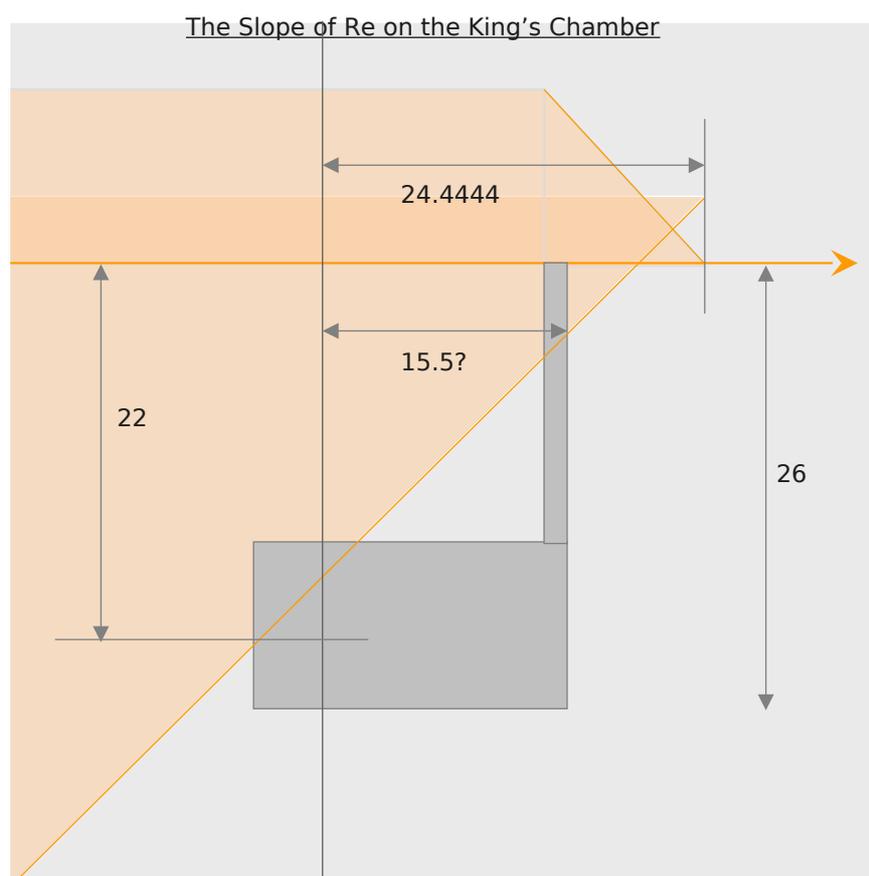
Each row of numbers add up to 111, all rows add up to 666, each column of the 6 numbers add up to 111, each of the two diagonals of 6 numbers add up to 111, there are $6 \times 6 = 36$ squares and the number for Re was 6, and it had been created by 1 recurring to three places. The slope angle for a Pyramid of Re was $\tan 1.1111$ the clue taken from the magic square to compare with $\tan 1.1000$ for the Pyramid of Set. If the Pyramid of Re was then laid flat on a square of sides 440 cubits it should pass on the chamber. Indeed it does!





It is immediately clear that the Pyramid of Re, with a base of 440 cubits, and shown flat on the ground is making sense. A pyramid with a half-base of 220 cubits rising at a slope angle of $\text{Tan } 1.1111$ will be $220 \times \text{Tan } 1.1111 = 244.4444$ cubits high. But the tip of this pyramid will be $244.4444 - 220 = 24.4444$ cubits east of the north-south centreline of the square and because it is sloping at $\text{Tan } 1.1111$, its half-base is $24.4444 / \text{Tan } 1.1111 = 22$ cubits exactly.

That is a certain indication the Re is here because the result speaks for itself!



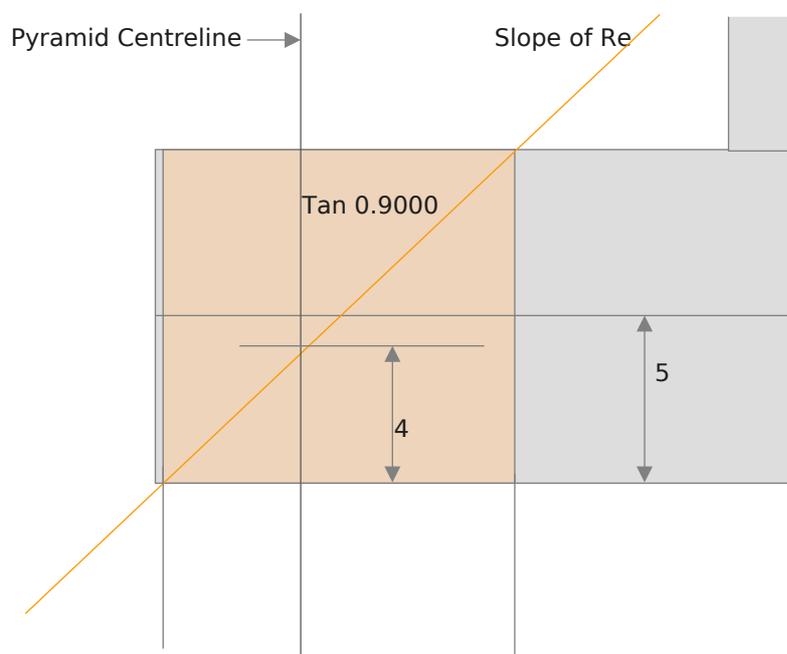
← North South Centreline

Tan 0.9000

There is not the remotest chance of that occurring if the pyramid was spurious and so this must be saying that the line of the slope on the Pyramid of Re is passing through the King's Chamber and for a reason. It is already known that the south wall of the King's Chamber is 26 cubits south of the east-west pyramid centerline because the rising face of the Great Step had fixed that position. That places the chamber, relative to the pyramid centre east to west but that leaves north to south. The north to south pyramid centreline is unknown for there is nothing inside the pyramid with which to relate it. But there might well be some other thing that can relate the position of the centerline inside the pyramid.

The square says that it is 24.4444 cubits west of the tip of the Pyramid of Re. It might also be some 15.5 cubits west of the east wall. There is meaning about the east wall of the chamber for it extends on into the adjacent corridor and then on downwards to the corridors below until it reaches the Queen's Chamber below where once more it is a continuation of the east wall. The east walls everywhere seem to mean something.

The Slope of Re on the King's Chamber Floor

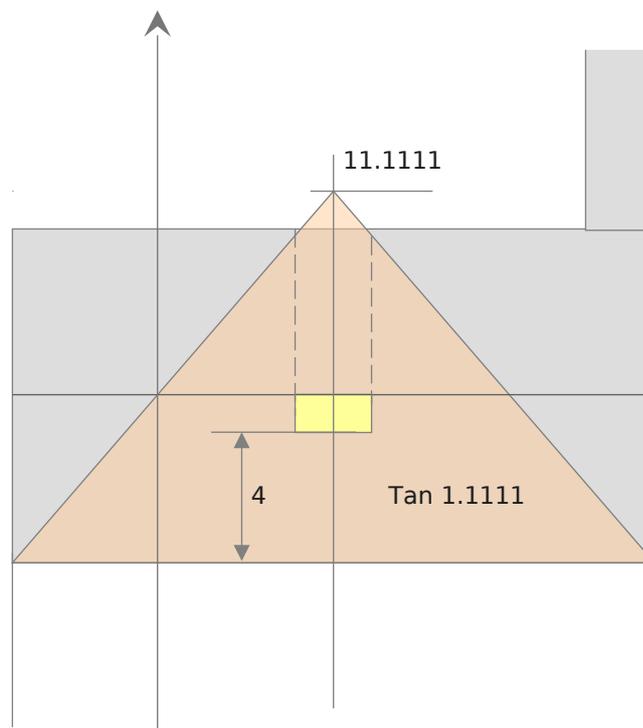




The chamber can now be shown on plan with the entrance on due north and the slope of the Pyramid of Re as it passes through on the Great Pyramid centreline at $26 - 22 = 4$ cubits north of the south chamber wall, and $4 / \tan 0.9000 = 4.4444$ cubits east of the west wall. Since it will pass through the chamber at $10 - 4 = 6$ cubits south of the north wall it will also pass out of the north chamber wall at $6 / \tan 0.9000 = 6.6666$ cubits east of the north-south centreline.

In other words the slope of the Sun God Re crosses over the King's Chamber floor and covers a distance of $4.4444 + 6.6666 = 11.1111$ cubits where the slope angle in tangent was $\tan 1.1111$ for the Pyramid of Re. That demonstrates that the concept of pyramids laid flat on the ground at Giza might well have had some truth behind it. There was a Pyramid of Re and it had base angles of **Tan 1.1111** recurring.

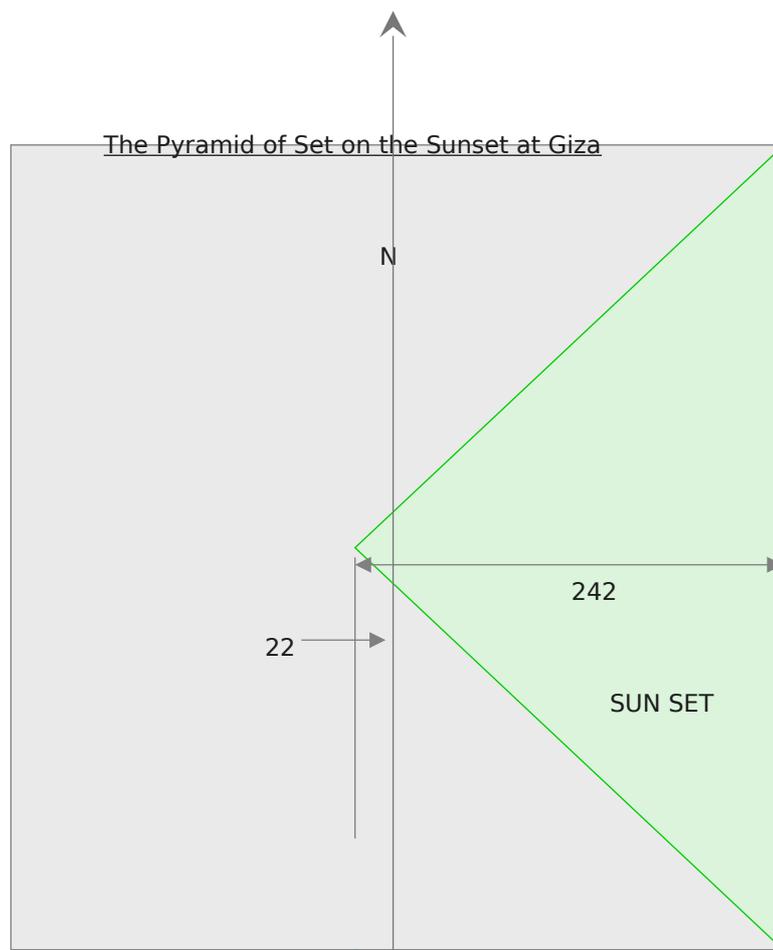
The Pyramid of Re on the Chamber Floor

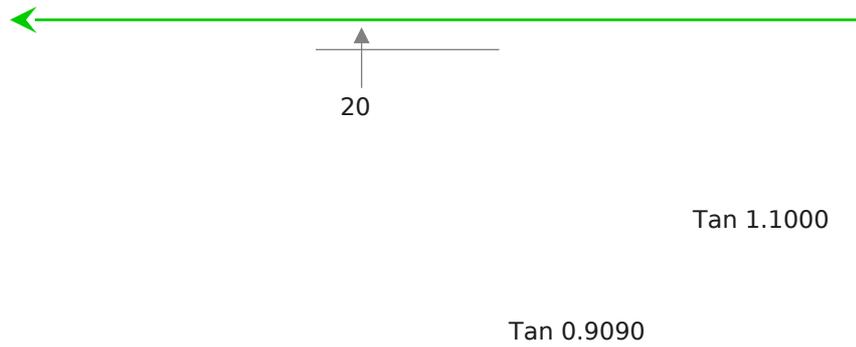




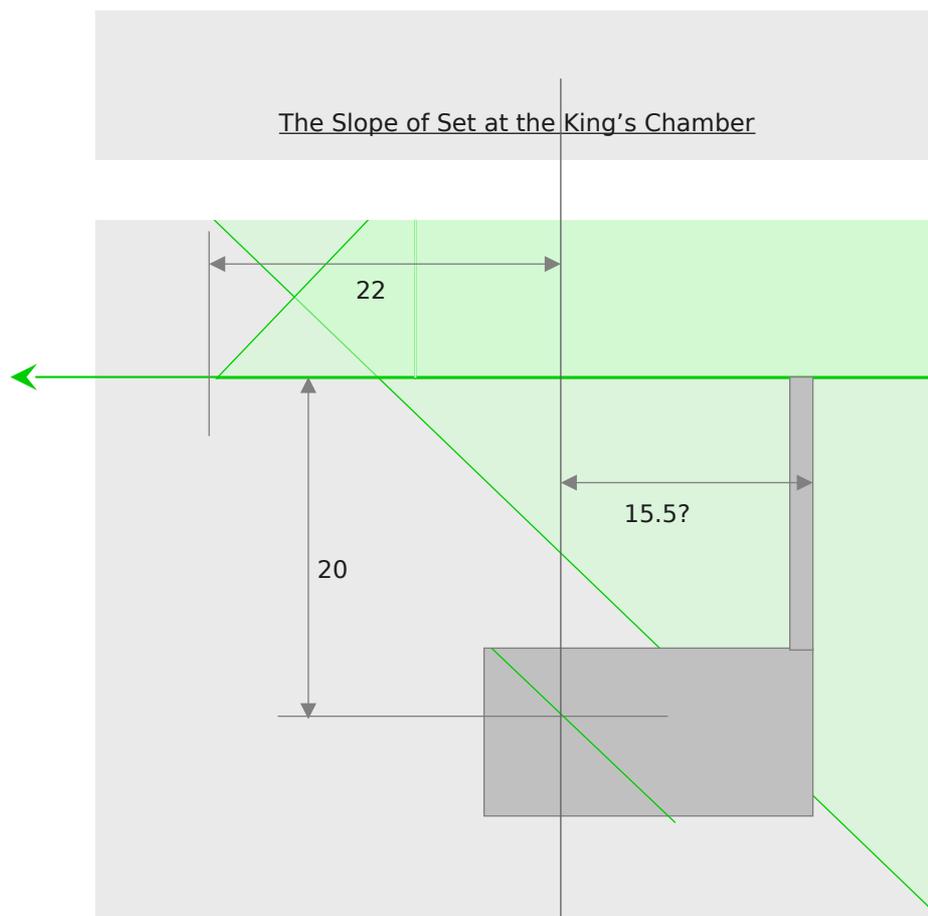
A Pyramid of Re with base angles $\tan 1.1111$ can now be constructed on the chamber floor on one of the long walls and in this case it will be the south wall. Because the chamber is 20 cubits long it is 10 cubits on its half-base as well as 10 cubits wide. The pyramid laid flat will be $10 \times \tan 1.1111 = 11.1111$ cubits high, and the tip will extend beyond the opposite wall by $11.1111 - 10 = 1.1111$ cubits. That forms a mini-pyramid 1.1111 cubits high with a half-base distance of $1.1111 / \tan 1.1111 = \mathbf{1 \text{ cubit}}$. That is an amazing result to give a full base of 2 cubits exactly. A double square exists of sides 1×2 cubits on the chamber centreline created by Re and in the middle of the floor. That must be why the walls were designed to be 10 cubits wide and 20 cubits long, and were finished in hard granite!

The west slope of the Pyramid of Re with base angles $\tan 1.1111$ will cross the east to west chamber centreline at a distance of $4 \times \tan 1.1111 = 4.5$ cubits east of the west wall and 5.5 cubits west of the vertical chamber centreline. The distance of 4.5 cubits is sending a clear message about the long missing north south pyramid centreline. What then of the Pyramid of Set in this incredible configuration? Will he be playing a role as well?





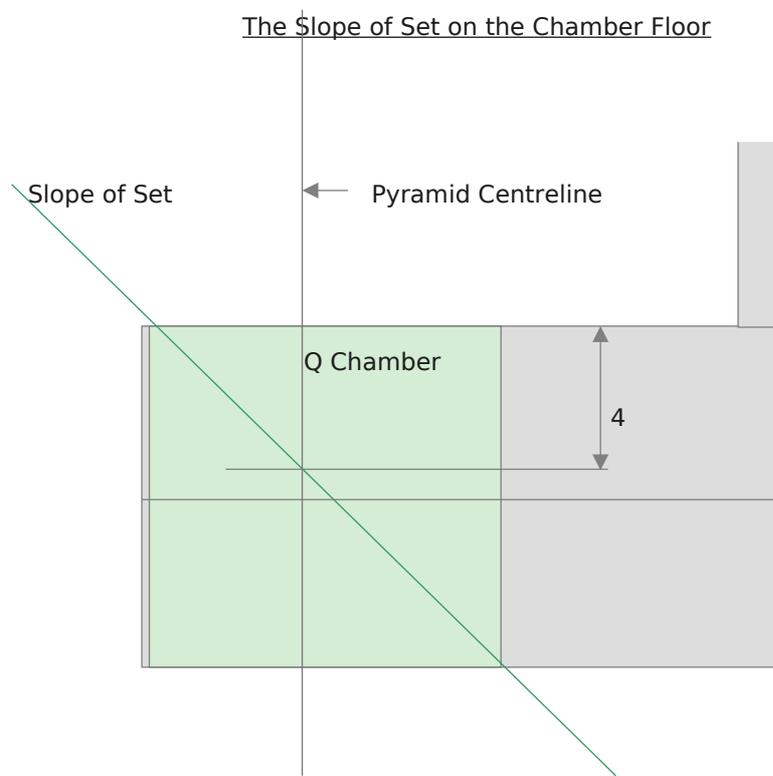
The Pyramid of Set, like the Pyramid of Re, makes perfect sense. It would have been laid out on the east side of the square base and its tip would have been pointing towards the Setting Sun in opposition to the Rising Sun of the Pyramid of Re. It would be sloping at Tan 1.1000 and would therefore be $220 \times \text{Tan } 1.1000 = 242$ cubits high as already found for the pyramid coming off the North Shaft exit point of the Queen's Chamber. The tip of the pyramid would therefore extend west beyond the north south pyramid centreline by $242 - 220 = 22$ cubits creating another mini-pyramid 22 cubits high. The half-base on that pyramid would be $22 / \text{Tan } 1.1000 = 20$ whole number cubits exactly. The crossing point creates another rectangle in the middle of the King's Chamber floor!

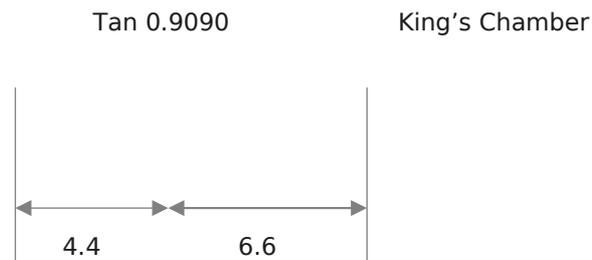


Pyramid Centre →

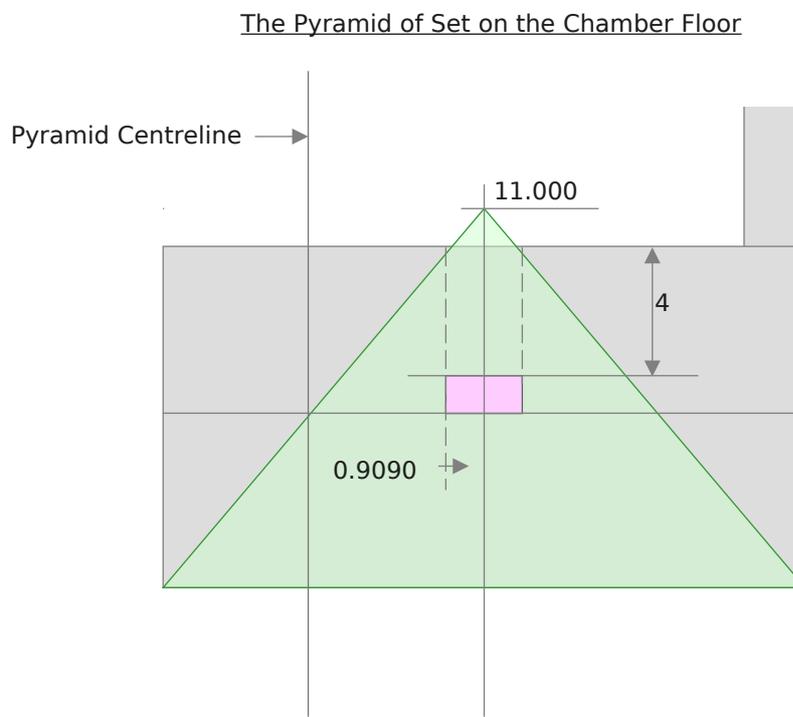
Tan 0.9090

The Slope of Set would pass through the King's Chamber at 4.5 cubits east of the west wall and $26 - 20 = 6$ cubits north of the south wall, instead of 4 cubits for the Slope of Re. This means that it is 1 cubit north of the east west centreline where previously it had been 1 cubit south of chamber centre, and a square can now appear on the floor. There is not a slightest chance that these distances could be achieved if the two pyramid heights had possessed no basis, but they did have basis and the result is extraordinary. It had been planned.

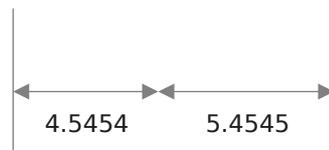




The slope of the Pyramid of Set will now pass through the chamber at an alternative angle of $220 / 242 = \text{Tan } 0.9090$ when seen from the south and as it crosses the floor. It crosses the north to south centreline at 20 cubits south of the east west centreline and $26 - 20 = 6$ cubits north of the south wall of the chamber. Because of that, it crosses the north south centreline 4 cubits south of the north wall at a distance of $4 / \text{Tan } 0.9090 = 4.4$ cubits west of the north south centreline. Then it passes out of the south wall at $6 / \text{Tan } 0.9090 = 6.6$ cubits east of the north south centreline. The chamber is 10 cubits wide. What now appears is the Queen's Chamber floor seen transposed over the King's Chamber floor because $4.4 + 6.6 = 11$ cubits and the Queen's Chamber is 11 cubits long and aligned in the same direction.

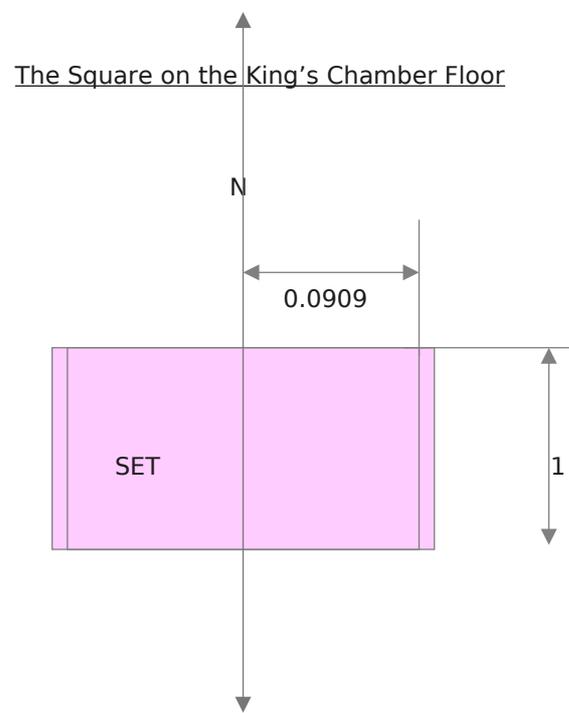


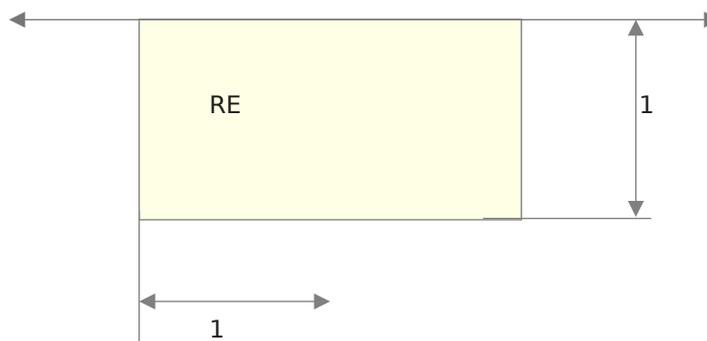
Tan 1.1000



The Slope of Set passes through the chamber on the north south centreline at 6 cubits north of the south wall. In doing so it complements the result found for the Slope of Re that marked 4 cubits north of the south wall on the centreline. The Slope of Re and the Slope of Set are now together able to form a square of sides 2 cubits on the centre of the floor through their respective pyramids on the base foundations.

The Slope of Set marks a point 1 cubit above the east west chamber centreline and the Slope of Re marks 1 cubit below the same centreline. The Pyramid of Set is $10 \times \text{Tan } 1.1000 = 11$ cubits high and it extends beyond the north chamber wall by 1 cubit. The half base distance will then be $1 / \text{Tan } 1.1000 = 0.9090$ cubits each side of chamber centre. A rectangle that is not quite a double square of sides $(0.9090 \times 2) \times 1$ cubits, or 1.8181×1 cubits, now emerges directly above a double square of sides 2×1 cubits for the Slope of Re. That creates a square and a double square and a rectangle and two more rectangles, and looks as this figure could be the basis for a large number of combinations and permutations, but I leave that to anyone else who might one day read this, barring a number of observations of my own.





It is beyond comprehension that any geometrical figure could have appeared on the exact centre of the King's Chamber floor if it had come about by accident. There is a square of sides 2 cubits along with a double square of sides 2 x 1 cubits and then a rectangle with sides of 1.8181 x 1 cubits. Once again this is reminiscent of the goddess Isis whose number was 8 and whose identity was 18. That rectangle belongs to the queen.

The figures had been created because a dimension of 15.5 cubits had been adopted as the distance between an unknown (by means of survey) north to south centreline on the Great Pyramid that is 15.5 cubits west of the east chamber wall and 4.5 cubits east of the west chamber wall. The double square coming off the Slope of Re carries sides of 1 cubit and 2 cubits to give an area of 2 square cubits.

$$\text{Square root } 2 = 1.4142135 \text{ cubits}$$

$$280 / 1.4142135 = 197.9899 \text{ cubits}$$

$$280 - 197.99 = 82.01 \text{ cubits}$$

$$82.01 \text{ cubits} = \text{Level on the Great Step}$$

That must mean the double square is bringing Re to the centre of the Osiris chamber and on the way it is relating itself with the level on the top of the Great Step at the top of the Grand Gallery. The Pyramid of Re was inside the Great Pyramid as well as outside.

The area of the inner rectangle derived from the Pyramid of Set on its width, and the Pyramid of Re on its height, will be $(0.9090 \times 2) \times 2 = 3.6363$ square cubits. The area of the square is 4 square cubits and $4 / 3.6363 = 1.1000$, which is also $\tan 1.1000$, the slope of the Pyramid of Set. The two areas divided have become an angle in tangent.

The area of the two vertical portions within the square can now be found at $4 - 3.6363 = 0.3636$ square cubits. The number 36 is on the magical Square of the Sun in 6 rows of 6 numbers, and they are undoubtedly Re.

THE MISSING PYRAMID CENTRELINE

There is nothing inside the Great Pyramid that marks the position of the missing north south centreline even though the riser of the Great Step marks the east west centreline.

That is strange and illogical and it leads to the view that somewhere inside the chamber systems there does exist a marker, but it is insubstantial and can only be imagined. There is one obvious clue, and that is the decision by the builders to put the entrance to the pyramid at some distance east of pyramid centre, and then to make the corridors align on the east walls of both the King's and Queen's Chamber. That was an odd decision since the entrances to the chambers might have gone anywhere. There was a reason for doing that and it was not necessarily to outwit thieves trying to find the entrance.

The survey by Rinaldi and Maragioglio had revealed that the corridors were 1.05 metres wide or exactly 2 cubits wide. That would mean the corridor widths in cubits were themselves part of the equation. The sheer length of the corridor systems and the difficulty of knowing the true physical centre from the uncertain outlines of the pillaged pyramid of today, makes the finding of any north to south centreline of the Great Pyramid into something bordering on the impossible. Any small error of measurement over the length of the corridors that would deviate in the smallest way from an exact and precise, 90 degrees on the original, though missing, casing stones at the entrance, would be magnified enormously by the time it reached the King's Chamber, as can clearly be seen when the pyramid is depicted on plan.

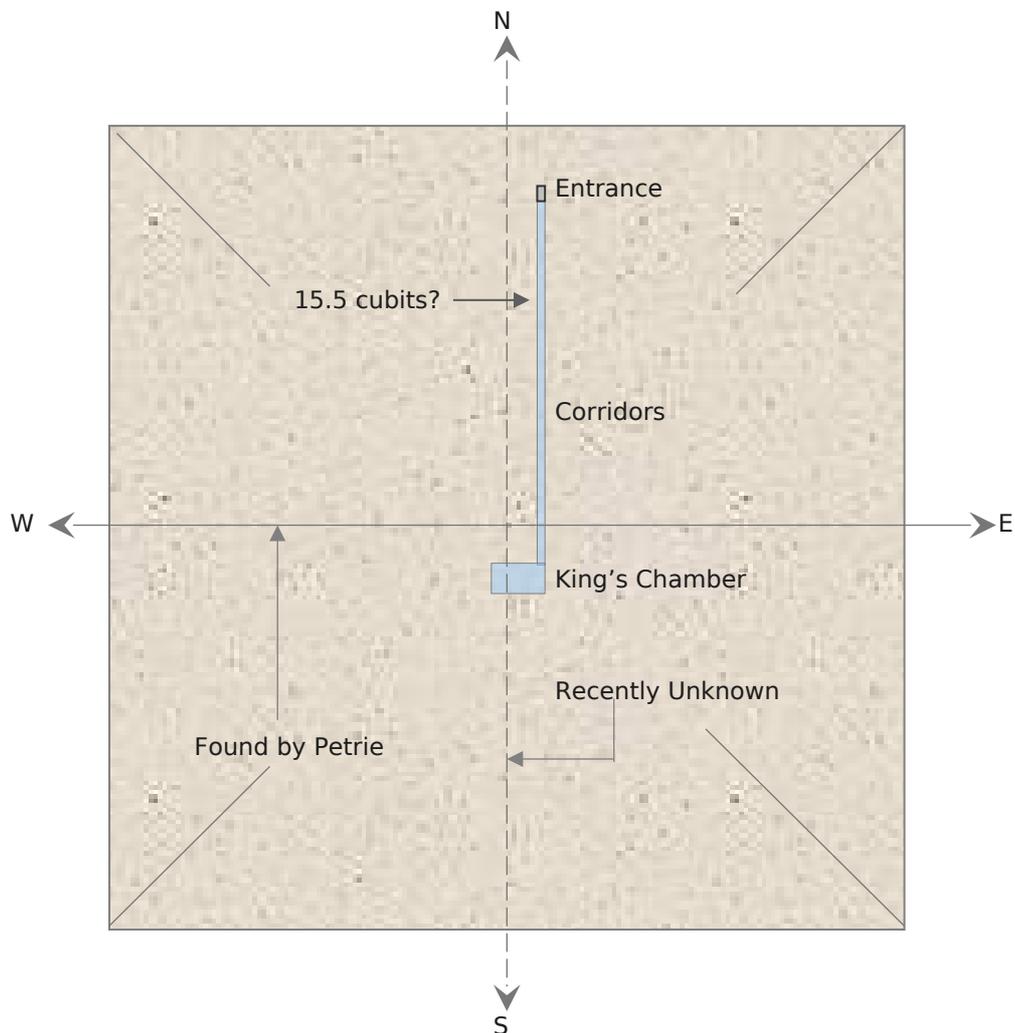
The Grand Gallery is directly above the entrance corridor to the Queen's Chamber, and the Ascending Corridor is directly above the Descending Corridor. The Descending Corridor leads to the pyramid entrance. Seen on plan, the corridor systems will read as one corridor offset substantially east of the pyramid centreline.

According to the Cole / Borchardt survey by of 1925 given in Doctor I. E. Edwards' account *The Pyramids of Egypt*, the pyramid entrance is about 24 feet east of pyramid centre but this does not help much because 'on what' he does not say. The distance would however translate into approximately 13.96 cubits if it were actually on the west reveal but if it were on the east reveal it would be around $13.96 + 2 = 15.96$ cubits east of pyramid centre.

Any similar distances as given by Flinders Petrie in his *Pyramids and Temples of Gizeh* are almost unfathomable. This is because his findings were published in tabulated form rather than in architectural form and it is hard to know precisely where his measurements began and where they had ended. This survey too does not help very much.

Rinaldi and Maragioglio do show a rather vague north to south pyramid centreline west of the entrance corridor centreline leading into the King's Chamber at 7.2 metres west of corridor centre or 13.74 cubits, or again, 14.74 cubits from the east wall.

The Offset Corridor Systems on plan



The means used by which these distances were measured had also presented something of a problem. They were not found internally because there is nothing internally for them to have been measured against. It had to be done externally and from a pyramid that was missing its casing stones and possessed no outlines. The middle distance between the two north corner stones would have been used and then projected at 90 degrees onto the ragged opening that now forms the entrance and it was certainly not an exact science. The consensus seems to be that the east wall of the King's Chamber, the east walls of corridors, and the east reveal of the entrance, were all somewhere between 15.96 and 14.74 cubits east of the 'uncertain' north-south pyramid centreline, as found by measurement. If that were so, and the King's Chamber extends by exactly 20 cubits west of the east walls, then the unplaced north-south centreline of the Great Pyramid must in

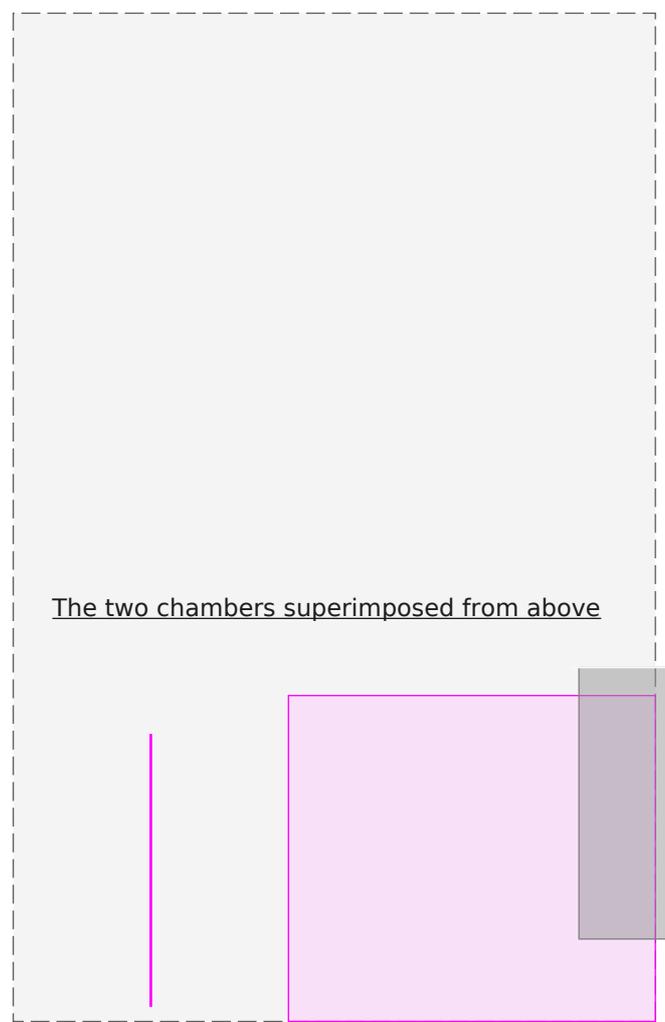
any event pass through the King's Chamber and to the west but the question is, where exactly?

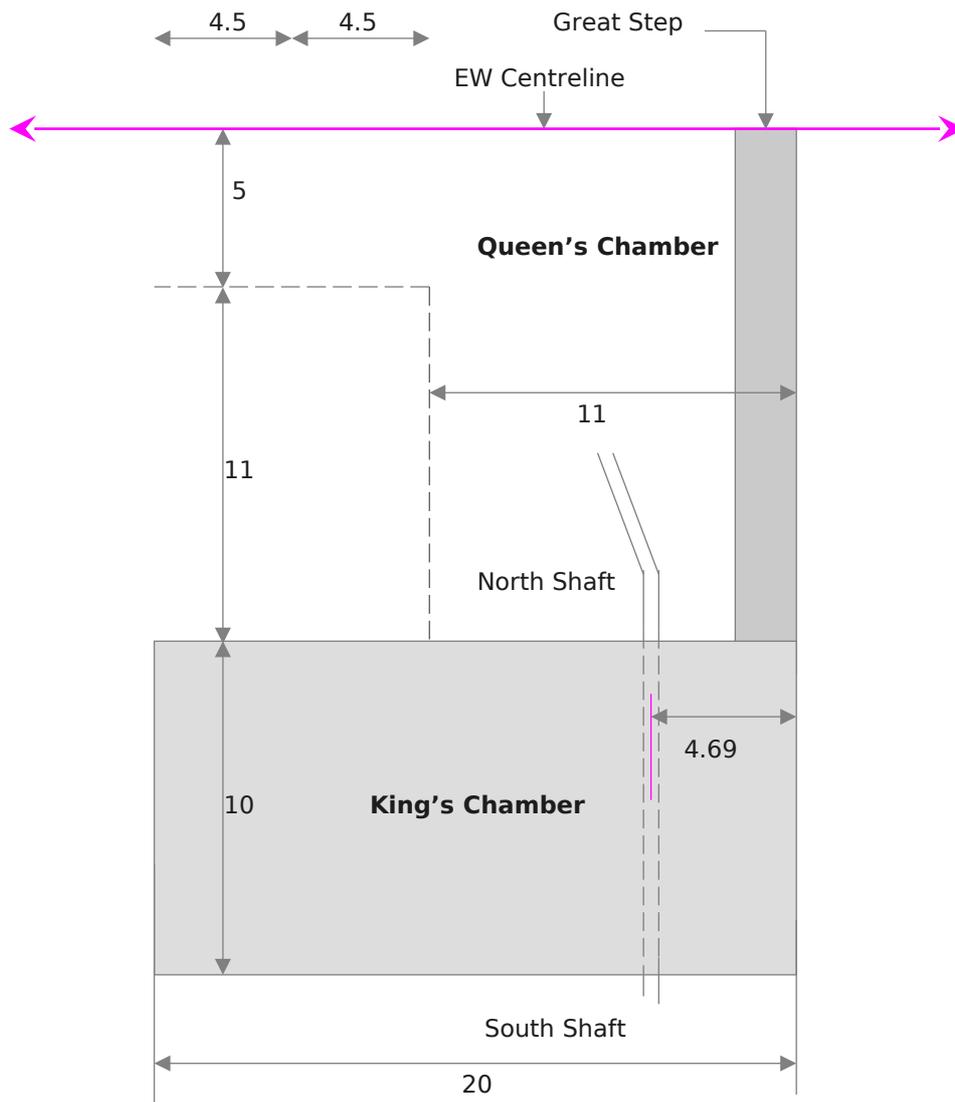
On that basis the missing north south pyramid centreline would seem to exist within the western extremities of the King's Chamber at some point around 4.5 cubits east of the west wall but there is absolutely nothing there marking this point in stone. The King's Chamber is almost certainly the most important part of the pyramid and the missing centreline within the chamber was fundamental to the whole of the pyramid construction.

What then would the walls themselves say about that?

What can be seen on the walls but the two shaft openings?

Why were the shaft outlets built opposite to each other in line and level, and did that strange condition occur by accident or had it been done for a geometrical purpose? Since that would make possible another invisible shaft linking the two openings then the two opposite openings were probably not accidental for nothing at the Great Pyramid was built without a reason. For the moment though the plan of the pyramid itself gives the first clue, and the plan of the chambers and corridors as seen inside the pyramid would provide the next clue.



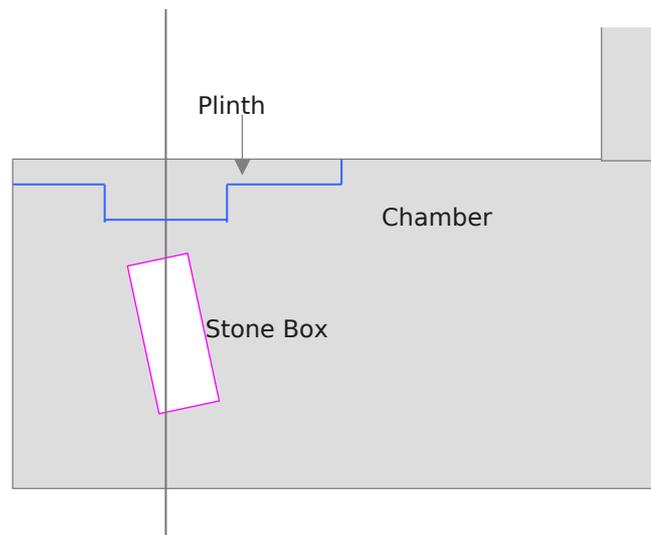


The chamber is offset to the west from the line of the corridor, which runs north to south showing that it too was orientated on latitude and longitude. In fact all of the main internal spaces are aligned in this way. The centre of the south shaft opening at the King's Chamber is shown on the engineer's drawings at 2.46 metres from shaft centre to the east wall with the two shaft openings shown directly opposite to each other. They would then be $2.46 \times 1.0936 \times 3 / 1.7181 = 4.69$ cubits from the east wall when taken from the shaft centre, as measured. But the ancients had not used 'centrelines on features' as points to be measured and had instead used physical surfaces. When measuring the lateral positions on the shafts they would therefore have adopted the east or west faces, on plan, rather than centrelines, and more than probably it was the eastern faces because of the spiritual aspects.

The shaft opening was measured at 0.22 metres wide or 0.11 metres on centre, making a half width of about 0.22 cubits. That would put the two shafts at $4.69 - 0.22 = 4.47$ cubits from the east wall and short of 4.5 cubits by 0.03 cubits. The ancient designers had intended that the east sides of the two shaft openings were to be 4.5 cubits from the east chamber wall and because the chamber was 20 cubits long, they would be 15.5 cubits from the west chamber wall. That is how the geometry of the Slope of Re and the Slope of Set had seen it. The two shaft openings had been placed opposite to each other so as to identify the position of the missing pyramid centreline, in stone, as well as by calculation! But $15.5 - 4.5 = 11$ cubits, the pyramid number, and that must mean that whatever happens in the zones to the east of the chamber also happens in the zones to the west of the chamber.

The original position of the Stone Box

The Existing Position of the Stone Box



There are no better candidates for adoption of important spaces within the Great Pyramid than the mysterious Stone Box that was first found when Caliph Ma Mun had broken his way into the King's Chamber. The box undoubtedly knew the missing centreline. Its dimensions were larger than those of the entrance corridors and it was placed within the chamber as the pyramid went up around it. By this means the box was always an integral part of the whole pyramid and had remained there from the 9th century, when Ma Mun

found it, to the time when Piazza Smythe first saw it against the north wall, and when Petrie saw it next in 1880. It remains there to this day, but unfortunately it has been moved.

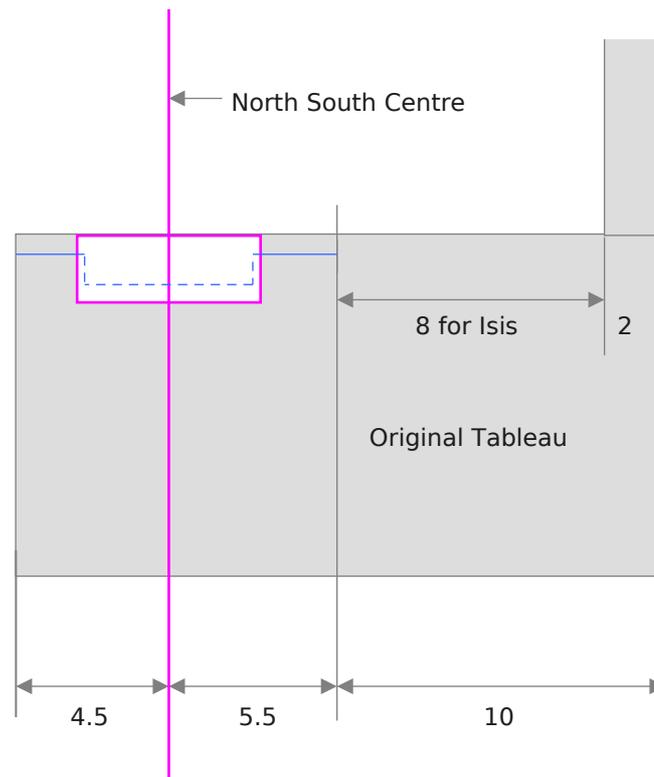
Rinaldi and Maragioglio had given the clue. On their plan drawing of the chamber floor they had shown the position of the box as they had found it in 1965, placed askew to the west as if it had been cast aside of no real importance. Obviously it had been important so why then was it placed askew? The box had obviously been moved. It had certainly been important to the pyramid builders and they would not have dumped it in this manner. Where then had it been placed and why was it moved?

The question was put to the Assistant Curator of the Department of Egyptian Antiquities at the British Museum. He replied to say that the answer was in Petrie's own report, where he had recorded that he himself had moved the box during his survey in 1880. Petrie had said that he had found it resting (on a plinth) against the north wall when he first entered the chamber. He had been somewhat curious to know if any secrets might be hidden behind it, and he had organized his men to swing it away from the wall so that he could inspect behind. That was how the box been moved. The original position was hard against the north wall. This was proven by a photograph taken by Piazza Smythe when he came to the pyramid in 1865 with his wife Jessica, the first flash photograph ever taken outside a studio, and it showed the box standing directly in front of a stone wall with his wife standing to the right so as to give an indication of scale.

The survey drawings had also shown that a mysterious 'tee-shaped' outline existed on the north chamber floor, and it was aligned along the wall displaced to the west by almost half the chamber length, with a projection biased to the west. It looks like a plinth. Looking on the floor plan it is plain to see that the box had been on the plinth, and recent photographs do show a curious grating affair on the floor at this north wall position. Petrie might well have disturbed the sacred geometry by moving it from its original position.

There was a clear projection of the plinth, at centre, shown biased towards the west wall as if it were somehow confirming the distances of 4.5 cubits and 5.5 cubits already found on the pyramid geometry. Unfortunately, the engineers had not deemed it important enough to take any dimensions but by scaling off the drawings directly it appears as if the plinth was 1 cubit wide and the projection was another 1 cubit wide. That would be no surprise if it were true.

The Original Position of the Stone Box



The bias of the projection on the plinth would therefore agree with the location of the north to south pyramid centreline, also biased towards the west wall. When Smythe and later Petrie found the box resting on the plinth it too must have been biased slightly towards the west wall, as it was required to do if it was to follow the line of the plinth that supported it. In that event, the stone box must originally have been placed on the centreline of the Great Pyramid, which was also a longitude, and which would then have encircled the earth. The concept was brilliantly logical and all embracing if whatever had once been contained inside this rather important chunk of granite, was then of similar international importance.

What did the box contain?

This raises another question. What was the intended purpose of this hollowed out block of stone that had grown with the pyramid enclosing it? The consensus of expert archaeological opinion is that it held the body of a pharaoh but since no body of a pharaoh was ever found inside it, or anywhere inside any pyramid for that matter, then their hypothesis will always remain unproven. There is however some evidence that it once had a lid because the remains of 3 fixing plugs on the rim have been identified. It is hardly

likely that the builders would have gone to the trouble of grinding it out of a solid chunk of extremely hard granite if they had no intention of placing anything at all within it. What else then could it have been built to contain that would have been important enough to justify the effort, and the placing of it within the pyramid? There are few likely candidates but one of them stands out.

Another theory is that it held a dismantled Ark of the Covenant. This is entirely feasible, if somewhat startling, but it is no more speculative than the improbable pharaoh's tomb theory. David Hatcher-Childress, author of his *Lost Cities of Atlantis, Ancient Europe and the Mediterranean*, was convinced that the Ark of the Covenant had been stored in the Great Pyramid for a considerable length of time. He claimed that it was a relic of the 'Osirian Empire' and that it had come to Egypt in 10,000 BC where it was stored in a Temple of Isis, perhaps at Dendera. After that it came to the Great Pyramid, where he says that it remained for 3400 years until the coming of Moses. The box containing the Ark was kept secretly in isolation from the hostile Amun priests, hence the portcullis. It is interesting to note that he claims that Moses might therefore have entered inside the Great Pyramid. Without taking the hypothesis further, he could have been naming the pharaoh Akhenaten who also could have entered the pyramid. The Amun priests were known to have been hostile towards Akhenaten, who worshipped the sun disc, and Moses was contemporary with him.

From a practical viewpoint the Ark of the Covenant might well have been stored in the granite box. The Italian engineers give the internal dimensions as 1.98 x 0.69 x 0.92 metres. This converts to 3.78 cubits long, 1.32 cubits wide, and 1.76 cubits high, but these are 'pyramid cubits' based on 1.7181 feet and they might not have been the same as the 'biblical cubit' associated with Moses. The dimensions given in Exodus (Ch 25 v 10) say that the Ark of the Covenant was 2.5 cubits long, 1.5 cubits high, and 1.5 cubits wide. On that basis the Ark would not fit inside the box. The cubit was not however a universal measure and many interpretations of it exist. The Exodus cubit could have been based on 18 inches, the standard height of a seat, where the goddess Isis was identified with seats and the number 18. The Mercy Seat that was placed on top of the Ark of the Covenant was conceivably the *Seat of Isis*. She was the metaphysical presence who was thought to have existed between the two winged angels who had faced each other across the top of the lid while they revering her occult presence. If that were so then the Ark of the Covenant

would have resided with her inside her pyramid as The Mistress of the Pyramid and that would have made absolute sense.

Were the Exodus cubit based on 18 inches, then it would have been 1.5000 feet long instead of 1.7181 feet long as would apply with the pyramid cubit. The Ark would then have been 2.18 pyramid cubits long compared with 3.78 pyramid cubits at the box, and 1.30 pyramid cubits wide compared with 1.32 pyramid cubits on the box. In that event then the Ark of the Covenant would have fitted inside the stone box and it could then have been stored inside it.

No one knows the exact nature of what was contained within the Ark, but it had certainly given out some form of electric shock, or radiation, as if it was an early form of an atomic pile. This implies that it would have required some sort of ventilation and temperature control, and that could have been supplied by the South Shaft of the King's Chamber that according to the pyramid geometry on the exit point was always open to the sky. If such a thing as an atomic pile could have existed at the time of Moses, and perhaps long before, then the stone pyramid would have been a very good place to store it, hidden behind the drawbridge, supplied by the otherwise useless, portcullis.

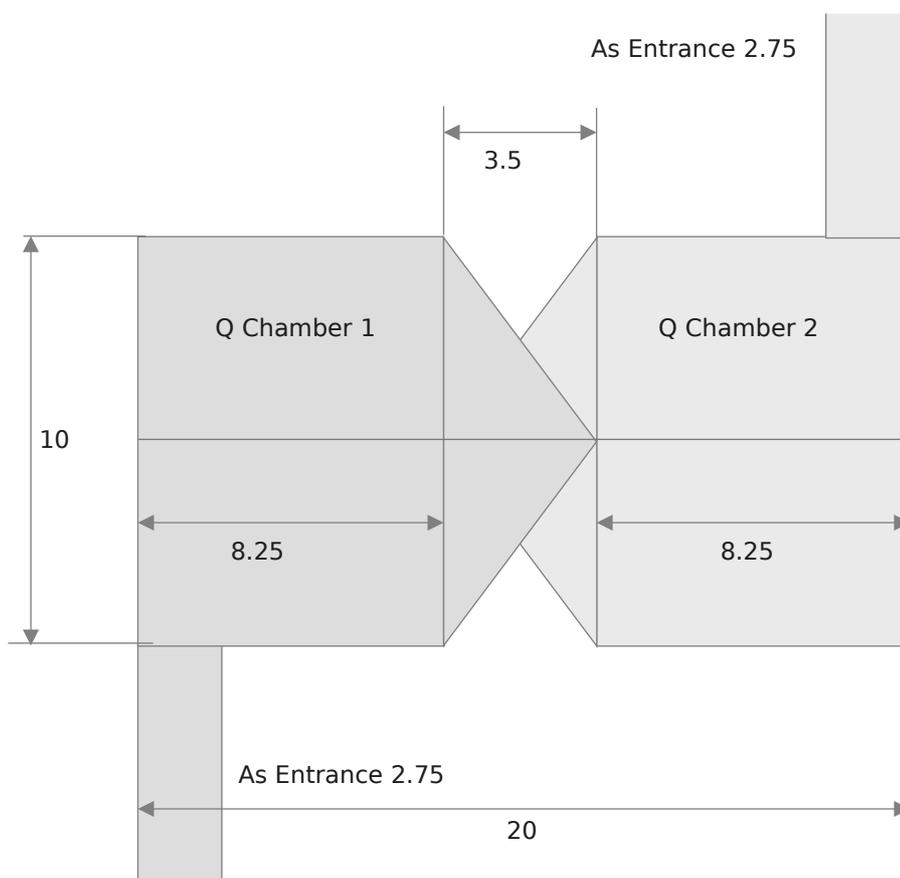
THE MERGING OF THE CHAMBERS

The two main chambers within the Great Pyramid were not geometrically isolated from each other. The Queen's Chamber was not the result of a change of mind of the builders, for how could it be? If such a change of mind had occurred it would have been at such a time when the pyramid was built up to the level of the chamber, or something slightly above, but the shafts and the pyramid squares had proved that the chamber had been finished and that an original stone floor had once existed. There had been no change of plan and Doctor Edwards had been quite wrong when he concluded that the Queen's Chamber floor was left unfinished but the same priests who had removed the capstones and casings of the pyramid proper, had also taken up the floor.

There was however a strange anomaly, seen only if the two chambers are viewed from above and together. The King's Chamber gives the clear impression that it is twice the size of the Queen's Chamber, by volume. The main element that seems to deny that is the length of 11 cubits for the Queen's Chamber compared with 20 cubits for the King's Chamber, where the widths are both chambers are the same at 10 cubits. Why then were the widths the same?

It is certain that if such a conjunction does exist, it does not exist 'on plan' because the length of 11 cubits on the Queen's Chamber floor is not compatible with the length of 20 cubits on the King's Chamber floor, but it might certainly exist by other means. The King's Chamber is nominally 11 cubits high, and the east and west walls are also 10 cubits wide. The Queen's Chamber is 11 cubits long and another 10 cubits wide. That leads to another possibility.

Two Queens and One King's Chamber on Plan



The floor of the Queen's Chamber is essentially the same as the two end walls of the King's Chamber when seen in elevation. The Queen's Chamber would therefore, in theory, fit into the King's Chamber at one end if it is placed 'end-on' so that its floor becomes vertical and aligns with one end wall of the King's Chamber. If another Queen's Chamber were so placed at the other end of the chamber, the pitched roofs would converge on centre and overlap. If that were true, then by how much would they overlap? If this configuration is

valid then two Queen's Chambers will fit into the space provided by one King's Chamber, but only if the height of the Queens Chamber from its original finished floor, to its pitched ceiling, is $8.25 + 3.5 = 11.75$ cubits, or something very close to that distance.

The Rinaldi and Maragioglio drawings show the level to the top of the ridge of the Queen's Chamber ceiling is 27.45 metres, or 52.42 cubits above base, where the original floor level has been found to be 41.25 cubits above base. The difference between the ridge and the original floor level would therefore be $52.42 - 41.25 = 11.17$ cubits, this to be set against the required 11.75 cubits. There is some error but it is not out of the question that at some time long past they were similar. It is already known that the ridge is out of level and that it is badly skewed where it rests on the tops of the walls and that was probably due to earthquake activity as it occurred down the ages. The height measured from an uneven floor was compromised.

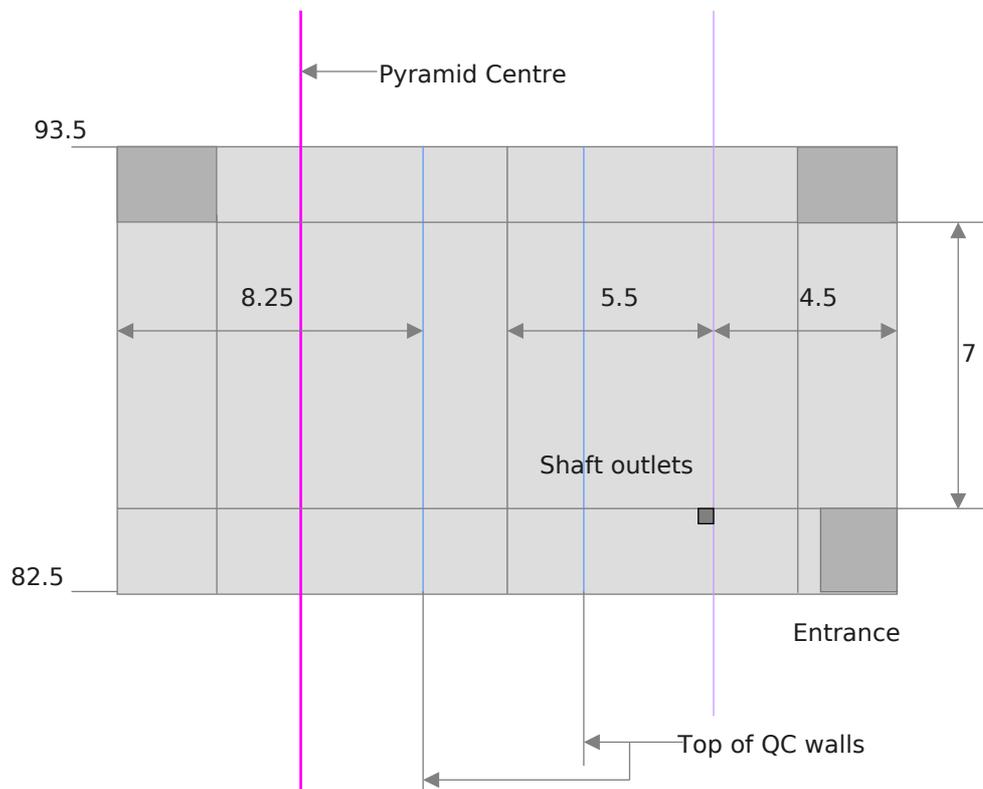
The Volumes of The Chambers

Let it be assumed that the ridge was 11.75 cubits above base. The area of the Queen's Chamber floor is $10 \times 11 = 110$ square cubits and that happens to be the length of the Great Pyramid base in linear cubits divided by 4. That does not sound like a random event. The volume of the chamber then will be $11 \times 10 \times 8.25 = 907.5$ cubic cubits, where the volume enclosed by the pitched roof will be $11 \times 10 \times 3.5 / 2 = 192.5$ cubic cubits. The total volume of the two parts of the chamber will therefore be $907.5 + 192.5 = \mathbf{1100}$ **cubic cubits**. That was certainly not a random event. This result shows that 8.25 cubits on the chamber height must have been a valid and credible dimension, and that the plan area of the chamber, multiplied by 10, will equal the volume, even though the roof is pitched and there are no vertical distances of 10 cubits.

The volume of the King's Chamber is $20 \times 10 \times 11 = \mathbf{2200}$ **cubic cubits** and this presents another surprise. Two Queen's Chambers will fit into one King's Chamber by volume, exactly. That declares that the King's Chamber was notionally 11 cubits high even though there are differences in heights and levels taken on the floor by survey. Those differences were there for other reasons as have been demonstrated mathematically. It is probable that the geometrical level for the King's Chamber floor, rather than the physical level for the floor, was 82.5 cubits above base, and as found on the vertical rectangle determined by the very strange step down in the Queen's Chamber entrance corridor.

All of this was achieved entirely by the use of cubits, tangents, and pyramids inside pyramid squares, and the incredible reason why two Queens' Chambers had been made to fit into one King's Chamber will now be explained. It was not so much on the two end walls of the chamber where the real secrets will be revealed but on the two side walls, and the Queen's Chamber dimensions were needed to bring this about.

The North Wall of the King's Chamber



The long-section through the King's Chamber when seen onto the north wall, shows the two Queen's Chambers 'side on' as they would appear with their respective entrances to the upper right and left. The King's Chamber entrance would then appear lower right.

Because the two Queen's Chambers are seen 'sideways-on' and their entrances are 2 cubits wide, then the section on the north wall carries two horizontal divisions 2 cubits

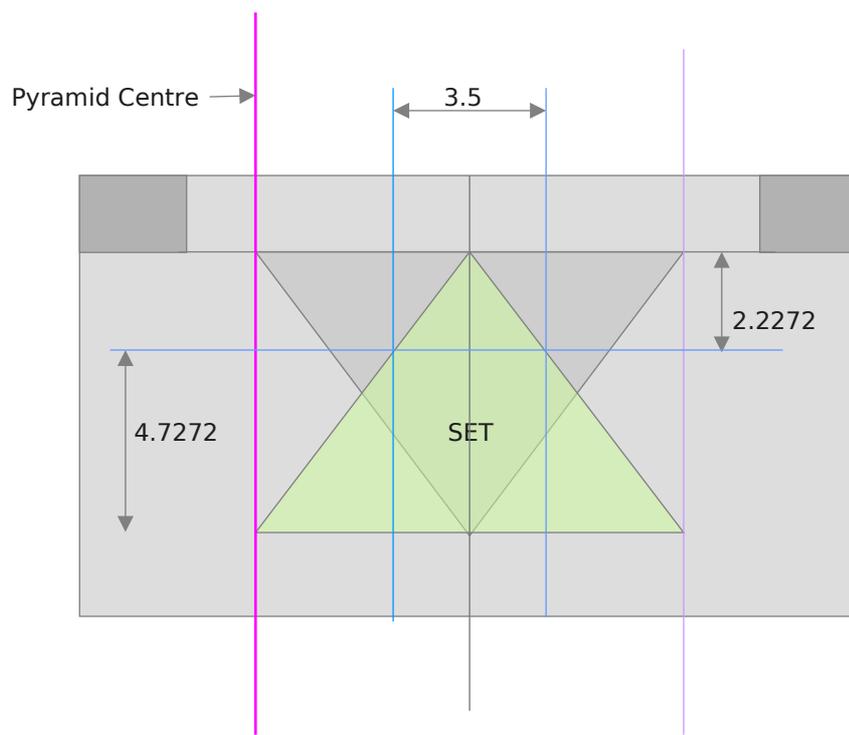
high. They are on the upper part of the wall and the lower part of the wall and because the entrance is another 2 cubits high this height also occurs on the lower part of the wall. That was why the corridors were made 2 cubits wide!

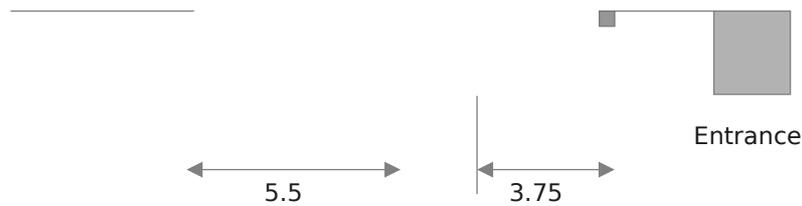
Then there was the dimension of 2.75 cubits, and that was because of the 'step down' on the corridor leading into the Queen's Chamber was 2.75 cubits high, making the entrance 2.75 cubits high. Since the King's Chamber is 11 cubits high there will be a remainder on the two heights of 2 cubits of $11 - (2 + 2) = 7$ cubits. The number 7 identifies Set. If the number 7 for Set represents another pyramid height then its height will have been controlled and by the two entrance widths of the Queen's Chamber and the King's Chamber.

They are taken above and below from a chamber 11 cubits high on the wall to leave 7 cubits for Set. The east face of the two shaft openings controlled the length of the pyramid half-base is $10 - 4.5 = 5.5$ cubits each side of chamber centre, giving a pyramid base 11 cubits long. That would signify that Set is now within the King's Chamber and something concerning him will appear on the long walls. What would that be but another pyramid inside the chamber? The two shaft openings were marking the datum level 84 cubits above pyramid base!

The height for this new Pyramid Set is 7 cubits, divided by the distance from the centreline of the Pyramid of Set to the centreline of the Great Pyramid, at 5.5 cubits, is an incredible value of $7 / 5.5 = \text{Tan } 1.2727$ recurring. That is strange because $\text{Tan } 1.2727$ was the tangential value of the base angles for the Great Pyramid! The two pyramids must know each other!

The North Wall and the Floating Pyramid of Set



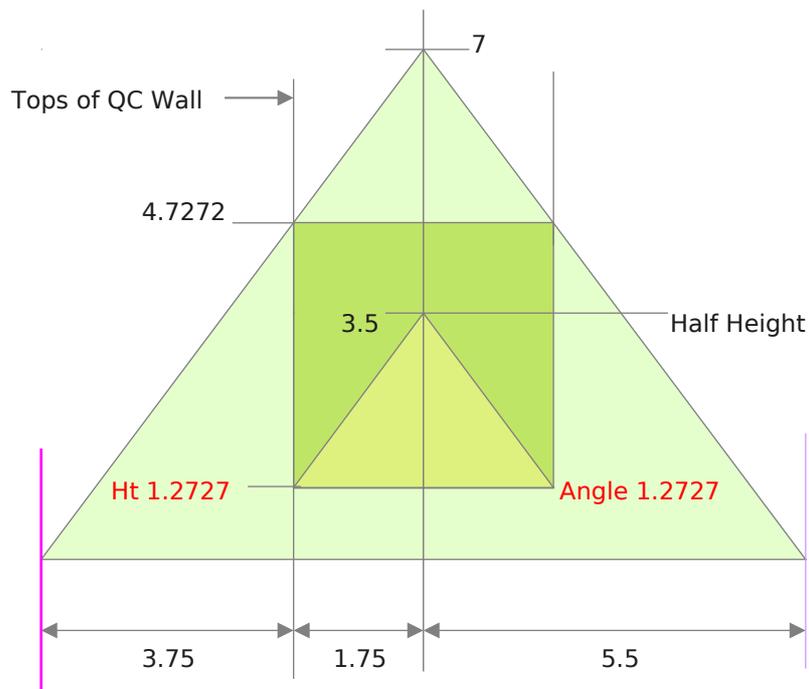


There exists therefore a clear link between the Pyramid of Set 7 cubits high and 11 cubits on its base on the chamber wall, and the Great Pyramid through the tangential value of 1.2727. The pyramid is floating suspended inside the chamber. *It looks almost supernatural.*

The two lines representing the 'tops of walls' of the two Queen's Chambers can now be seen to cross the slopes of the Pyramid of Set at 8.25 cubits from the east or west walls and because of that they are also $8.25 - 4.5 = 3.75$ cubits from the east or west of the base positions of the pyramid and $3.75 \times \tan 1.2727 = 4.7727$ cubits above pyramid base.

Another pyramid exists above the level of 4.7727 cubits and it will be $7 - 4.7727 = 2.2272$ cubits high. The half-base will be $2.2272 / \tan 1.2727 = 1.75$ cubits long and the full base will be 3.5 cubits creating a pyramid square of sides 3.5 cubits.

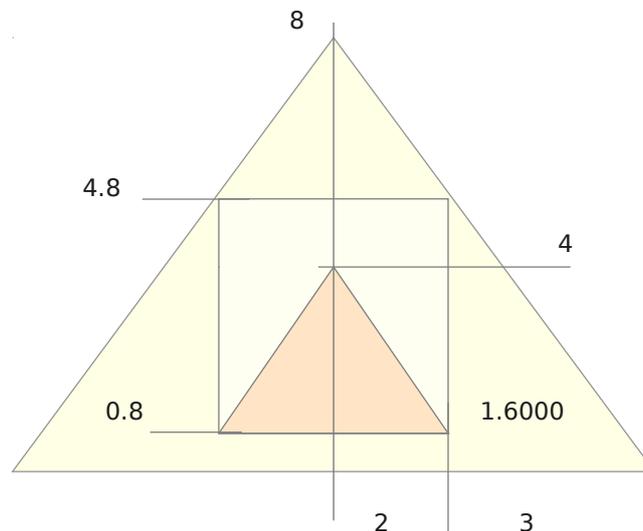
The other meaning behind 1.272727



A pyramid inside the pyramid square will be $1.75 \times \tan 1.2727 = 2.2272$ cubits high and its tip will therefore be $4.7727 - 3.5 + 2.2272 = 3.5$ cubits above pyramid base. The level of the tip has bisected a pyramid 7 cubits high. The base of the pyramid inside the square will now be $4.7727 - 3.5 = 1.2727$ cubits above pyramid base. That intriguing result because the base distance of 1.2727 cubits is in the same number as the angle distance of 1.2727. That is extraordinary and it raises another question as to whether or not a pyramid 7 cubits high with the same slope angle as the Great Pyramid is unique, or commonplace. If the condition is commonplace then would the pyramid base angles always be in the same number as the distance on the square above base?

In order to test out this theory, a random pyramid at say 6 units high on a base of 10 units can be chosen and the calculations made again. If the pyramid does not reach the same conclusion then the chances are that the number 1.2727 was always special.

Test example



Pyramid is 8 high and 10 on base

Base angles $8/5 = \tan 1.6000$

Sides of square 4 with half at 2

Pyramid on square $2 \times \tan 1.6000 = 3.2$ high

Square about the slopes at $3 \times 1.6000 = 4.8$ above base

Tip height = $0.8 + 3.2 = 4$ and that is half of 8

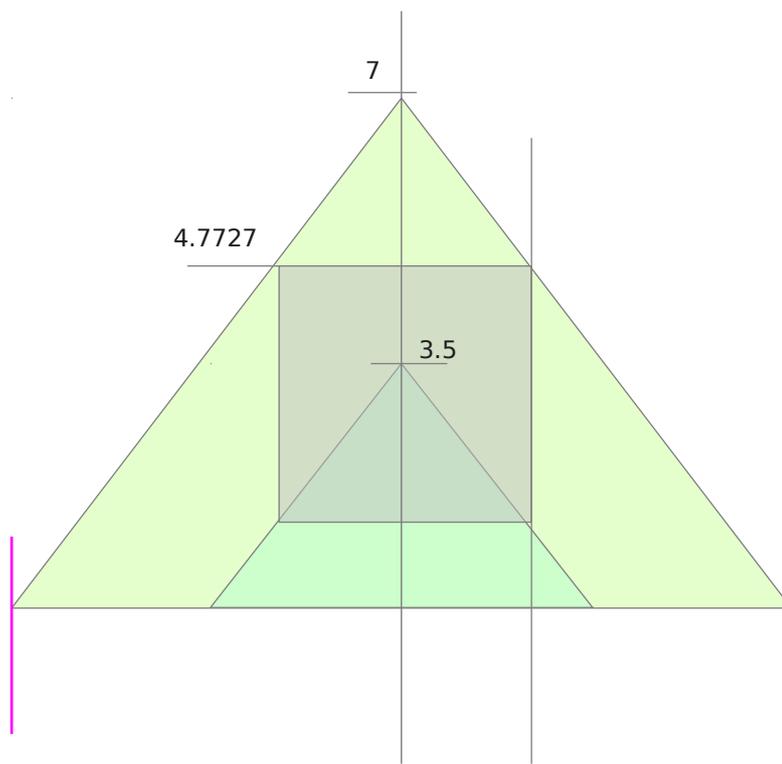
Base height = $4.8 - 4 = 0.8$

On that reckoning a square of half the height of its enclosing pyramid would carry a pyramid inside the square whose tip height would bisect the enclosing pyramid but it would NOT do so in matching numbers. That was reserved for 1.2727. That is amazing because even the Great Pyramid does not comply with this particular rule. Only the Pyramid of Set complies because it is 7 cubits high and 11 cubits on base and for no other reason. The geometry on the King's and Queen's Chambers had made that possible.

Rule of The Great Pyramid of Set

A square with sides of half the height of its enclosing pyramid, and whose corners about the slopes, will carry a second smaller pyramid of same slope on its base, whose tip will bisect the height of the larger pyramid enclosing it. The number 1.2727 in tangent will also be the number 1.2727 in cubits for the height of square above base.

The Half Base Pyramid of Set



70

110

110

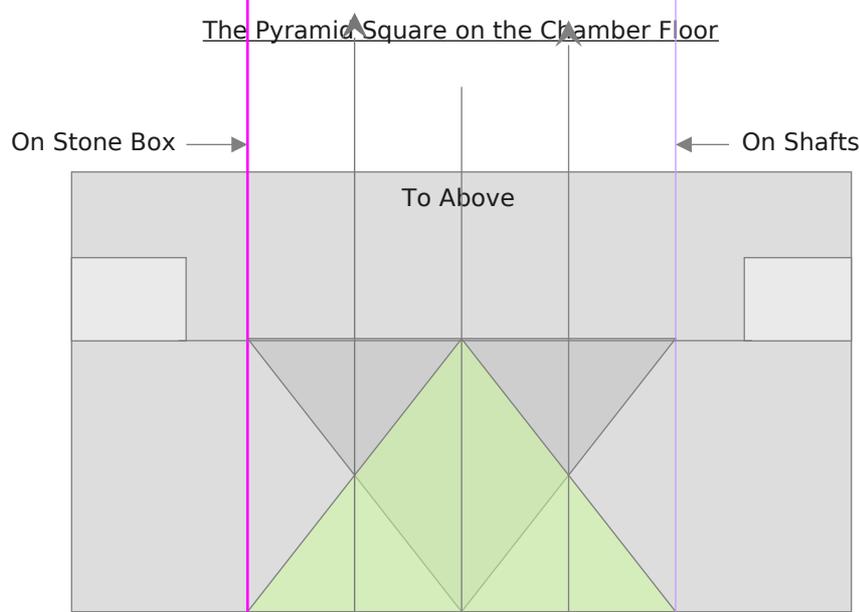
The Pyramid of Set is 40 times smaller than the Great Pyramid and if it now becomes the Great Pyramid then its height will be $7 \times 40 = 280$ cubits. The level of the top of the pyramid square will be $4.7727 \times 40 = 190.9090$ cubits above base, and the tip of the pyramid inside the square will be $3.5 \times 40 = 140$ cubits above base to bisect the height. The bottom of the square will be $1.2727 \times 40 = 50.9090$ cubits above base, and a second pyramid square can now be added with sides $140 / \tan 1.2727 = 110 \times 2 = 220$ cubits, which is half the base of the Great Pyramid and following the same geometry for the shaft exit level of 121 cubits above base for the Shaft of Set.

The two pyramid squares about the slopes at levels of 190.9090 cubits and 140 cubits above base and the difference of 50.9090 cubits forms the height of a 90-degree triangle. The base of that triangle will then be the difference between the half-widths of the pyramid squares at 110 cubits and 70 cubits to give 40 cubits and the slope angle is $50.9090 / 40 = \tan 1.2727$, the base angle of the Great Pyramid and the geometry checks out.

At the Great Pyramid, the topside will be at a level of $3.5 \times 40 = 140$ cubits above base at half the height of the Great Pyramid. The second pyramid square is at a level of 140 cubits and it has sides of 220 cubits. The square will therefore project below the base of the Great Pyramid by $220 - 140 = 80$ cubits. But because the Great Pyramid is 40 times larger than the pyramid inside the King's Chamber, the projection below base is $80 / 40 = 2$ **cubits**, at the chamber.

That is a shattering result!

The Pyramid of Set is not only floating in space but it is also anchored on the chamber floor and since the top of the square is halfway up the pyramid then it is anchored on the ceiling as well! There was a real purpose behind this discovery.



THE PYRAMID AND THE FIVE VOIDS

Now the five voids present themselves. They are situated in a vertical stack immediately above the King's Chamber and they are really something of an enigma. Like the two shafts emanating from the Queen's Chamber, they were built entirely enclosed in stone with no openings whatsoever. Like the shafts, they seemed at first to serve no purpose whatsoever. Why then were they so placed that they mirrored the floor plan of the King's Chamber below? Why indeed were their ceilings perfectly true and flat where the floors were all over the place, caused by the varying thickness of the huge stone beams that had been laid north to south across these spaces? Quite obviously, the ceiling levels were meant to represent something whereas the floors did not. That was easy to see.

Like the unfortunate Queen's Chamber below, they have been subject to a certain amount of misplaced logic. Nobody could come up with anything better to explain them other than

to say that they were 'relieving' chambers. That is to say, that somehow these five empty spaces were protecting the roof of the King's Chamber from collapse in the event of a catastrophe like an earthquake. Certain people have noticed cracks in the beams and reached the conclusion that without the voids; the roof would have fallen in. The theory went, that this was because the voids had reduced of the weight of stone above.

A very quick look at these spaces make it quite clear that the amount of stone saved was very small indeed in relation to the sum total of stone existing above the chamber, or even between the voids. If the ancient builders had wanted to reduce the weight of stone they would have eliminated all of the voids except the uppermost with the pitched roof. But they did not do that and the reason was that this was not the answer.

Then there was the principle of triangulation that these people most surely knew about. Any engineer knows that downward loads over an opening, like a doorway, are also transmitted sideways into the adjacent stonework. A typical example is the Norman Arch, which curves to a point above the opening and follows the principle of triangulation, utilising the most rigid structure known to man. The builders of the Great Pyramid had constructed the uppermost void above the King's Chamber in just this manner, as they had indeed the Queen's Chamber below. If they had wanted to protect the chambers against earthquakes, the upper void would have taken the place of the lower void, and no others would have been necessary. They did not do that because the voids were there to mark levels. The ceilings were smooth and level because they were marking levels in just the same way as the corridor ceilings to the King's and Queen's Chambers were marking levels. That is no surprise because it has already been found that the corridors mark levels in just the same way as the four shafts mark angles and it is all in the hidden geometry. If that is so then it is necessary to find out what these levels were within these five voids, and then to try to discover how they were used.

Rinaldi and Maragioglio had surveyed the voids in 1965 and then shown them in drawings on section and long-section. It is their long section that shows the huge irregularities on the thicknesses of the floor beams and the flatness of the ceilings. Surely someone had seen them and recognized them for what they were? That was why they had been hidden away like the two shafts below.

The levels were given in metres beginning with the ceiling of the King's Chamber at 48.87 metres taken off the floor and 43.03 metres above pyramid base. Those same 48.87 metres represent 93.31 cubits, but the King's Chamber is 11 cubits high coming off the

highest part of the floor at 82.16 cubits and that would make it 93.16 cubits on the ceiling. There exists a discrepancy of 0.15 cubits between the survey levels and the levels according to the pyramid geometry at 93.5 cubits. This is because the King's Chamber floor is slightly sloping out of true, which means that the levels on the floor will vary. Taking the levels from a datum on the King's Chamber ceiling at 93.31 cubits, as the engineers saw it, they had their base on which to take levels on the void ceilings and that is what they did. There was error.

Then there appears to have been a problem with the survey. The engineers had given the vertical distances between levels of the void ceilings in 'whole number metres' and that could not possibly have been right. The first was at 3 metres, the second at 2.7 metres, the third 2.9 metres, and the fourth at 2.7 metres again. It is unlikely that the ancients would have created dimensions in 18th century metric in this way and it suggests that the surveyors had encountered some difficulty in obtaining the results. They had given approximations. This is not surprising when it is seen that the access to each void was through holes in slabs and crooked passages that had been blasted with dynamite by Howard Vyse. The result was that the accuracy was compromised. What then can we read into their numbers, given in metric and converted to cubits?

The Levels on the Void Ceilings

Davison.	$48.87 + 3.00 = 51.87$ metres	99.04 cubits
Wellington.	$48.87 + 5.70 = 54.57$ metres	104.20 cubits
Nelson.	$48.87 + 8.60 = 57.47$ metres	109.73 cubits
Lady Arbuthnot.	$48.87 + 11.30 = 60.17$ metres	114.89 cubits
Campbell.	To ridge it was 64.13 metres	122.45 cubits

Inspiration!

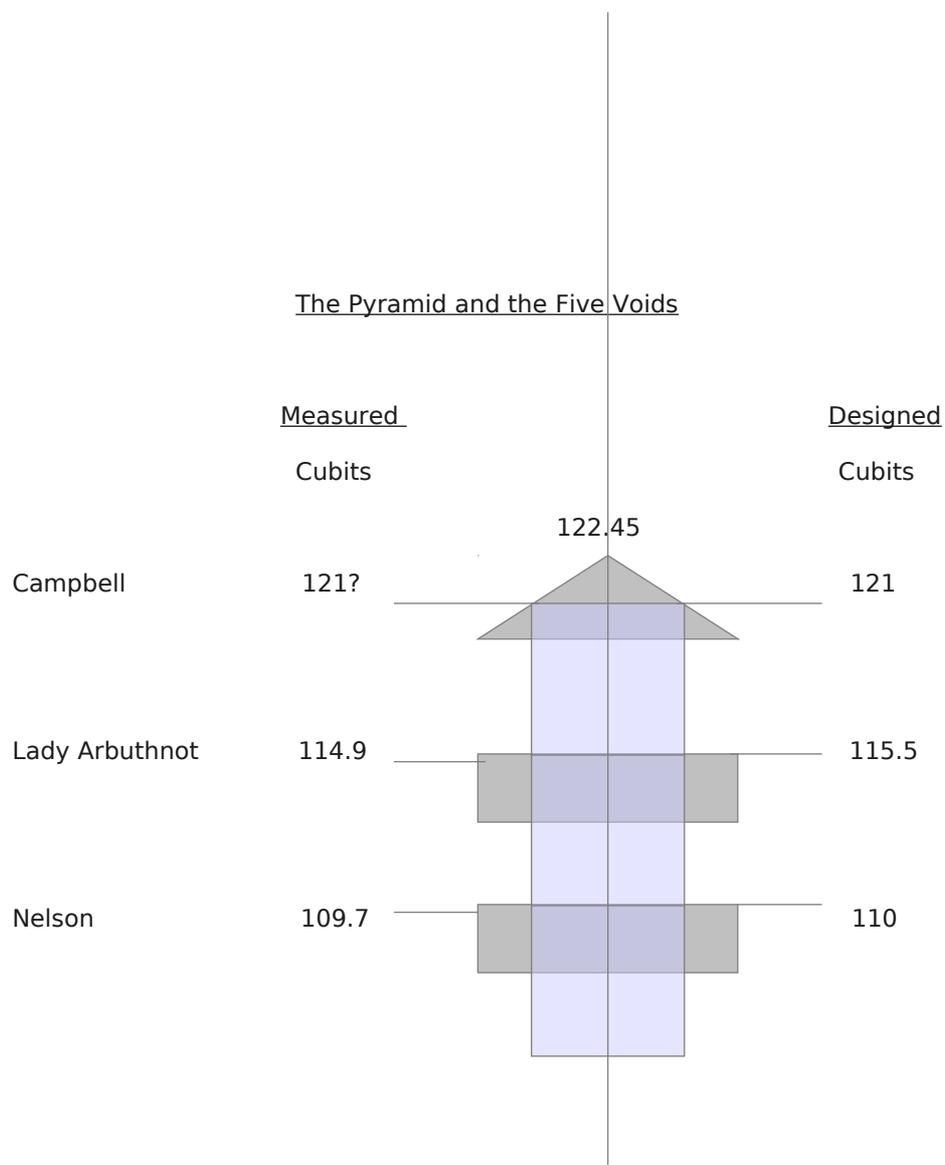
Suddenly it was obvious!

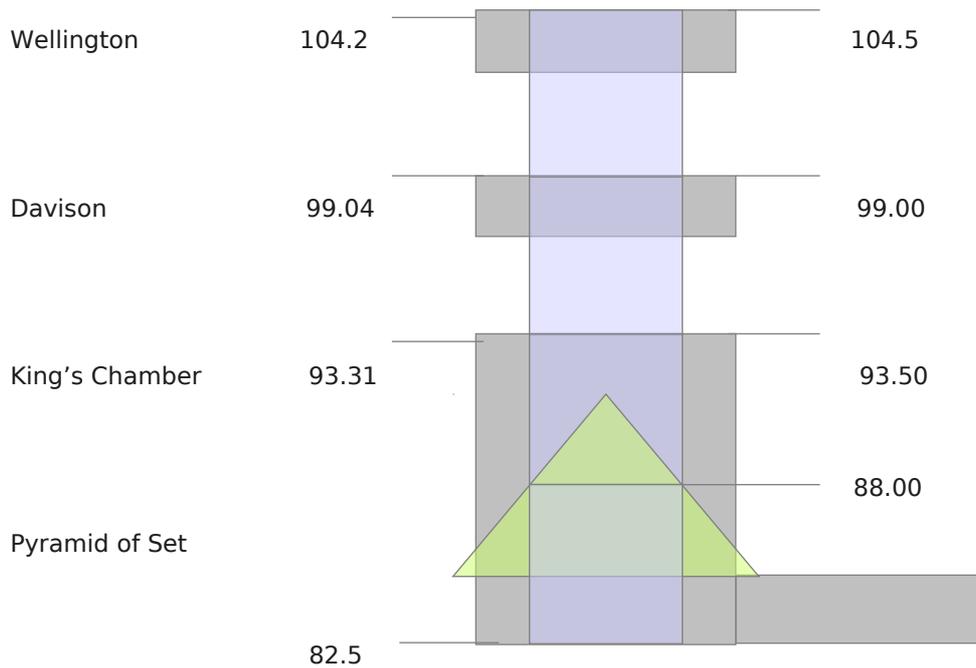
Looking at the stack of voids drawn out in section and forgetting the grossly uneven floors, and then looking at the Pyramid of Set sitting there in the King's Chamber with its pyramids squares of sides of 5.5 cubits intent on rising upwards, it was blindingly clear!

The pyramid squares did in fact rise upwards and their levels had been marked by the voids!

This was the reason for the Pyramid of Set!

What was needed now was to see how the levels would be compatible with the voids and with the pyramid as a whole!





If the level on the King's Chamber ceiling was influenced by the height of a pyramid square then that was starting the sequence of pyramid squares of sides 5.5 cubits, and beginning on the level of 82.5 cubits above base and then the ceiling at 93.5 cubits above base. The level as surveyed was 93.31 cubits and although this was in the vicinity of 93.5 cubits it was too low by 0.19 cubits. Was that due to survey problems? What about the voids?

Davison

The level of the ceiling was 99.03 cubits according to the engineers whereas it should have been $93.5 + 5.5 = 99$ cubits, according to the geometry of the squares. There is an extremely small difference of 0.03 cubits and the two levels are the same. That was promising.

Wellington.

The engineers give this level of the ceiling at 104.2 cubits above the pyramid base, where it should have been $99 + 5.5 = 104.5$ cubits above base. The two levels are again in the vicinity of each other but the survey level falls short by 0.3 cubits. That was acceptable.

Nelson.

The ceiling is 109.73 cubits above base according to survey, where it should have been $104.5 + 5.5 = 110$ cubits above base, a familiar number. The survey level again falls short this time by 0.27 cubits and that looks as if all survey levels above Davison are now falling short.

Lady Arbuthnot.

This is the uppermost void and because of that, any error would be expected to be the most extreme. The level given by the engineers is 114.89 cubits but it should be $110 + 5.5 = 115.5$ cubits above base. It falls short by 0.61 cubits.

Campbell.

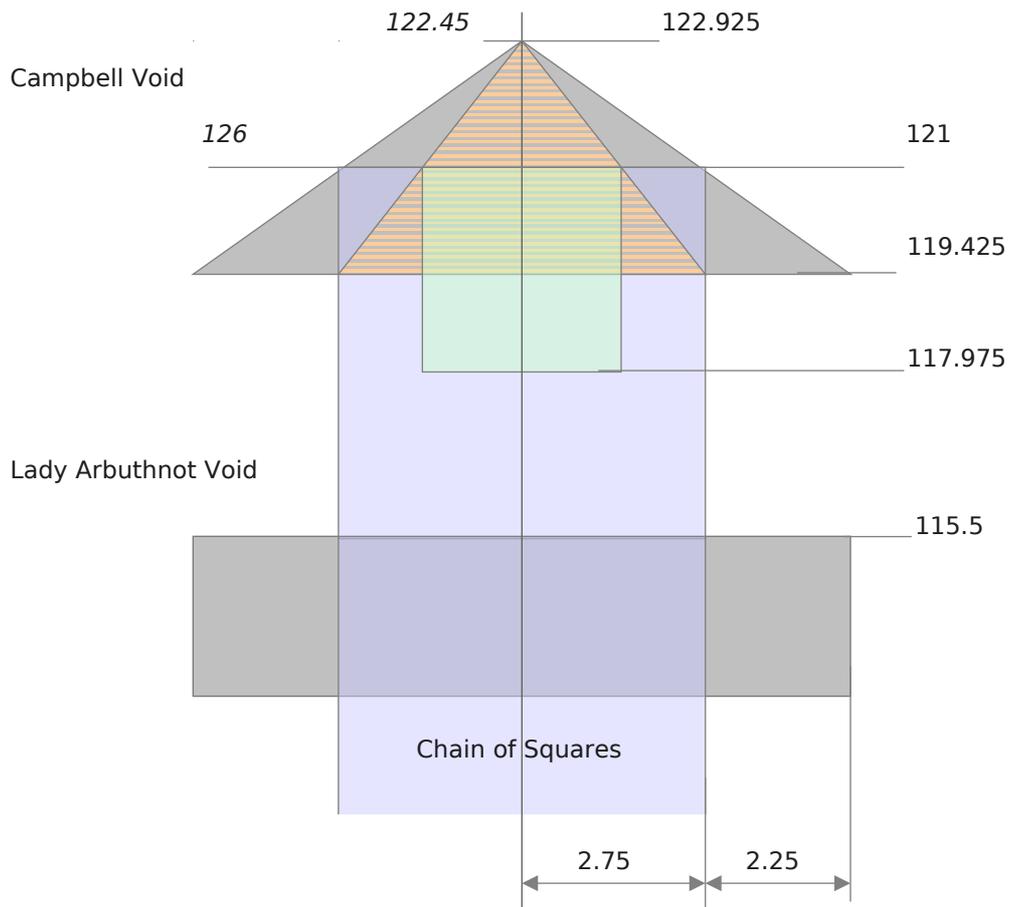
According to the engineers there is a height of 15.26 metres, or 29.13 cubits, from the top of the King's Chamber to the top of the ridged ceiling to give $93.32 + 29.13 = 122.45$ cubits above base on the ridge. That was not however the whole story, because this was a sloping ceiling and the pyramid squares rising up from the chamber below ought to have some point on which to terminate. Where was that point? There are 5 pyramid squares or 5.5 cubits on that distance and they would give a level of $115.5 + 5.5 = 121$ cubits above base in the vicinity of the ridged ceiling. The number 121 was an important pyramid number and that leads to the view that it could be meaning something.

The difference between the ridge level and the level on the pyramid squares is huge and there was probably a reason why that was so. It was the reason why the ceiling was pitched east to west, in just the same way as the ceiling of the Queen's Chamber was pitched east to west.

The truth was that these pitched ceilings were not built for structural reasons, as commonly assumed. They were geometrical. They were forming a pyramid triangle for a pyramid square that had abutted the slopes at 121 cubits above base. That was why the difference in levels was so large. It was the principle of squares and pyramids in operation again. Why not?

The Pyramid Square of the Campbell Void

The Great Pyramid on the Campbell Void



The slope, according to the survey drawings, measures very close to 34 degrees and the slope of the Queen's Chamber ceiling was 3.5 cubits high / 5 cubits half-base = $\tan 0.7000$. But and that was the slope of Set! $\tan 0.7000 = 34$ degrees 59 minutes 30 seconds and it must be the same angle given in drawn form. The engineers had not seen this angle as important but they had drawn it out and it scales very close to that. What a pity they had not thought that it meant very much but that was typical of the pyramid because there were many locations that did not seem important, but were important.

That would imply that the Queen's Chamber ceiling and the Campbell Void ceiling were using the same design since both were 10 cubits wide and both would be 3.5 cubits high for the pyramid square to abut the slopes.

What was needed now was to find out if there was any meaning behind the pyramid square at the end of the vertical chain that had surely abutted the slopes. The upper pyramid square will abut the slopes at a level of $2.25 \times \tan 0.7000 = 1.575$ cubits above the base of the Campbell triangle. The distance above that level to the tip will be $3.5 - 1.575 = 1.925$ cubits and so the level of the ridge above the Great Pyramid base will be $121 + 1.925 =$

122.925 cubits. That compares well with the 122.45 cubits as found from the survey. The levels are fairly very close together, enough for the geometry to seem viable.

Another pyramid can now be constructed on the pyramid squares rising upwards and its half base will be 2.75 cubits. That would make a slope angle of $3.5 / 2.75 = \text{Tan } 1.2727$.

What have we here?

We have that angle in tangent again!

These are the Great Pyramid base angles and they have created pyramid on the void that is $280 / 3.5 = 80$ times smaller instead of the 40 times smaller as occurs at the chamber.

There is a miniature Great Pyramid at the end of the chain!

It must be there for a purpose.

The pyramid square of sides 5.5 cubits can now be added to this miniature pyramid and it will abut the slopes on the void at 121 cubits above base for the pyramid built in stone.

The pyramid square will therefore have a half width of $(122.925 - 121) / \text{Tan } 1.2727 = 1.5125$ cubits and that number is already familiar. It is none other than 151.25 cubits, the exit point of the North Shaft, King's Chamber x 100. The square is of sides 3.025 cubits.

But the geometry does not end there.

There is another mystery here because the pyramid square ought to abut the pyramid slopes in a first phase operation as it did for the shafts, but it does not do that in this instance and so why does it not do that?

The level where the square abuts the slope is at 1.575 cubits above the base, but if that were seen at the Great Pyramid it would be $1.575 \times 80 = 126$ cubits above base. That was why the level of the level of the first pyramid square did not apply because it had abutted the slopes at 154 cubits above base, not 126 cubits above base. The level of 126 cubits had applied to the second pyramid square, not the first. That was why something strange was happening here.

Like everything else, there was a very good reason why.

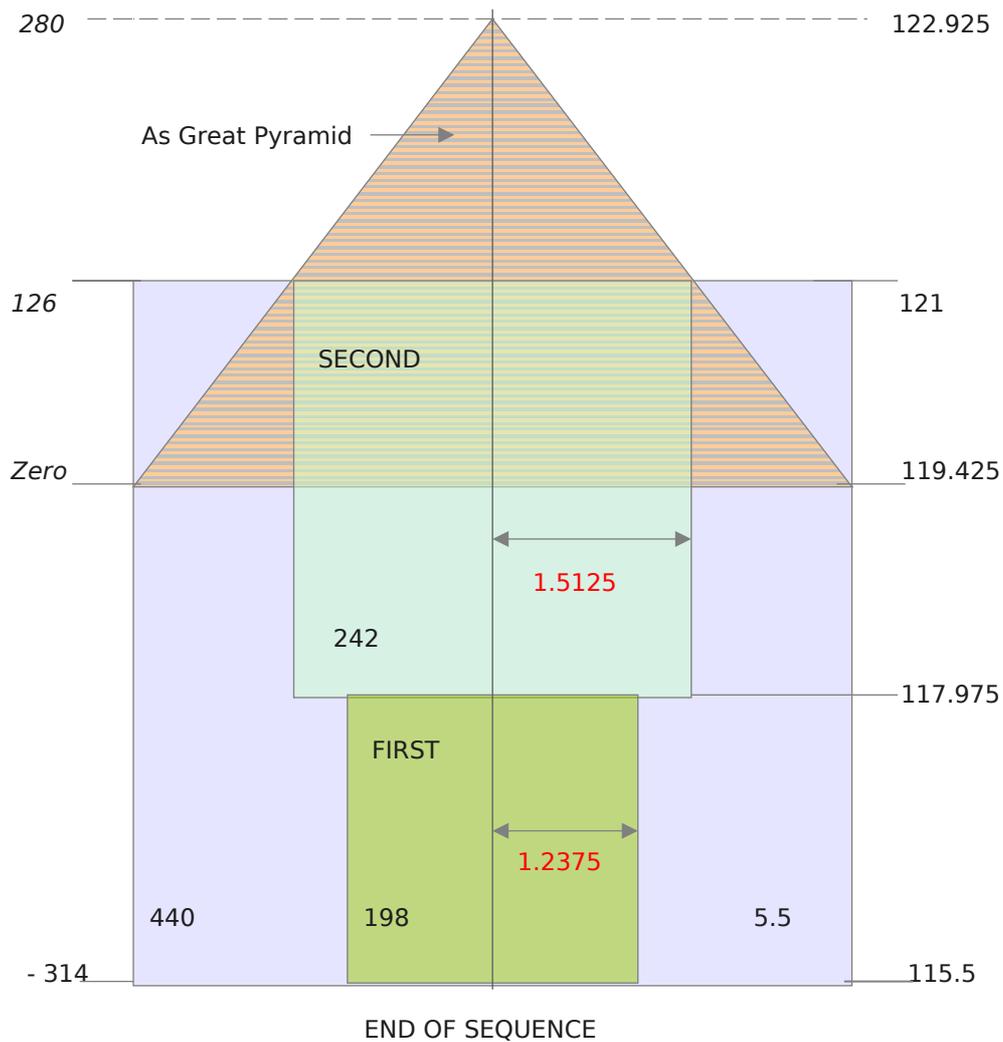
The upper pyramid square from the Pyramid of Set has now become the square on base of the Great Pyramid Square because $5.5 \times 80 = 440$ cubits. The pyramid at the Campbell void has transformed itself into the Great Pyramid. It carries with it the second pyramid square that was of sides 242 cubits on a half-base of 121 cubits at a level of 121 cubits for the full sized Great Pyramid. But at the Campbell Pyramid it was a difference story. Precisely the same level was not 121 cubits above base at all but 126 cubits above base as

already found. There was a difference of 5 cubits, and 5 cubits was also the height of the Crowning Pyramid on the original summit of the Great Pyramid, now taken up by a mast.

The Stopping Point on the Chain of Squares

At Voids Pyramid

At Great Pyramid



The second pyramid square of sides 242 cubits extends below the pyramid base and into the square of sides 440 cubits to leave a remainder of $440 - 242 = 198$ cubits. That was another jolt to the system because 198 cubits was the length of side of the first pyramid square that had come off the shaft exit points of the King's Chamber at 154 cubits above base.

It was a miracle and it had been planned!

Now we know why the squares were in reverse order. It was brilliant! It was logical! It would prove the reason why the Campbell Void had a sloping ceiling. The first pyramid square had been intended to take the role of the second pyramid square, but instead of abutting the pyramid slopes, it had been re-directed to place itself between the base of the second pyramid square and the base of the last of the chain of squares rising up for the King's Chamber below. It was intended to create a termination point.

That was extraordinary!

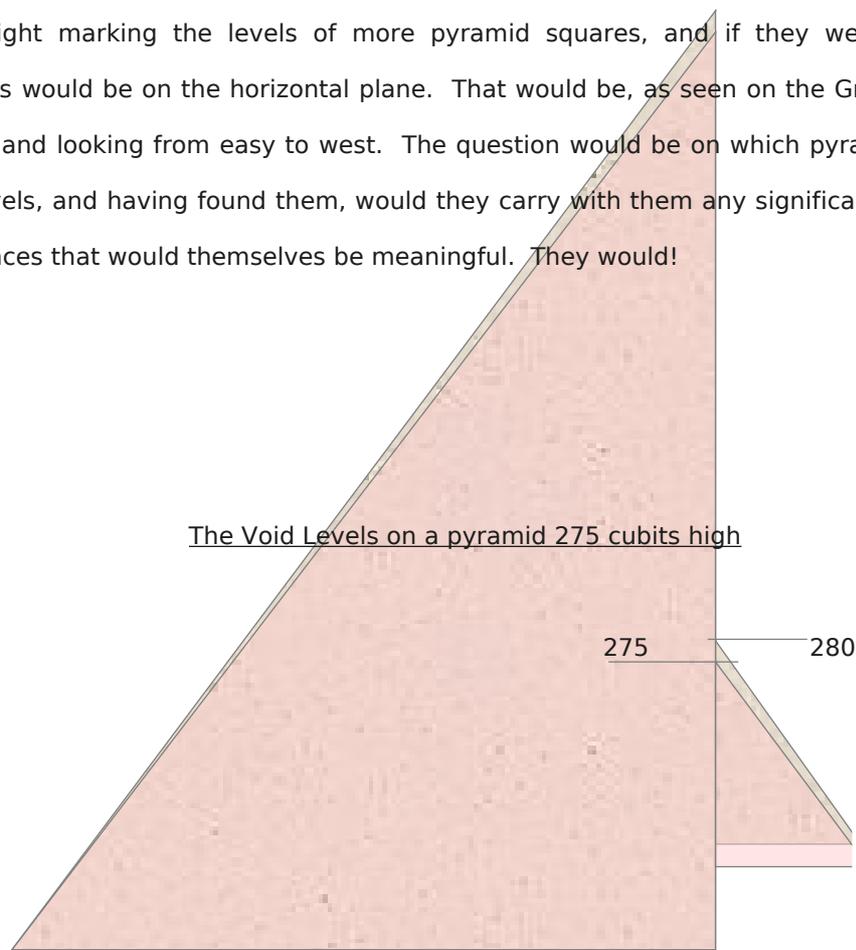
The first pyramid square, now acting like a second pyramid square, would still have sides 198 cubits long at the Great Pyramid, but at the Campbell Pyramid $198 / 80 = 2.475$ cubits long. The half width of the square would be $2.475 / 2 = 1.2375$ cubits long, and 123.75 cubits had been the level above base of the second pyramid square for the north shaft exit point (not the south shaft as previously) at the Great Pyramid, but 100 times greater.

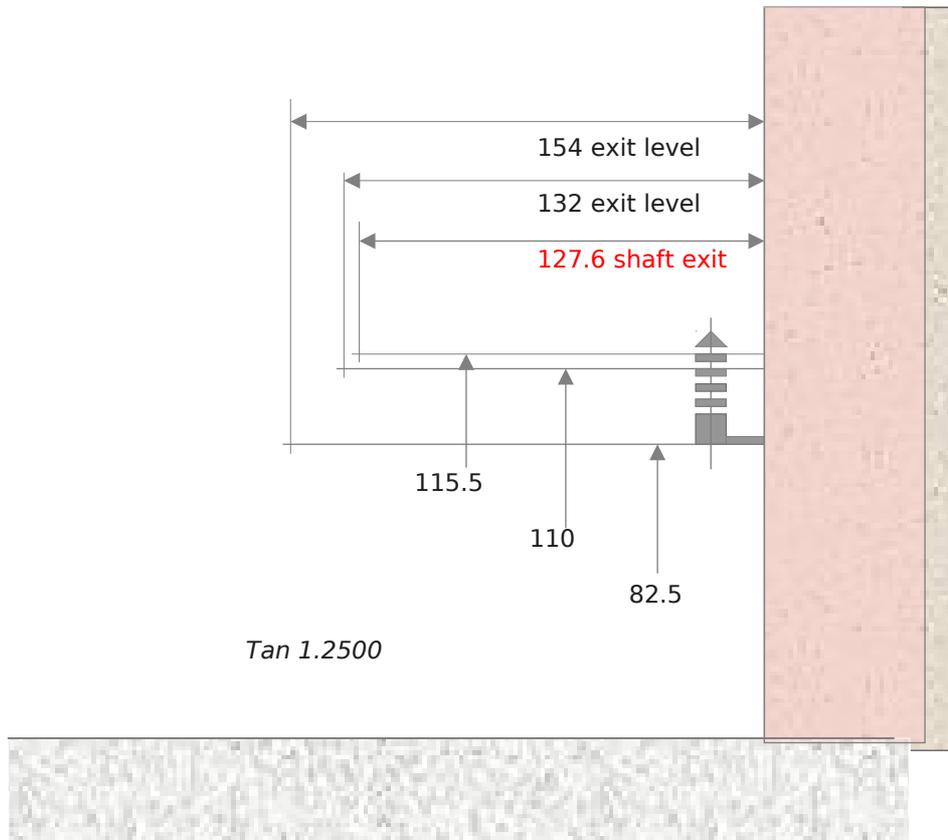
The Levels on The Voids

The chain of pyramid squares rising from the Pyramid of Set must then have been real and true if the geometry that had emanated from them had followed a logical path, as indeed it had. That would say that the levels were marking something else and it had to do with the Great Pyramid as a whole.

There had been one pyramid built in stone and three invisible and notional pyramids. If that were the case then all of the levels on the voids must carry a mathematical relationship with the four pyramid slopes and the four pyramid base angles.

They might marking the levels of more pyramid squares, and if they were then the distances would be on the horizontal plane. That would be, as seen on the Great Pyramid section, and looking from east to west. The question would be on which pyramids and at what levels, and having found them, would they carry with them any significance in terms of distances that would themselves be meaningful. They would!





The first things to discover is that the void levels bear no relationship with a built pyramid that is 280 cubits high. They were built only for the three invisible and notional pyramids, and for that reason it would be impossible to discover what they meant without using tangents with cubits, and without first having interpreted them from the shaft exit points by using pyramid squares. The numbers check out.

$$275 - 121 = 154 / \text{Tan } 1.2500 = 123.2 \text{ cubits}$$

$$275 - 115.5 = 159.5 / \text{Tan } 1.2500 = \mathbf{127.6 \text{ cubits}}$$

$$275 - 110 = 165 / \text{Tan } 1.2500 = \mathbf{132 \text{ cubits}}$$

$$275 - 104.5 = 170.5 / \text{Tan } 1.2500 = 136.4 \text{ cubits}$$

$$275 - 99 = 176 / \text{Tan } 1.2500 = 140.8 \text{ cubits}$$

$$275 - 93.5 = 181.5 / \text{Tan } 1.2500 = 145.2 \text{ cubits}$$

$$275 - 88 = 187 / \text{Tan } 1.2500 = 149.6 \text{ cubits}$$

$$275 - 82.5 = 192.5 / \text{Tan } 1.2500 = \mathbf{154 \text{ cubits}}$$

From these answers it will be seen that...

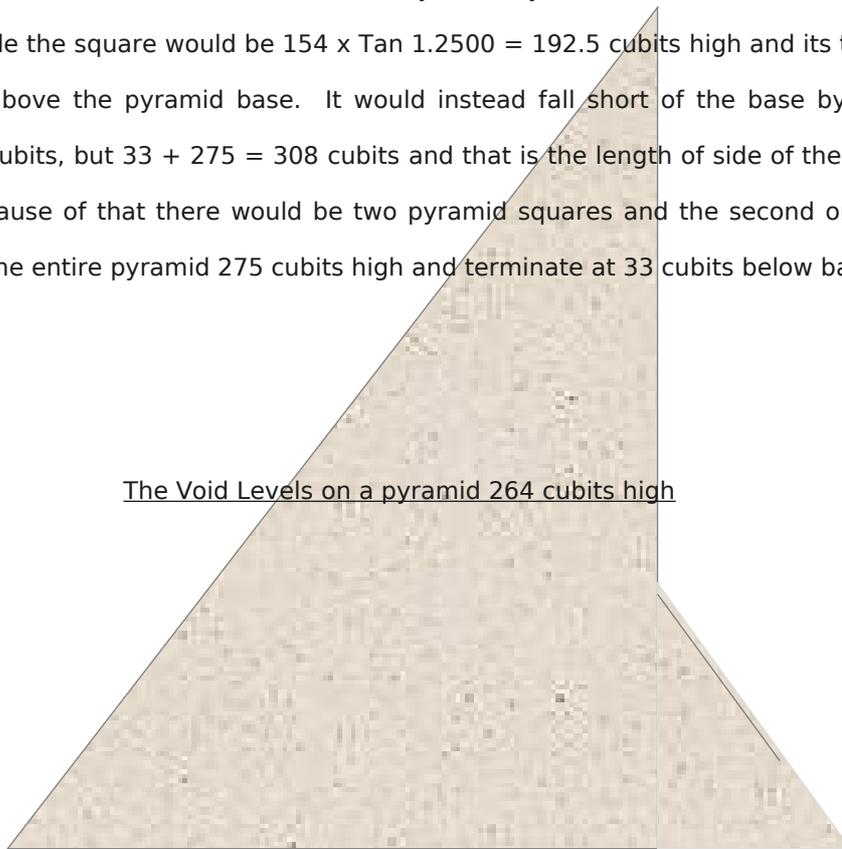
127.6 cubits was the exit point level above base for the South Shaft, Queen's Chamber for a pyramid 264 cubits high. The distance would give a pyramid square of sides $127.6 \times 2 = 255.2$ cubits extending below base by $255.2 - 115.5 = 139.7$ cubits with a pyramid inside the square $127.6 \times \tan 1.2500 = 159.5$ cubits high, with its tip $159.5 - 139.7 = 19.8$ cubits above pyramid base. That is 10 times smaller than 198 cubits, the length of side of the first pyramid squares for the King's Chamber shaft exit points.

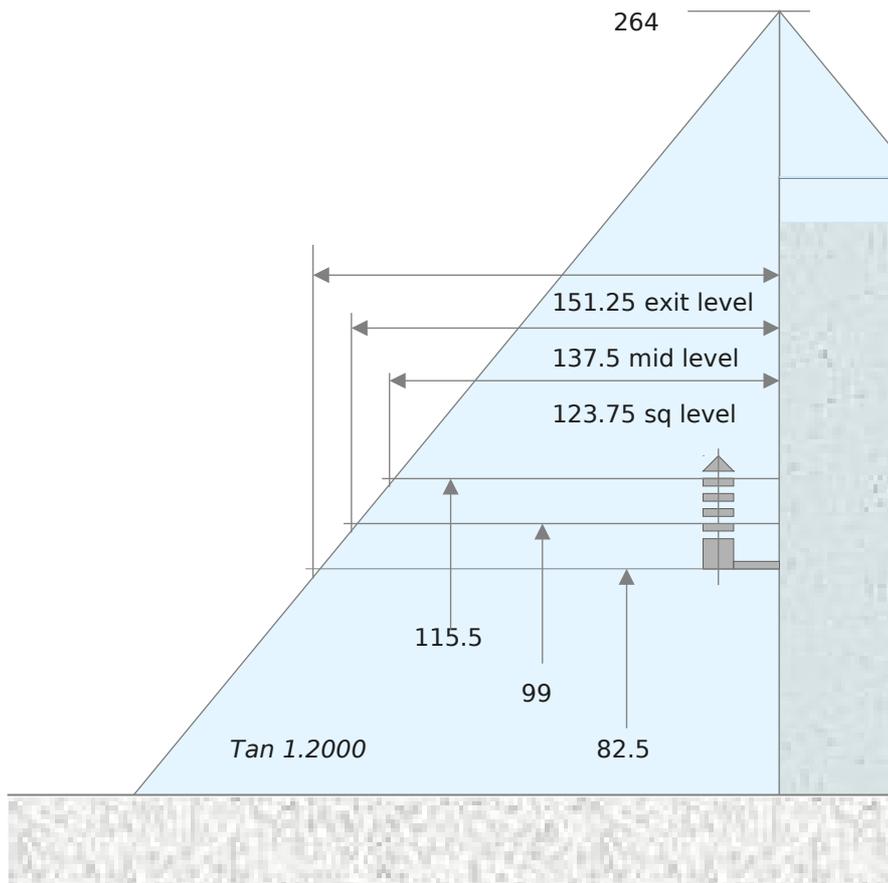
132 cubits was the exit point above base for the Slope on the Diagonal of the South Shaft, Queen's Chamber, for a pyramid 264 cubits high and it would give a pyramid square of sides 264 cubits, the height of the pyramid relating with the South Shaft, Queen's Chamber.

The pyramid square extends below the base of the Great Pyramid by $264 - 110 = 154$ cubits, and that was the level of the exit point of the South Shaft, King's Chamber. A pyramid inside the square would be $132 \times \tan 1.2500 = 165$ cubits high, and that was also the height of the Optimum Square that had related only with a pyramid 264 cubits high. The tip would then extend above pyramid base by $165 - 154 = 11$ cubits, and 11 cubits will give 25 layers on a pyramid 275 cubits high. It was also the sacred pyramid number.

154 cubits was the exit point level above base for the South Shaft, King's Chamber, for a pyramid 280 cubits high. It would give a pyramid square of sides $154 \times 2 = 308$ cubits and it would extend below the base of the Great Pyramid by $308 - 82.5 = 225.5$ cubits. The pyramid inside the square would be $154 \times \tan 1.2500 = 192.5$ cubits high and its tip would not extend above the pyramid base. It would instead fall short of the base by $225.5 - 192.5 = 33$ cubits, but $33 + 275 = 308$ cubits and that is the length of side of the pyramid square. Because of that there would be two pyramid squares and the second one would encompass the entire pyramid 275 cubits high and terminate at 33 cubits below base.

The Void Levels on a pyramid 264 cubits high





$$264 - 121 = 143 / \tan 1.2000 = 119.1666$$

$$264 - 115.5 = 148 / \tan 1.2000 = \underline{123.75}$$

$$264 - 110 = 154 / \tan 1.2000 = 128.3333$$

$$264 - 104.5 = 159.5 / \tan 1.2000 = 132.9166$$

$$264 - 99 = 165 / \tan 1.2000 = \underline{137.5}$$

$$264 - 93.5 = 170.5 / \tan 1.2000 = 142.0833$$

$$264 - 88 = 176 / \tan 1.2000 = 146.6666$$

$$264 - 82.5 = 181.5 / \tan 1.2000 = \underline{151.25}$$

123.75 cubits was the level of the second pyramid square coming off the exit point level of 151.25 cubits above base for the North Shaft, King's Chamber, and a pyramid 275 cubits high. It was also the level of the top of the square that had produced the vertical rectangle 127.75 cubits high to give levels of 41.25 cubits on the original Queen's Chamber floor before it was hacked up. Then 41.25×2 had given 82.5 cubits for the level of the invisible geometrical floor of the King's Chamber. The half width distance of 123.75 cubits will give

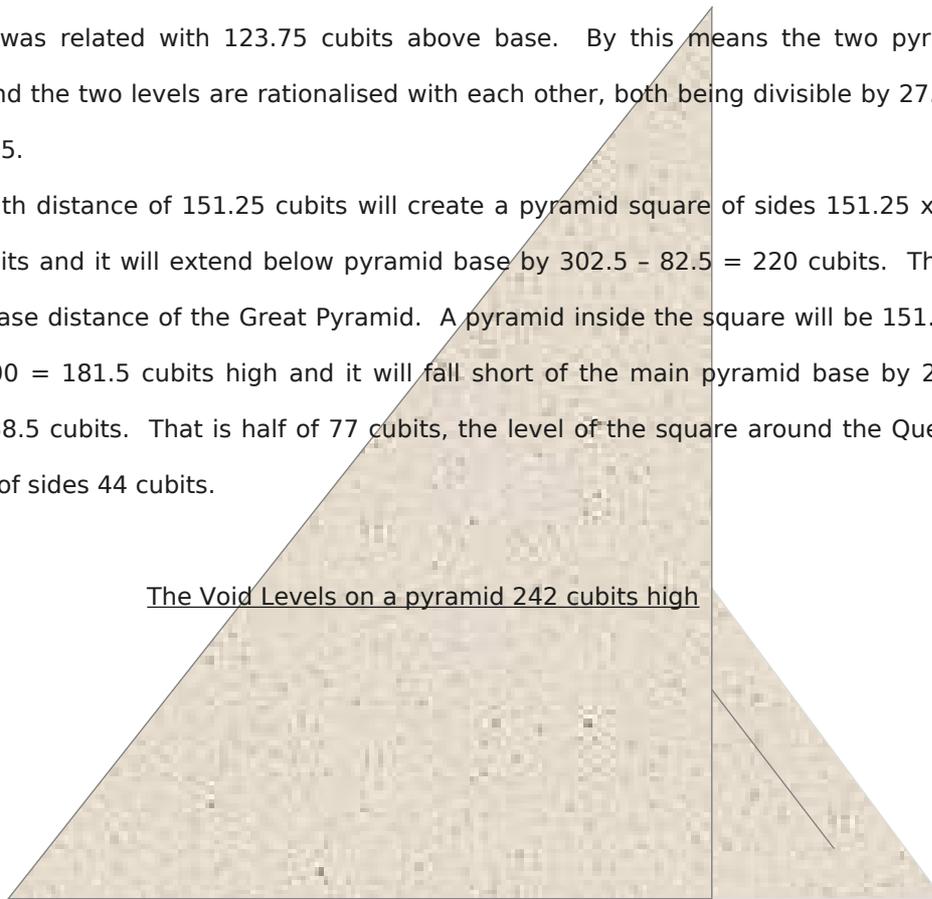
a pyramid square of sides $123.75 \times 2 = 247.5$ cubits, and the square will extend below the pyramid by $247.5 - 115.5 = 132$ cubits. That is half the height of a pyramid 264 cubits high. A pyramid inside the square will be $123.75 \times \tan 1.2000 = 148.5$ cubits high, and its tip will extend above the main pyramid base by $148.5 - 132 = 16.5$ cubits. That is ten times smaller than the height of the Optimum Square, in whole number cubits, only for a pyramid 264 cubits high, and 16.5 cubits will divide a pyramid 264 cubits high in 16 layers exactly.

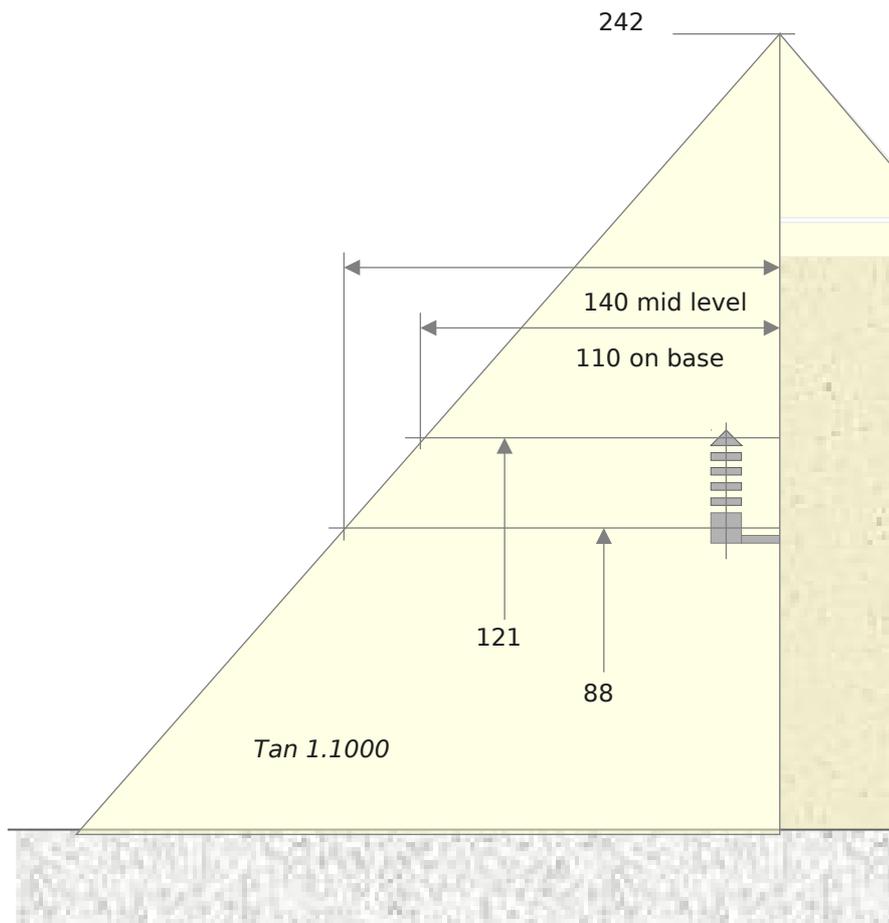
137.5 cubits was the level of half the height of a pyramid 275 cubits high that had also come off the North Shaft of the King's Chamber, and if the level is divided by ten it gives $13.75 / 8 = 1.7187$ cubits, the design height of the stone courses that exist on the walls of the Queen's Chamber. A half width distance of 137.5 cubits will give a pyramid square of sides 275 cubits, the height of the first invisible pyramid, and it will extend below the pyramid base by $275 - 99 = 176$ cubits. A pyramid inside the square will be $137.5 \times \tan 1.2000 = 165$ cubits high, and that is again the height of the only Optimum Square that will fit inside this pyramid without leaving a gap or surplus and then do it in whole number cubits. The tip of the pyramid inside the square will fall short of the main pyramid base by $176 - 165 = 11$ cubits, and that will give 24 layers of 11 cubits on the pyramid above.

151.25 cubits was the level of the exit point of the North Shaft of the King's Chamber for a pyramid 275 cubits high, where this dimension is coming from a pyramid 264 cubits high. The void level of 82.5 cubits above base was also the level over the King's Chamber floor and that was related with 123.75 cubits above base. By this means the two pyramid heights and the two levels are rationalised with each other, both being divisible by 27.5, in 5.5 and 4.5.

A half width distance of 151.25 cubits will create a pyramid square of sides $151.25 \times 2 = 302.5$ cubits and it will extend below pyramid base by $302.5 - 82.5 = 220$ cubits. That is the half base distance of the Great Pyramid. A pyramid inside the square will be $151.25 \times \tan 1.2000 = 181.5$ cubits high and it will fall short of the main pyramid base by $220 - 181.5 = 38.5$ cubits. That is half of 77 cubits, the level of the square around the Queen's Chamber of sides 44 cubits.

The Void Levels on a pyramid 242 cubits high





$$242 - 121 = 121 / \tan 1.1000 = \underline{110}$$

$$242 - 115.5 = 126.6 / \tan 1.1000 = 115$$

$$242 - 110 = 132 / \tan 1.1000 = 120$$

$$242 - 104.5 = 137.5 / \tan 1.1000 = 125$$

$$242 - 99 = 143 / \tan 1.1000 = 130$$

$$242 - 93.5 = 148.5 / \tan 1.1000 = 135$$

$$242 - 88 = 154 / \tan 1.1000 = \underline{140}$$

$$242 - 82.5 = 159.5 / \tan 1.1000 = 145$$

Every level on the voids and on the King's Chamber below, for a pyramid 242 cubits high, give answers in whole number consecutive cubits, in horizontal multiples of 5 cubits. Of the numbers that emerge, 110 is 4 times smaller than the Great Pyramid base, and 2 times smaller than the half base, and 140 is 2 times smaller than the height.

110 cubits will create a pyramid square of sides 220 cubits and it will extend below the base of the Great Pyramid by $220 - 121 = 99$ cubits. A pyramid inside the square will be $110 \times \tan 1.1000 = 121$ cubits high, and its tip will occur at a level of $121 - 99 = 11$ cubits above the main pyramid base to give 22 layers of 11 cubits on a pyramid 242 cubits high, which is the pyramid number.

140 cubits will create a pyramid square of sides 280 cubits, which is the same length as the height of the Great Pyramid at another 280 cubits. By this means a pyramid 242 cubits high creating the level connects with another pyramid 280 cubits high through the mid-point level of the King's Chamber at 88 cubits above base.

The pyramid square will extend below the base of the Great Pyramid by $280 - 88 = 192$ cubits and a pyramid inside the square will be $140 \times \tan 1.1000 = 154$ cubits high. That was the level of the exit point for the South Shaft, King's Chamber, and from where the geometry had first begun.

The pyramid tip will then fall short of the Great Pyramid base by $154 - 121 = 33$ cubits to give 33 layers of 7.3333 cubits on a pyramid 242 cubits high, the 6th level up from pyramid base being $7.3333 \times 6 = 44$ cubits, the datum level at the Queen's Chamber, and 7.3333 cubits above the mystical double square that was 36.6666 cubits high.

HISTORICAL INTERPRETATIONS

There is ancient record that says that King Djedefra, son of Pharaoh Knufu, had tried to build his own pyramid in the image of the Great Pyramid supposedly built by his father. He had managed to build a small and uninspiring monument that had reached a height of a mere 67 metres compared with 146 metres for the Great Pyramid, before it had then collapsed into an undignified pile of rubble. If that was the case, then the size, the complexity, and precision, that was seemingly available to the Great Pyramid builders, perhaps of Knufu, was strangely and inexplicably unavailable to his son. That does not make any sense at all. It only makes sense if neither had any idea of how to go about planning, and building an edifice of such magnitude and exactitude as that of the Great Pyramid. That would mean that the pyramid was already there, at the time of these pharaohs, and if they were associated with it at all they could only have done so through adoption.

Such a view would contradict most orthodox opinions of those who maintain that Knufu had indeed built this pyramid. If that were true then quite obviously he had taken the 'know-how' with him to his grave, and denied it his son, and successor. How then might he have done that? The pharaoh would have employed literally thousands of people, many of them highly skilled and many who knew the secrets because it was they who had laid them in stone. Unless Knufu had eliminated a cast of thousands before he died, he could not possibly have eradicated all of the knowledge and all of the experience that had been gained a few years previously. It would have been like trying to un-invent the wheel. Why, in anycase, would he wish to deny his knowledge to his son if indeed he actually had this knowledge? If Knufu had adopted the Great Pyramid as his own, then it had already existed in his time and the dating of the building of the pyramid to the period of his reign must then have been wrong.

Mark Lenher in his *Complete Pyramids* manages to give the dating of the Great Pyramid to the 4th dynasty, or around 2500 BC, but he insists on giving the pyramid dimensions in metres when he must know that it would have been built in ancient Egyptian cubits. He declares that the very few pyramids that were earlier than those built on the Giza Plateau were of the pharaohs Djoser, Sekhemnet, and Khaba, all of the 3rd dynasty. Of these, only the Djoser pyramid at Saqqara was finished, and even then only to a height of 60 metres, or around 114 cubits. The other two pyramids had then remained unfinished at heights of

an uninspiring 7 metres and 20 metres. It is certain therefore that the pharaoh Knufu had not learned how to build the Great Pyramid from the earlier pharaohs, assuming he had built it at all.

After the 4th dynasty there were numerous pyramids stretching the length of the Nile. There were seven built during the 5th dynasty, four built during the 6th dynasty, one built during the 8th dynasty. Then there was an explosion of pyramid building during the 12th dynasty when another seven were built, ending with the pyramid attributed to the pharaoh Amenemhet III. Pyramid building then ended abruptly in the 13th dynasty when just two minor pyramids were built but not one of them ever came to within a thousand miles of the Great Pyramid in terms of physical construction or mathematical complexity.

The Early Records

There is no absolute certainty of the dates of the building of any of the pyramids. There are simply no existing records. The one person who might have known the truth about ancient Egypt was the scribe and priest Manetho who wrote a history of Egypt for pharaoh Ptolemy II. The history was then lost, but scraps of it were translated about 600 years after his death. Those that survive were able to list the pharaohs, but very little was told about the building of the pyramids, or by whom.

The earliest Arab reports state that the pyramids were built before the Deluge by a king who thought that the world was about to turn upside down. This king, un-named, had seemingly collected all of the knowledge of the world, the astronomy, the geometry, the science, the physics, the machines, and even bendable glass, inside these pyramids for safekeeping. It sounds like an improbable story but parts of it could resonate around the secrets of the Great Pyramid even if with no other such pyramid.

The earliest Hebrew accounts were probably those of the historian Josephus, born 37 BC, who makes a vague reference to what the Bible termed 'pillars of stone' but these might have been anything. He said that it was the Sethites, inventors of wisdom, who had preserved their knowledge inside two monuments, the second said to have existed at the time of Christ. There is a peculiar connection between Set, Egyptian God of Intelligence, and these Sethites, for Set was also called Seth. There might have been a connection.

The Greek historian Herodotus who came to the Great Pyramid in 450 BC, made the earliest written record of any visit to the Great Pyramid. Nine books of his were written in the Ionic dialect dealing with the histories of Persia, Lydia, and Egypt. He recorded having

entered the Descending Corridor and reaching the unfinished pit at the bottom where he reported the existence of water. He would have known nothing of the Ascending Corridor above, because the stone plugs had by then been released and the masking stone in the ceiling of the Descending Corridor was in his time still in place.

The Greek geographer Strabo had followed him in 24 BC. The outer pyramid casing stones were intact and inscriptions in different languages were said to have covered the four pyramid slopes. Modern Egyptologists tend to call them graffiti, implying that they carried very little significance but examples of stones with these inscriptions are virtually non-existent today and so there is no evidence? Strabo reported that he had found the pit at the bottom of the Descending Corridor filled with vermin. Many centuries were then to pass. The north located entrance door was closed and its position forgotten. No one knew where the entrance was because the casing stones had been so accurately made that no clue remained. Then the Romans occupied Egypt from 30BC until 395AD when the country came under Byzantine control. That lasted until 642AD when the Arabs under Haroun-Al-Rashid ruled Egypt.

Caliph Al Ma'Mun

Haroun-Al-Rashid had two sons, Al-Atnin, and Al-Ma'Mun. The first died and the second son Al-Ma'Mun became ruler. He was a very learned man and a scientist who founded the Great Library in Baghdad known as The House of Wisdom because it had effectively supplanted the famous library in Alexandria. The Caliph had learned from sources that the Great Pyramid might contain information including what were known as star maps. It was these star maps rather than any treasure that had induced him to come to the pyramid in AD 813, intent on forcing his way in. He appears to have known which side to approach for he had gone to the north pyramid face where lay hidden the entrance doorway. Being unable to find the door, he had set his men to work with hammer, and chisel, at a point where he thought the entrance might be located at pyramid centre, but the ancients had already thwarted him by placing the corridor and entrance at some distance east of pyramid centre. They had cleverly predicted that anyone trying to force their way in would approach the centre. The result was Ma'Mun's Hole that can be seen today on the north face.

His men had worked for months and were about to give up, believing that the pyramid was solid stone throughout, when a crashing noise was heard inside. That had given them new

heart and they renewed their efforts until at last they broke into the Ascending Corridor from its side, and to the west. There they found the six stone plugs still in place after they had been released. These were broken away allowing them access to the Grand Gallery and to the King's and Queen's Chambers above. There was no treasure. There was nothing at all. The chambers were all empty except for the strange stone box. The theory goes that the crashing noise was made when the masking stone at the tip of the first plug had worked loose and fallen into the Descending Corridor below. Without that loose stone there would have been no crashing sound and the workers would have departed without finding anything.

That raised a significant question mark that can only be speculated upon. Why would the plugs have been released in order to bury a pharaoh forever if the body of a pharaoh was not inside the pyramid when the plugs were released? That was a contradiction in terms. It must imply that the Great Pyramid was not built as a tomb but for an entirely different reason. Who would have possessed the authority to give the order that the plugs should be released, if not the pharaoh? It could not have been Knufu himself, for why would he want to seal his own pyramid with him buried elsewhere, if this was his pyramid? Why would he have gone to the trouble to build the pyramid with burial chambers, and then seal an empty pyramid?

The Pillaging of the Pyramid

The last person who left a record that the Great Pyramid was still intact, and with its casing stones in place, appears to have been Abdul Latif who came to the pyramid in the 1200 and recorded that the inscriptions on the pyramid slopes were so numerous that they would cover thousands of pages of script. Had there been a message on those slopes?

The 4th Crusade began two years later in 1202 and by 1212 some 40,000 Christian zealots had sailed to Palestine and to Egypt. The 5th Crusade under Frederick II of Germany ended in disaster but the 6th Crusade under Saint Louis IX of France set out in 1248 and took the port of Damietta on the Nile Delta. They had then moved on Cairo where Christians would have first set eyes on the pyramids, and they came under attack. Religious fanatics had also broken off the phallus of the Osiris, husband of Isis, at the Temple of Philae. The casings stones of the pyramids at Giza, including Great Pyramid were now being stripped away. The Khafra pyramid nearby suffered too but not so extensively as the Great Pyramid, where the evidence shows that this was done systematically, and with intent.

One reason for this put forward by many Egyptologists is that there was an earthquake in 1222 that had damaged Cairo and that the pyramids had become quarries for the stone that was needed for repairs. This explanation would be more convincing if there was evidence of such stones 'with inscriptions' that can be still be seen in ancient buildings in Cairo of today, but none are known to exist. There is evidence, however, that when the Great Pyramid was first being recorded in the west there existed a mountain of small stone chippings from stones taken from the pyramid that had risen so high as to block the cavity at the entrance left behind by Ma'Mun. There is a possibility, therefore, that the stones that had defined the outline of the Great Pyramid, and carried these inscriptions, were broken down to obliterate any evidence of the original tips, outlines, or inscriptions. Any view of the Great Pyramid as seen today will show that it was stripped 'evenly' and that the operation had included the summit. If the pyramid had been used as a quarry, then the obvious place from where to take the stones would have been at ground level and at the four corners. That would have avoided the dangerous need to scale the pyramid like a mountain inclined without footholds and at an impossible angle of 52 degrees to the ground. One slip would have been fatal, but there is no sign that it had been quarried from the corners, and so the builders had gone about this in the most hazardous manner that they could contrive.

Another account says that Sultan Hassan had used the pyramid casings to build his mosque in Cairo in 1356. That implies that 100 years after the earthquake, there were still many of casings in place, enough to build the mosque. These were all finely finished casing stones and they were made universally with an inclined face. An example exists at the British Museum and if these particular stones were to be used to build a wall then the inclined faces would have rendered them useless as a brick.

William of Baldensel was the next to come to the pyramid in 1336 and he stated that he had seen Latin inscriptions on the casing stones and that they were in good condition. Then there is the 1395 account of Barand Anglure who claimed that by then the violation of the Great Pyramid stones was going full-scale. After that, and it would be three hundred years before anything more of substance would be known about the Great Pyramid, outside Egypt.

John Greaves and Isaac Newton

John Greaves came to the Great Pyramid in 1638. He spent much of his time investigating the King's and Queen's Chambers after having been unable to reach the full extent of the Descending Corridor because he found it filled with debris, that is, the stone chippings that had by then accumulated around the entrance. He was the first to discover a crevice beneath a stone at the base of the Grand Gallery and descending into a hole below. What then was this vertical passage intended to be? There can be only one answer. It was a means of escape for those who were to set the plugs in motion in order to seal the pyramid forever. Because of that it was by definition an illicit shaft addition, because most certainly it was not part of the original pyramid design. It could not possibly have been included surreptitiously while the pyramid was going up around it and so it must have been tunneled later, another hazardous operation. That would explain why Caliph Ma'Mun had not found the skeletons of those who had set the plugs in motion when he first broke in. The men who had released the plugs had escaped taking everything else with them. Greaves wrote up these discoveries in his *Pyramidographia* when he arrived back in Oxford, and much of it was spent trying to establish the original unit of measurement used. He was made Savilian Professor of Astronomy at Oxford, and his data was then to reach Cambridge and fire the imagination of Isaac Newton who was probably the first to deduce that the King's Chamber was based on a cubit. Newton was to become secretly obsessed with the Great Pyramid because he believed he had seen a connection between its dimensions and those of the First Temple of Solomon. He had even gone to the trouble of drawing up a plan.

Nathaniel Davison and the First Void

Davison followed John Greaves to the pyramid in 1765 and he found the first of the strange voids above the King's Chamber that now carries his name. He too had visited the King's Chamber and on returning through the Grand Gallery he had looked up had seen a crack in the highest part of the Gallery. Working his way into the space he came upon the first of the five voids immediately above the chamber. It was completely empty and its walls were devoid of any markings whatsoever. That small fact would lead to much controversy concerning later claims attributing the pyramid to Knufu.

Napoleon and Pyramids

Napoleon had in his early years read much about the Great Pyramid and he had become very interested in it because, like Newton before him, he too was a mathematician. He often had pyramids on his mind and he had inadvertently demonstrated this during his first military campaign in Italy where on taking Milan he had ordered that the Catholic priests of Milan Cathedral were to build eight pyramids as a punishment to Rome. They were intended to commemorate those fallen in battle but his choice of 'pyramids' with the number 'eight' was significant because the Great Pyramid was known the 'Isis Pyramid' and the Egyptian number for Isis was eight. Napoleon was student of history and he might have borrowed this idea from Louis XIV who had done much the same thing in 1661 when he ordered Pope Alexander VII to build a single pyramid inside the walls of the Vatican. This pyramid was also intended as a punishment because the French king knew that pyramids were an abomination to the Church of Rome. This earlier pyramid had been intended to publicise the Pope's disgrace after the Vatican's Corsican Guard had dragged the French Ambassador's wife from her coach. So enraged was Louis XIV that not only did he order that the pyramid was to be built but he had personally designed it as well.

Then in May 1798 Napoleon set sail for Egypt at the head of an armada of 400 ships and 55,000 troops. His official reason for this campaign was that he intended to block the British trade routes to India but his real reason was to investigate the mysteries of Egypt. He was intent on a scientific investigation of the pyramids. Egypt then came under the control of France after the Battle of the Pyramids in July 1798 when he had drawn up his men in front of the Great Pyramid and had addressed them with the words, "Soldiers, from the height of these pyramids forty centuries look down upon you".

Napoleon visited the upper chamber of the Great Pyramid with his guide Imam Muhammed on the anniversary of the French Revolution in August 12, 1799. It was to be a very strange place by which to commemorate such an important event for France and by a great leader of France. He entered the pyramid and spent many hours alone inside the upper chamber, ordering that he was not to be disturbed. When he finally emerged his officers noticed that he was looking pale and thoughtful, so much so that his aide asked him if he had witnessed a mysterious presence. Napoleon had replied that he had no comment to make, adding that he never wanted the incident to be mentioned again. He continued to say nothing until he was on his deathbed on St Helena when he was about to confess to what he saw to his aide Las Cases, when he shook his head saying quietly to

himself, “no, what’s the use, you will never believe me.” No one knows what he actually meant.

Howard-Vyse and the Five Voids

The British Officer, Colonel Richard Howard-Vyse came to Egypt in 1836 intent on making more pyramid discoveries. He had offered to fund the work of Giovanni Battista Caviglia who had already investigated the ‘escape shaft’ found by Greaves. Caviglia had descended to its full extent and was the first to discover that it did emerge at the bottom of the Descending Corridor, confirming the means of escape. Howard-Vyse had wanted Caviglia to investigate the Great Pyramid for signs of any other hidden chambers in exchange for ‘sharing the credit with him’ if any were found. He then went away but was infuriated to find on his return that Caviglia had been searching for mummies. He sacked Caviglia, and in February 1837, hired an engineer named John Perring to investigate a crack that had appeared in one of the walls of the Davison void. Howard-Vyse had then hired men to break their way into the next void above by using gunpowder. There was another void above that of Davison, and he called it the Wellington void. He was the first to see inside after dismissing all who were there before making his entry. The next day he returned with John Perring and a local handyman called J.R.Hill. They found that the void was also completely empty except for a thick black dust. On the following day another engineer named Mash accompanied them and it was only after this second visit that they began reporting a number of markings on the walls in red ochre, but strangely, none were found on the wall through which they had forced their way with explosives. They claimed that there were a number of cartouches on the remaining walls and that they were indicating the name of a pharaoh. Because another void had been found above that named after Davison, Howard-Vyse had reasoned that there could be yet more above those. During the next few months of blasting with gunpowder, the remaining three were found, terminating with the uppermost with the pitched ceiling which he called the Campbell void. Copies of the cartouches in all voids, other than Davison’s, were sent to Samuel Birch, expert in hieroglyphics at the British Museum. He testified that they identified the name of the pharaoh Knufu, and Howard-Vyse became famous. Later on, Birch was to admit to some misgivings. The cartouches had been marked upside down on the walls. Why would that be if they were intended to proclaim the pharaoh? Such a thing could be taken as an insult. Why indeed hide them away in a void supposed never to be

seen by man if they were to proclaim the pharaoh? The inscriptions were supposed to be of the period around 2500 BC but they were very crudely done whereas other cartouches of this period were usually very well executed. Then there were symbols from a later period when hieroglyphs ceased to be pictures and had begun to take the form of writing. Either Samuel Birch had been genuinely mistaken or he had been influenced in some way. In addition it was also found that not only was Knufu named but another pharaoh 'Khnem-knuf' was named and his name was on a void that was lower than Knufu's name, implying that he came first, if the pyramid had been built from the ground upwards.

All of these things came to the attention of another researcher named Zechariah Sitchin who wrote a series of books that he called *The Earth Chronicles*. He was summarily dismissed as a lunatic for expounding the theory that the Great Pyramid had been built by visitors from the 12th planet 500,000 years ago. Sitchin noted that Howard-Vyse had dismissed Caviglia on the day after his secret visits to the Davison void, and then his workmen on the day they broke in. The chronicles of Howard-Vyse later confirmed that J.R.Hill was sent in by day to mark the five voids with the names he had given them, that is, Wellington, etc, but accepted knowledge of hieroglyphics at this time was in its infancy. The Rosetta stone, on which all translations were based, had not been found until Napoleon's expedition in 1799. If Hill had planted cartouches as referred to in books he could have got it wrong. Both Hill and Howard-Vyse were known to have done much rushing about around Cairo when a new book about hieroglyphics had reached Egypt, and this book had given a new interpretation of the name of Knufu. That could well have been the reason why the names of two pharaohs had been found within the voids, because the second pharaoh had been added in haste. Nonetheless, the name of Howard-Vyse remains hallowed in the halls of Egyptology, and it was he who had connected the Great Pyramid with the pharaoh Knufu.

John Taylor and the value of Pi

The London publisher John Taylor was probably the first to see a connection between base of the pyramid and the height, and to understand why the sides of slope were 52 degrees. He decided in 1864 that it had originally sloped at that angle because the ratio between its height and base was also intended to be the same as the ratio between the radius of a circle and its circumference. At a stroke he had implied that the pyramid builders were considerably more advanced in mathematics than they had been credited with if they knew

the value of Pi, but he did not then know the original pyramid height, or the length of base, and so he could not have calculated it out to find the truth.

Piazzi Smyth and the Queen's Chamber Shafts

The two shafts of the Queen's Chamber were unknown when the Astronomer Royal of Scotland, Piazzi Smythe, visited the Great Pyramid in 1865. He took his wife Jessica with him and spent some four months camped nearby. He declared on his return to Scotland that it was only by 'Divine Inspiration' that the Great Pyramid could have been constructed, and like Zechariah Sitchin before him, he lost much of his credibility with his peers. He had also spent much time trying to discover the unit of measurement used and had decided that it was a cubit 25 inches long, but E.B. Denison, a scientific contemporary, otherwise known as Lord Grimthorpe, an expert with clocks, decided that his cubit was wrong and the correct answer was staring him in the face. Denison stated that it was 20 inches long, that two hundred and eighty of them made the height, where four hundred and forty of them made the base. He was very nearly correct. Smythe had by now decided that two shafts were missing in the Queen's Chamber and he dispatched the engineer Wayman Dixon to the pyramid in 1872 to locate them. He was convinced that they existed but how, has remained something of a mystery. Wayman Dixon with his helper Bill Grundy had soon found the shafts and Smyth was proved correct. It was a miracle. Grundy had hit the bulls-eye first time, each time, and twice. No one had any idea of the location of the missing shaft openings inside the chamber or even if they existed at all. No one knew which wall they were on or where in any particular wall they would be found. Grundy had gone to the centre of the north and south walls at the correct level and there they were! Solid stone had blocked each shaft opening at the wall face and each shaft had been carefully and precisely made and just as carefully hidden entirely away. How strange that was, unless Piazzi Smythe had made some secret calculations of his own that revealed their probable location, never disclosing that to anyone Dixon.

Inside the horizontal part of the north shaft were found a piece of cedar wood, a granite ball, and a bronze hook. After much hunting around in recent times they were eventually found hidden away in the British Museum. The ball and the hook-shaped implement are now on display, but unfortunately not the piece of cedar wood because it has been lost. This small piece of wood could have positively dated the pyramid construction and was certainly of very great importance when seen in the light of the unknown genesis.

Dixon and Smyth had by now become close friends when in 1875 Dixon was sent to collect Cleopatra's Needle from Egypt and erected on the Thames Embankment, near Charing Cross, in London. Dixon's brother John wrote to Smyth from Egypt in November 1872 and in his letter he reporting the discoveries made within the north shaft. He brought them back to England packed them into a cigar-box, and posted them to Smyth in Scotland who then made descriptive notes of them in his diary. After that, he seems to have lost interest in them and sent them back to London where they were kept at Sir John Soanes Museum in Lincoln's Inn Fields. The curator of died in 1876 after placed them in a jar on the roof of the building

Abney and the Mast at the Summit

During this period, the elusive Transit of Venus Party decided to make their expedition to the Great Pyramid in 1874. The timing suggests that they had been in contact with Piazz Smyth for some other divine inspiration because the planet Venus carries five occultations, in two orbits around the Sun, every eight years relative to Earth. The 5-pointed Star of Venus had always symbolized the five-sided pentacle in occult society. It was these same people who had then climbed to the summit of the Great Pyramid and erected the mast that was to represent the original pyramid height, in cubits. If they knew the height in cubits it begs the question of how they knew given that they had pre-dated Petrie's survey by six years. The history of this group of people is hard to find but it can be traced to the Royal Astronomical Society who say that Sir George Airy, Astronomer Royal at Greenwich, had mounted the expedition led by William de Wiveleslie Abney. His party had camped in the Mokattam hills near Cairo, and a map that they had drawn there shows that not only had they erected the mast at summit but they had drawn lines of longitude on the pyramid tip, which they showed as being 30 degrees 1 minute 46.4 seconds north of the equator, and 2 hours 5 minutes and 24 seconds east of Greenwich. In order to place the mast so accurately they must first have known the true height before the tip stones were lost sometime in the 13th century. These people were astronomers, but there is no record that they knew the original design height or that they knew the existing height of the pyramid before they set out. Their expedition appears to have been something of a failure from the astronomical point of view. They must have surveyed these heights while in Egypt and then had manufactured the mast that remains to this day to the correct height. Why had

they seen that as relevant to astronomy, and what had been their motivation in linking the pyramid with the planet Venus?

The First Great Pyramid Survey by Petrie

Flinders Petrie who knew, and had been in contact with Piazzi Smythe, followed The Transit of Venus Party to the Great Pyramid in 1880. He went there loaded down with large quantities of accurately made instruments. He too had camped on the Giza Plateau for two years while he conducted the first accurate survey ever to be made of the Great Pyramid. The results of his findings *The Pyramids and Temples of Gizeh* were published in London in 1883 and ever since have been recognized as the definitive reference work for all scholars of the pyramid construction. Petrie had acknowledged the existence of the Venus Party in his book, and had he not done so, it is almost certain that they would have never come to any sort of public notice outside the world of astronomy. He confirmed that the pyramid height to the top of the Abney mast was accurate to within half an inch of 280 cubits. There was though a problem with Petrie's work. His findings were in tabulated form, not drawn. The result was that his dimensions, though detailed, were non-specific where they related to points being measured and this would later give rise to considerable ambiguity as to what was being measured.

The Edgar Brothers

John and Morton Edgar then made their expedition to the Great Pyramid in 1909. They were intent on finding physical proof for their theories that the Great Pyramid was built from mystical origins. They had followed in the footsteps of Zechariah Sitchin and Piazzi Smyth who had earlier made very similar claims. Some of their findings are shown on other surveys but they had paid particular attention to the slope angles of the two main corridor systems suggesting that they were aware that the geometrical double squares existed there.

Cole, Borchardt, and the Corner Stones

Petrie's work stood until J.H.Cole and L Borchardt, a German archaeologist, decided to return to the Great Pyramid in 1925 to carry out a re-survey. This suggests that they had seen some limitations in Petrie's Survey. Their findings were to strip away any lingering doubts about the original base dimensions. They discovered that the original corner stones of the Great Pyramid had remained buried in the sand, untouched and lost for centuries.

With the corner stones they were able to establish the original lengths of base, and orientation, from the four original sides. Even then, the findings were not conclusive because the four sides varied very slightly in length, and were subsequently taken as the literal fact of the original intention.

The First Architectural Survey

The Italian engineers Rinaldi and Maragioglio carried out their survey, *which is used in this account* in 1965, and it was fundamental to everything known at the Great Pyramid. It was an architectural style survey and of paramount importance because they had presented the findings in a series of large-scale drawings. That had meant that any ambiguity had been eliminated and the reader could tell exactly where dimensions began and where they ended. The same would apply to levels within the pyramid because the many positions, as well as their value, were also shown on these drawings. Unless they had themselves made errors, then this was the one and only means by which all statements could be regarded as reliable. They had unfortunately given their dimensions in metres, to only to two decimal places, and that meant that a conversion was needed for the original cubit dimensions. They had given a series of section drawings through the two chambers and on the corridors and shafts, and where levels applied on the floors, they were shown as well. Even more importantly, they had shown the positions of the stone jointing lines within the chamber walls, and those joint lines were highly relevant to the original pyramid geometry.

Rudolf Gantenbrink and his Robot

Gantenbrink came to the Great Pyramid in 1993. By now necessary to obtain permission from the authorities for access to the pyramid, and his permission was for the cleaning away of debris from the two shafts of the King's chamber and in particular, the south shaft. His purpose was to investigate the slope angles of the four shafts emanating from both the King's and Queen's Chambers. He had constructed an ingenious crawling machine for this purpose. The machine was small enough to pass through the 9-inch square shafts and powerful enough to climb the steep gradient on caterpillar tracks. The machine carried lights, a video camera, and a clinometer for measuring gradient as the machine progressed upwards, and everything was controlled from the chamber below. It was during his investigations that the small door was found in the south shaft of the Queen's Chamber giving rise to worldwide media interest. The authorities in Cairo refused to give permission for this door to be opened and until they do it will be an area ripe for speculation. His

machine had also entered the north shaft of the Queen's Chamber, and traversed the horizontal portion but was thwarted when it attempted to climb the gradient because, unknown to him, the shaft diverts sideways causing a kink in the lateral plane that made it impossible for the machine to pass. The result was that this particular shaft remains undiscovered but for its lower portions.

Politics at the Pyramid Tip

Robert Bauval in his book *Secret Chamber*, published just before the Millennium for the year 2000, had depicted a golden coloured tip pyramid placed on the truncated summit of the Great Pyramid, and emblazoned on its front cover of his book. To anyone with knowledge of the hidden geometry, this had at first seemed to say that Bauval himself had the knowledge. In fact the secret chamber that he was referring to was either between the paws of the Sphinx nearby, north of the King's Chamber inside the stone of the Great Pyramid, or beyond the door in the lower south shaft that had been found by Gantenbrink. There were no specific secret chambers but some politics concerning the small flat space at the summit of the Great Pyramid. The flat summit was suddenly attracting the attention of the Egyptian Government concerned with the coming Millennium for the year 2000. The pyramids on the Giza Plateau were going to be the focal point for the celebrations, with particular attention being paid to the Great Pyramid. Bauval had reported that Doctor Zawi Hawass, Director of the Giza Plateau and the spokesman for the Egyptian Supreme Council of Antiquities, had announced before German-Austrian television in February 1999 that at midnight on the 31st December 1999 a military helicopter would fly over the summit of the Great Pyramid with a golden pyramid shaped icon slung beneath it, and it would place this icon on the summit of the Great Pyramid at the stroke of midnight. While this occurred the people would cheer like the old way. At the same time, the door in the south lower shaft would be opened and whatever existed beyond would become known. According to an interview with Dr Hawass published in *The Irish Times* of 18th April 1999, the idea had come from a relief that had been found at Abu Sir, another place of pyramids, where he had discovered a Egyptian scene depicting some ancient workers dragging behind them a pyramid shaped object with the hieroglyph word for 'white gold' written beneath. In the background there were women dancing. Dr Hawass had interpreted this as the time when the pyramid had finally been built and was complete but for its capstone. The people had been rejoicing as it was being placed at the summit.

These were bold announcements but since they had come with the backing of the Egyptian authorities, the decision to draw worldwide attention to the Great Pyramid, and at such an important time in world evolution, had already been made. On the 3rd October 1998 a press conference was called in Cairo for Farouk Hosni, the Egyptian Minister of Culture, and Jean Michel Jarre, the French composer and wizard of electronic music who had just completed a display marking the bicentennial of the French Revolution in Paris. The event had featured the placing of another pyramid tip in front of the Grande Arch de la Fraternite, the Arch of the Brotherhood, namely the Freemasons. Minister Hosni had explained that an opera composed by Jarre called *The Twelve Dreams of the Sun* would be performed in front of the pyramids to coincide with the placing of a golden capstone on the summit of the Great Pyramid to mark the end of the Second Millennium, and Jarre himself had said that since the pyramids were linked with the sun, he had decided that the last twelve bows would accompany the sun in the tradition of the pharaonic sun god Re. In ancient Masonic lore, the Golden Pyramid crowns the top of a pyramid and it carries with it many strands of religious significance to represent the Supreme Being under whom all of the world's religions can unite.

As anyone will know who viewed the Millennium Celebrations, there was music and dancing in front of the pyramids, Jarre was there with his displays, but there had been no military helicopter, no golden capstone, and the door in the shaft remained untouched. Efforts to find out why from the Cairo Museum have met with no response. Something had gone wrong between the time of the announcements and the time for putting them into effect. One can but speculate as to the reason why, but the practicalities were clear. The politicians were embarrassed. The mast at the summit is still there. The summit would have needed some form of modification on the roughly distributed stones, if a manufactured object were to be properly placed upon it. That was not done either but the real reason why there was such a sudden change of mind could have been because of the numbers involved. The authorities had realised that certain questions about dimensions would be asked once it was in place and they did not want to answer those questions. If so, that raises the next question why?

The Rosicrucians were camped on the Giza Plateau and around the Great Pyramid there to wait the placing of the golden capstone, which they had hoped to witness, but they were Christian whereas Egypt is a Moslem country. The history of the Rosicrucians goes back in time to the Crusades and to the formation of the Knights Templar, the Poor Knights of

Christ who were anything but poor, and who were formed after discovering something of very great importance in the ruined foundations of the Temple of Solomon after Jerusalem had fallen. They had evolved into a number of secret societies including the Freemasons of today.

The Edgar Cayce Foundation

It is well established that the Rosicrucians had long seen a connection between the Great Pyramid and Jesus Christ, and one of their emblems actually shows a pyramid as seen from above with a depiction of Jesus at the pyramid tip, or in this case, at pyramid centre. This is most mysterious for there is no mention whatever in the New Testament of Jesus ever going near to the Great Pyramid or even that he knew it existed. All that comes near to such a possibility is the mention in Matthew 2; 13, that Joseph and Mary might have fled to Egypt from Herod after Jesus had been born in Bethlehem. But he was then a newborn baby and would have known nothing about it.

One particular group on the Plateau at that time was from the Association of Research and Enlightenment, mainly Americans from their base in Norfolk, Virginia. What then was their interest in the Great Pyramid? The Association of Research and Enlightenment is actually the Edgar Case Foundation with its many thousands of members spread throughout the world, and since 1973 they have been seeking to find the legendary chamber known as the Hall of Records that had presumably come from the citizens of Atlantis. Their prophet and founder Edgar Case had prophesied in 1932 that it would be found in the year 2000 and that it would be in the vicinity of the Great Pyramid. In pursuit of this the ECF had been able to secure several exploration licences from the authorities, including Doctor Hawass, to probe the area using radar and sonar. The researcher John West had investigated the motives behind the interest of the ECF at the Giza Plateau and he said that Edgar Case, a psychic, had predicted that in 1998 a chamber between the paws of the Great Sphinx would be opened to reveal the lost history of Atlantis and that the event would also herald the Second Coming of Christ. He had based this on advanced knowledge that this chamber had been located but that the authorities had refused plans to investigate it further. The investigations had actually already taken place in 1991, 1996, 1997, and 1998, and the principle source of the funding was Dr Joseph Schor who was the vice-president of a multi-million dollar pharmaceuticals and drugs conglomerate and also a life member the Edgar

Case Foundation. Although The Florida State University had fronted the expedition of 1996, it was Schor who had maintained control.

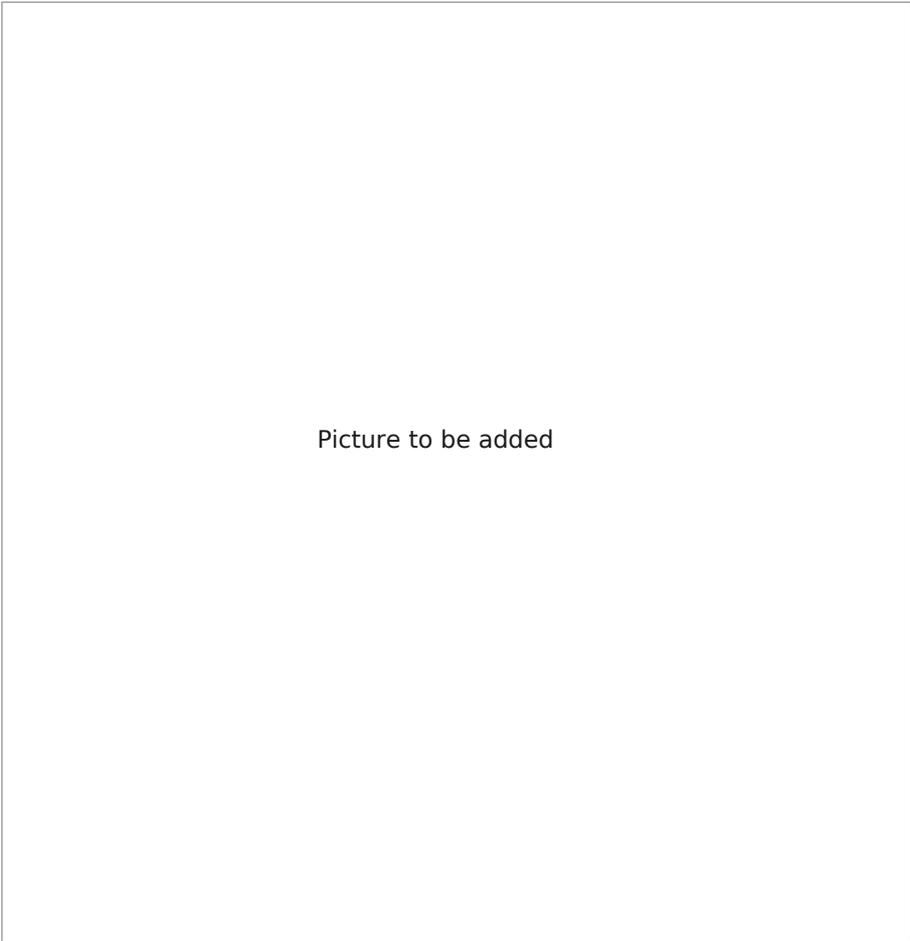
The other Cayce prediction was that at the end of the Second Millennium, a gilded capstone would be placed on the existing flat summit of the Great Pyramid, and so the announcement given by the Egyptian authorities was strangely in recognition of that even though they would later, and very quietly, retract from doing anything about it. Doctor Hawass had been chosen to oversee the Millennium Celebrations and with it, the placing of the golden capstone, after he had qualified in Egyptology at the University of Pennsylvania. His special subject was the Old Kingdom, the time when most of the pyramids were built, but Bauval had speculated that his selection could have occurred in 1978 after the Cayce Foundation had collaborated with the Stanford Research Institute, and when Zahi Hawass had first tried to locate the Hall of Records. Hawass had at that time met Hugh Lynn Case, the eldest son of Edgar Case and the then president of the ARE in 1975 through the American Egyptologist Mark Lenher, and this was because Lenher was Cayce's own Egyptologist. Hugh Lynn Case had masterminded that operation and after his death in 1984 his biographer, A Robert Smith, had laid claim that Hugh Lynn had been responsible for helping Hawass through the doors of the elite American Ivy League College because he was a member of the Fulbright Scholarship Board but Doctor Hawass has since vehemently denied this, or that Hugh Lynn Case was anything other than just a good friend. Just before his death, Hugh Lynn Case had announced a long term plan to find the Hall of Records on the Giza Plateau with the words; 'I'm never giving up. It is very important. If we get to the Old Kingdom it is going to make history. We are looking for the records. This is what the readings say of the Pyramids themselves and the Sphinx. We are looking for the Atlantean Records, which are buried there. We are looking for Hermes' records and his prophecy of his next reincarnation as Jesus. I think they are there, in front of the Sphinx. The Sphinx is guarding them. We are playing for all the marbles'.

The current president of the ARE is John Van Auken who has long known Doctor Hawass. For many years he too has been advocating the Second Coming of Christ and has written many books on the Cayce predictions. In one of his readings he mentions the celebrations that Cayce had predicted. In one of them dated 1932 and when asked about the records of Christ, Cayce replied, 'those records that are yet to be found of the Christ of the tomb, in those of the tomb, or those yet to be recovered in the pyramid in 1998'. He seems therefore to have been predicting that a major discovery at the Great Pyramid would be

made at the time close to the Millennium but he is not sure of its true nature. The Figure of Christ was often associated with the Egyptian god Osiris, and in 1998 Doctor Hawass announced the discovery of a Tomb of Osiris at or near Giza. Also in 1998 there were rumours on the Internet and in certain magazines that ex-president of the United States, George Bush, was connected with the Millennium Celebrations that were planned at Giza. In 1989, and eleven years before the event was due, the Millennium Society of America announced that George Bush was already committed to being present in front of the Great Pyramid on the night of the last day of the year 1999. But why would an American ex-president be interested in an Egyptian pyramid? Theories began to circulate that this was something to do with an elite fraternity at Yale University to which Bush belonged called the Skull and Bones, which uses the same symbol as that adopted by the medieval Knights Templar, and he became a member in 1948. His father Prescott Bush also became a member in 1917. It is well known that several of the US presidents were Freemasons, and the Declaration of Independence of 1776 was reputedly based on Masonic Orders. But if George Bush had attended the Egyptian Celebrations in front of the Great Pyramid there was never any mention of it in the media. Could it be that he was responsible for the unscheduled change of mind about the pyramid tip? Whether he was or whether he was not, the fact remains that the Great Pyramid was then, and as it is now, considerably more important to those with certain beliefs than would be appropriate if this edifice were simply an inert pile of stones. The answer must be that the pyramid is extremely important and so very mysterious that for a short while it had become entangled in official government policy. The unlikely reason was probably mathematical.

THE ANCIENT NUMBERS OF IDENTITY

The Great Pyramid was probably built for and dedicated to the ancient gods and goddesses of Egypt. The distances and areas within the pyramid, inside and out, were created in a form of a language where, instead of having names by using an alphabet they had been given names by using number? There are however, no ancient codebooks that have been handed down through the ages with the authority of the ancient builders stamped upon them that would say which number had related with what personality. They therefore have to be interpreted by other means, partly through legend and art, partly through inference from the evidence that exists, and partly through the mathematics that were an integral part of the pyramid.



Picture to be added

The Papyrus of Ani, Sheet 10470, British Museum

If there does exist any reliable source through which the main players may be identified it is in form of Egyptian art. There is one reliable source that probably points the way and it is the Papyrus of Ani, held by the Department of Egyptian Antiquities, at the British

Museum. This is one of the rare pieces of direct evidence that might be able to say which number had related with what ancient Egyptian personality. The papyrus is around 30 inches long and 9 inches high, dated to 1300 BC, and it is a very well executed example of Egyptian Art, which is displaying in very subtle manner the fact that certain sacred numbers were associated with certain gods and goddesses of Egypt who might then have been members of the Egyptian Royal Court. They were Set and Isis, Osiris and Nephthys, sometimes known as the Pantheon of Sion. The extract has been taken from Chapter 125 of the Egyptian Book of the Dead, and it is beautifully executed to show a scene from The Last Judgment. It shows the scribe Hunifer being presented to the God-King Osiris and attended by his sisters, the goddesses Nephthys and Isis. In the background there is a frieze of 35 snakes erect and it these snakes that are the means by which it is possible to find the link between Osiris, Nephthys, and Isis, and their sacred and somewhat obscure numbers of identity.

The snakes are so placed that they coincide with the headgear of these three entities but not with that of Set, who has been excluded. The Crown of Osiris is pointing the way for the tip of the Crown coincides with the level of the frieze of snakes as if it had been placed like that for a specific purpose. Then the 'dish-shaped symbol' worn on the head of Nephthys does the same thing. The 'seat shaped symbol' worn on the head of Isis follows. The headgear was the means by which all identification was made and so it would be appropriate if the headgear were so positioned that it would be directed on the relevant snake, and then the number of that snake counted from the left or right. There are 35 snakes on the frieze and there was a good reason why that number had been used. The scribes had known that there would be counting from the left, or from the right, and they had cleverly decided on 35 snakes because the rows of numbers counted in each direction, and added, would always give the answer 36. They knew that the snakes would in fact be counted. The number 36 was being preserved here and it has to do with the number $36 \times 10 = 360$, the number of degrees in a circle where $36 = 6 \times 6$, the sacred number of the great sun god Re, who was there too.

OSIRIS

The legends say that his brother Set, in a fit of jealousy, had murdered Osiris by tricking him into a box and setting it afloat on the Nile. He had later returned and cut the body into 14 pieces that he distributed about the desert. Isis, the wife of Osiris, had used the dog Anubis to help her find the 14 parts, and when she had collected them together she had

reassembled her husband at the Temple of Philae to create the Ka of Osiris. The Ka had then impregnated her after which she then gave birth to Horus, the bird with weak legs. Egyptian pharaohs were Horus Kings in life and Osiris Kings in death, and Osiris carried the number 14.

36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	↑													

On the frieze of snakes, the 14th snake is found by counting from the right and it coincides with the Crown worn by the Osiris seated on his throne in the Hall of Records. Then there are 22 snakes found counting from the left. The number 22 is familiar at the Great Pyramid for it is representing 22×10 to give 220 cubits on the pyramid half-base, and there are many other examples of the number 22 at the pyramid. Then $14 + 22 = 36$, the number for Re.

ISIS

The 'seat shaped symbol' was always associated with Isis because, according to Wallis Budge, late of the British Museum, the name 'seat' read in Egyptian actually means Isis. She was also associated with 18, the standard height of a seat, in inches. Her number of identity was 8 and the papyrus shows that the upper part of the seat-shaped symbol on her head will coincide with the 8th snake erect, counting from the right. It also coincides with the 28th snake, counting from the left. The number 8 for Isis is undoubtedly being depicted here. The 28 snakes counting from the left can give $28 \times 10 = 280$ and that could be Isis saying that the pyramid was 280 cubits high using the factor of 10. Since Osiris gives 22 on his remainder value, and Isis gives 28 on her remainder value, then it is perfectly logical to divide 28 by 22 to give 1.2727, the tangential value of the pyramid slope angle. The Papyrus of Ani is saying that tangents are being considered here on Isis and Osiris.

36	36	36	36	36	36	36	36	36	36	36
28	27	28	29	30	31	32	33	34	35	
10	9	8	7	6	5	4	3	2	1	
		↑								

Others associate her with the 28-day period of female menstruation and rejecting conception by making 28 her operative number. There are 3 snakes encapsulated by the dish shaped symbol on her head, and they appear on snakes 9, 10, and 11, counting from the right, and 25, 26, and 27, counting from the left. The sum of the first of these numbers is 30, where 30 divided by 10 is 3, the number of Nephthys. The sum of the numbers counting from the left is 78 and $78 + 30 = 108$ where 108 divided by 36 for Re = 3, her number of identity once more. Each pair of numbers added equal 36.

SET

The number of identity for Set, said to be the god of intelligence in man, was 7 and he had murdered his brother and cut the body into $7 + 7$ pieces. Then he had fought Horus, the son of the Ka of Osiris and of Isis and had taken out his eyes, which had fallen onto the desert sand, taken root, and grown into Lotus plants. Horus eventually overcame Set in battle and the papyrus shows Horus standing on 7 petals of the Lotus plant in front Osiris while seated on his throne. Set has been portrayed as the devil entity in opposition to Osiris.

RE

The legends say that the sun god Re became angry when he learned that Nut, goddess of the sky, had been with Geb, god of the earth, and he sent his son Shu, god of the Pillars of Light to intervene between them but Shu arrived too late because Nut had conceived. Re had then forbidden Nut from giving birth during any of his 360 days of the year, but Thoth, god of measure, took pity on Nut, played the moon at chequers and won for her a $1/72^{\text{nd}}$ part of the moon's light for her to give birth. The 360 days when divided by 72 equals 5, and Nut gave birth during the last 5 days in the Egyptian year. Five days were added to the Egyptian calendar of 12 months of 30 days making the 365 day solar year, a time that was called a holiday. The sacred number for Re was 6, and his operative number was $6 \times 6 = 36$ and with 360, the number of 'sun' days in one year.

In the papyrus there are 2 rows of 6 snakes centrally placed at the head of the chamber in which sits Osiris with his consorts. Both of these rows are depicting snakes erect with their heads turned in the direction of a central object that could be the sun. Because there are 12 snakes divided by 2, this might be saying that each of the numbers 6 apply to a half-base pyramid distance. In that event, there would be 6 each side a geometrical centre point, also shown by the 'urn shaped' objects each side of the chamber. This was implying

that a halving situation had existed and halving was prominent on the Great Pyramid geometry.

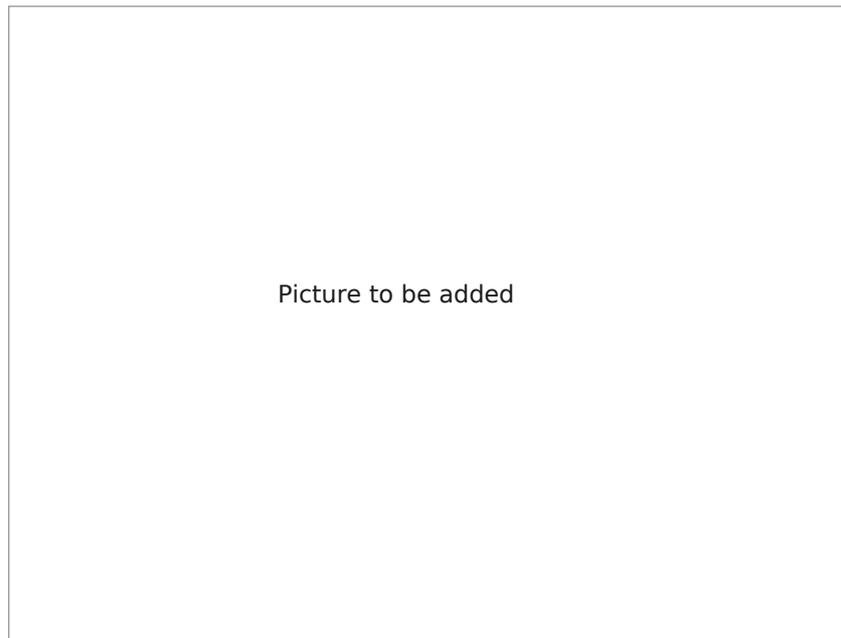
PYRAMIDS FROM ANCIENT CIRCLES

There had to be certain key numbers and they were in the hands of the gods for they came from earliest antiquity. The first of these numbers were probably 5, 8, and 10 and the reason why was established in the earliest of times, long before the first pyramid had ever been seen or contemplated. Then had come the unit to be used and it too was from deepest antiquity, the unit foot, and it was derived from the circle, the oldest of all of the known geometrical figures. There is evidence of this that exists today.

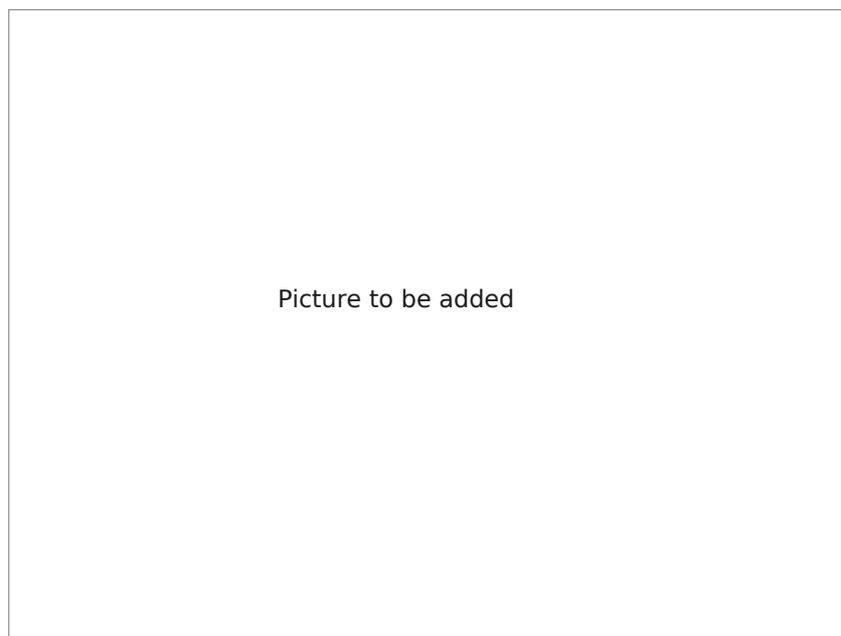
In the foothills of the Pyrenean Mountains of southwest France, south of Carcassonne, there is a rock formation called Serre de Bec whose slopes are facing towards the east, and on those slopes are numerous large boulders. Only the local people know about them for they are largely concealed under thick vegetation, but once exposed they reveal that they are covered with circles and they are all regularly formed and obviously man-made. There are hundreds of them around a metre in diameter, some dish-shaped and others dome-shaped but they are all on the east slopes and mostly facing towards the rising sun. How old they are is difficult to determine but they must be very old indeed and in reverence to the light giving, orange disc, that would have risen over the mountains to the east on the morning of each day.

Then there are the stone circles of Denmark that had been discovered at Torup Men Salgard in North Fenen and at Knydby- Horns Herred in Northwest Zealand. Some of these stones are at the Rinkobing Museum in Copenhagen and one of them displays a stone circle with eight spokes and five short strokes adjacent. The number five must then have been taken from the number of fingers on the human hand. These early people may not have known about any numbers by which to count, but they could interpret five fingers with a circle. Their other crude measure was the mature human foot. There were then five fingers, the human foot, and the circle marked with five bars. How then might that have evolved into a pyramid? Tons Brunes in his book *The Secrets of Ancient Geometry* was

able to show how early man might have discovered the basic of circle geometry through counting by division. They had seen the circles and had played on them by adding lines across them. The lines then became centerlines and they had crossed the circles on the circumference. After that, they had looked again at the crossing points and had decided to join them together. It was evolution.

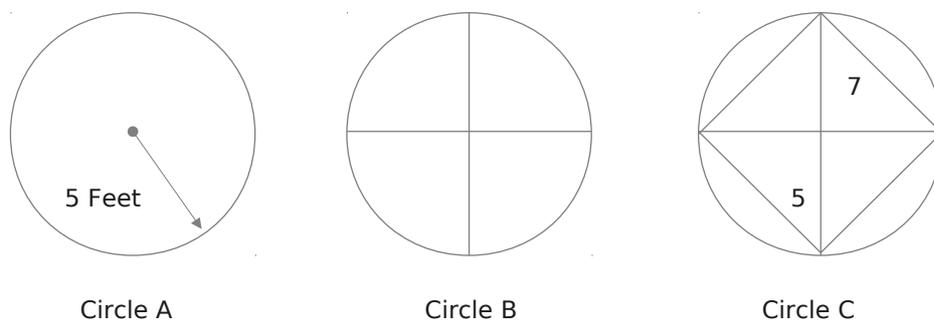


A rock cluster at Serre de Bec with dome-shaped circle

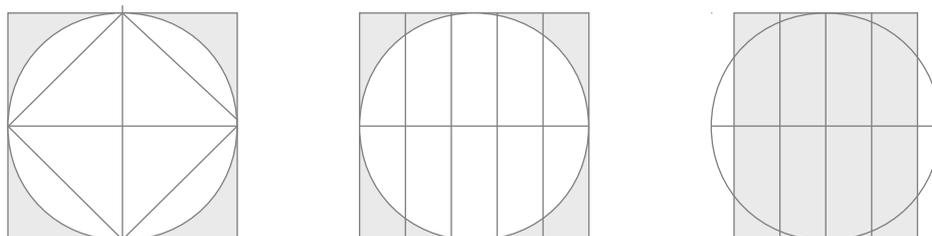


A typical grooved circle at Serre de Bec

Tons Brunes had also thought that these unknown people might well have stumbled upon something very close to the value for π . Then he had demonstrated that they might have been the first to create a section through the Great Pyramid before that pyramid was even being thought of. In other words the first pyramid design had come from the circle.



The assumption was that early man might well have drawn circles in the sand with his foot and that because he had five fingers he would have used five of his feet to make a radius for his first circle A. Then, having made his circle A he might have crossed it with two lines to make circle B, and then he had joined the crossing points to make circle C. But circle C now has a square inside it and that square had come from the circle. If then he had used five of his feet for a radius then he had used ten of his feet for the diameter but modern geometry says that the area of a circle is $\pi \times r$ squared. But that is also $\pi \times r \times r$, where r is the length of sides of half a diagonal of his square. The length of sides of his square would then be the square root (r squared + r squared) = 7.07 of his feet. He might have found this by pacing.



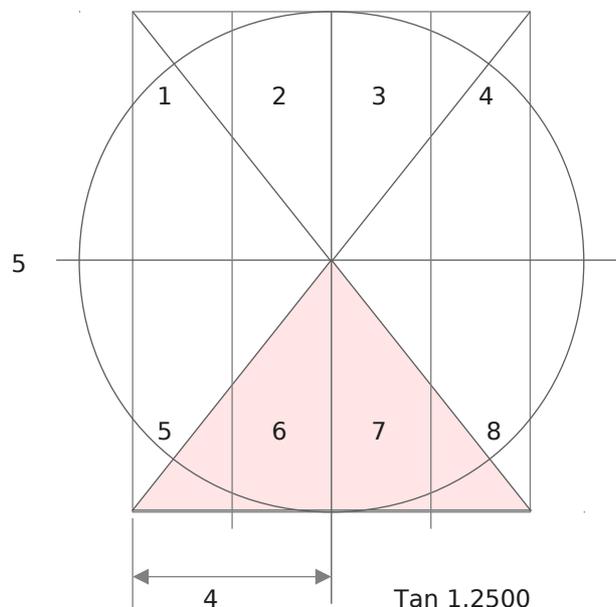
Square D

Square E

Rectangle F

However, ancient man had no means of knowing that he has created 7.07 feet and all that he could count was 7 of his feet. That might well have been the earliest derivative of 7 for the god of intelligence in man who was Set, and Set might then have originated from the sun via the circle that created the square of diagonal of 10 of his feet. Because r is 5 of his feet then $2r$ is 10 of his feet and his circle has created another square that is twice the area of the inner square at $10 \times 10 = 100$ square feet. The area of his inner square seems to have been $7 \times 7 = 49$ square feet but is actually 50 square feet. The numbers 5, 7, and 10 have now emerged in feet on Square D. However, the early man still had his five fingers and he had then decided to divide his square into 5 sections 2 feet wide as shown on Square E. Then he had decided to take one of them away to create a rectangle 10 feet high and 8 feet wide, which then becomes Rectangle F. This rectangle was very much in the image of the Egyptian goddess Isis because the width was 8 feet and her ancient number of identity was 8. The height was 10 feet and the area was $10 \times 8 = 80$ square feet, where $10 + 8 = 18$, the number of the Function of Isis.

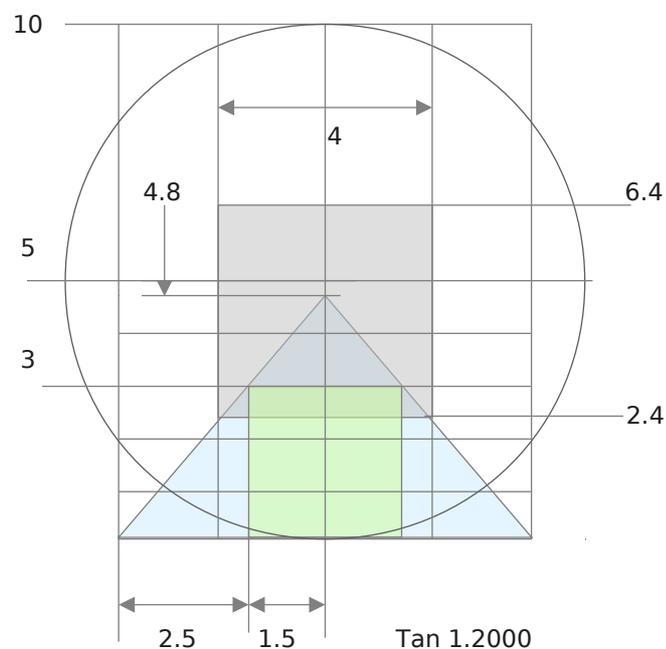
The First Circle Pyramid



The area of 80 square feet is also a close approximation to the value of π because the Celtic Druid, or whoever else it was who had first seen this thing, had decided that the area

of the rectangle was equal to the area of the circle. But the area of the circle, according to modern day knowledge, would be $3.1416 \times 5 \times 5 = 78.54$ square feet, where his rectangle was 80 square feet and 1.46 square feet too large. Now the Druids, according to Tons Brunes, could have divided up this rectangle on the circle into 8 triangles. The reasoning that lay behind this might well have had something to do with why the pyramid designers had first decided on conceptual pyramids that were not built of stone. This is because the rectangle could easily be divided in this manner and because it was also 10 feet high it was 5 feet high on its mid-level. The principle of halving was in operation here and that would mean that triangles 6 and 7 would together make a pyramid. That pyramid would then be 5 feet high and 4 feet on its half base to give a slope on a ratio of $5 / 4 = 1.25$. They might not have known it at the time, those many centuries ago, but the ancient investigators had actually stumbled on one of the properties of a right-angled triangle. They had found tangents. Their number 1.25 was a tangent, and it was measuring their angle. Whether they realised this is a moot point but they had certainly used this tangent in what was then to follow.

The Second Circle Pyramid

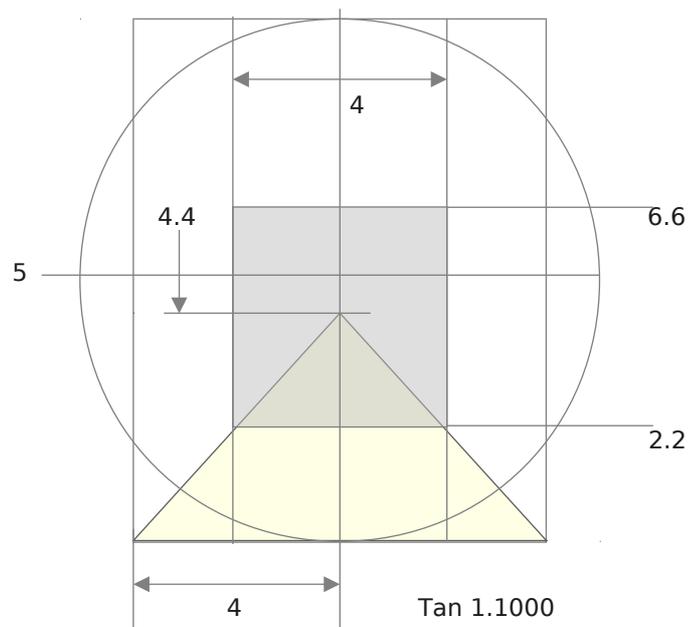


Because their rectangle was 10 feet high it automatically divided into 10 layers each 1-foot high, or 5 layers 1 foot high, and from those layers they could have seen that another

pyramid was possible. They might then have known that a square 3 feet high on a pyramid whose half base was 4 feet would have a half base of 1.5 feet, and that this square would fit inside their second pyramid without leaving a gap or surplus, and achieve this in whole numbers. It was an optimum square. Because it was unique they had decided it would qualify as another pyramid coming from their circle and since $3 / 4 - 1.5 = 1.20$ they had another slope angle. They used that as a tangent to discover a pyramid $4 \times 1.20 = 4.8$ feet high. They would have seen that this was 0.20 feet below their first pyramid 5 feet high, that there were 25 layers of 0.20 feet on half of their rectangle and 50 layers on the full rectangle.

Nothing is known about why the ancient designers had then decided to adopt a third pyramid from the circle because there was nothing immediately obvious that would have pointed in the required direction. That seems to say that they already had some kind of preview of what they were seeking and it was based once more on the halving principle. Perhaps they had discovered the geometry of the squares from the previous pyramid with its optimum square and having decided on a pyramid 4.8 feet high, they had halved it to 2.4 feet high, and then discovered that $2.4 / \text{slope angle } 1.20 = 2$ feet exactly to give a square of sides 4 feet.

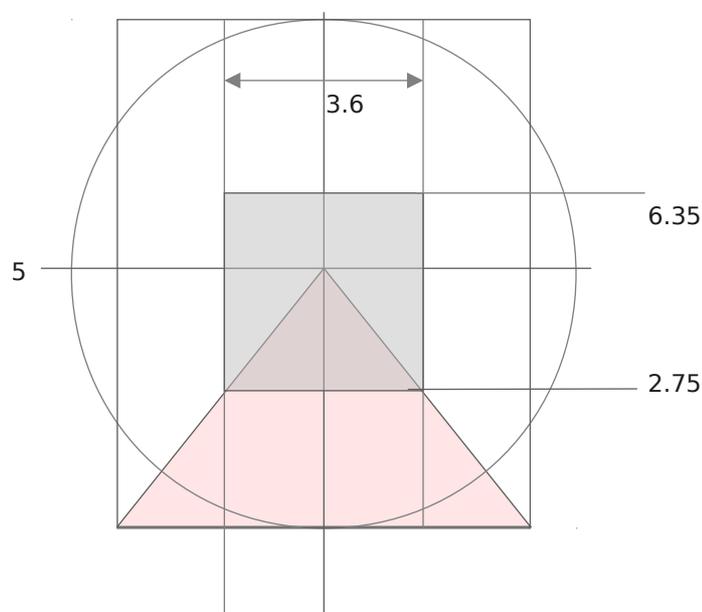
The Third Circle Pyramid



They might then have found that the half height 2.2 feet / slope angle 1.10 was also 2 feet and they had another square of same size but on a different slope angle. They therefore had another pyramid $4 \times 1.10 = 4.4$ feet high and with it another square of sides of 4 feet exactly to suit both pyramids. This was probably how they had found the third pyramid and they had seen these pyramids as a pair whose slope angles were 1.10 and 1.20 in sequence.

But their first pyramid had carried slope angles of 1.25. It was the odd one out, and it was not one of a pair. Was this when they had begun to seek out a fourth pyramid? If they had then this was at the root of why there were eventually going to be two chambers in their built pyramid so that each chamber would then take a pair of pyramids. That is probably how the ancient wizards had found their built pyramid, and it was all because of common pyramid squares. They had a common square for one pair of pyramids and now they sought a second common square for their lonely pyramid 5 feet high, but exactly when, or how, they saw the connection between pairs of pyramids for an upper chamber, and pairs of pyramids for a lower chamber, will never be known. It was probably based on the half width distance of 2 feet for the first, and then another half width distance for the second square had to be found. They had found layers 0.20 feet high. They already knew that the number of the Function of Isis was 18, and they appear to have applied her influence to the first pyramid by saying that the half width was going to be 1.8 feet, and 0.20 feet less than 2 feet. For their pyramid 5 feet high their square would then have been $1.8 \times 1.25 = 2.25$ feet below the tip and $5 - 2.25 = \mathbf{2.75}$ feet above the base. That was going to be a very important pyramid number.

The First Intermediate Level

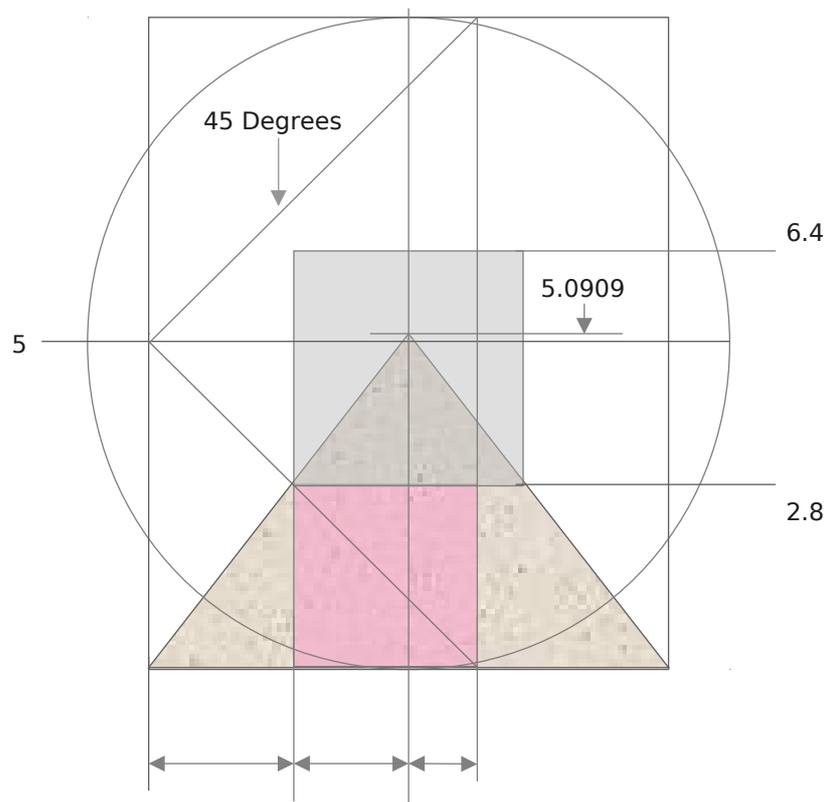




What then of the pyramid built in stone? All of the pyramids so far found were conceptual by having come from rudimentary diagrams drawn in the sand but they were nonetheless going to form part of the geometrical set-up that would become the Great Pyramid. A square had been found that would relate with the goddess Isis when seen in foot dimensions and that square related with a pyramid 5 feet high and sloping at 1.25 in tangent. The square of same size would be for the next pyramid built in stone, but how high would it be? They already had slopes angles of 1.20 and 1.10, in tangent, and 1.00 would therefore continue the theme in sequence as they wanted, but slope angle at 1.00 was too flat. They had to use it in another way on their circle geometry so that it did not mark another pyramid slope angle.

They already knew that a slope angle of 1.00 was the slope angle of a diagonal inside a square and so their new square would somehow use that diagonal on the circle geometry. It was going to decide the position of their first chamber inside the built pyramid.

The Pyramid built in Stone



2.2 1.8 1 Tan 1.2727

Their diagonal on the square began at the half height on their 10-foot rectangle at 5 feet high and since it had to extend by another 5 feet horizontally it would necessarily pass beyond rectangle centre at base by 1 foot. That meant that for their next pyramid they had a square whose base would be $1.8 + 1 = 2.8$ feet long and 2.8 feet high. The base remainder on the pyramid half base would then be $4 - 2.8 = 2.2$ feet, and so the angle of slope for their missing pyramid would be $2.8 / 2.2 = \mathbf{1.2727}$. They now had their fourth pyramid and it was $4 \times 1.2727 = 5.0909$ feet high for the pyramid to be built in stone. That was it! That was how the ancients had found the pyramid height at 5.0909 feet and at 0.0909 feet above the half height of the rectangle coming from the circle in 110 layers on 10 feet, or 55 layers on 5 feet, and where half of 55 was 27.5, and more importantly, where 2.75 feet was the level on the first square. That was when the planners realised that a pyramid with base angles Tan 1.2727 was going to be the pyramid that they would actually build.

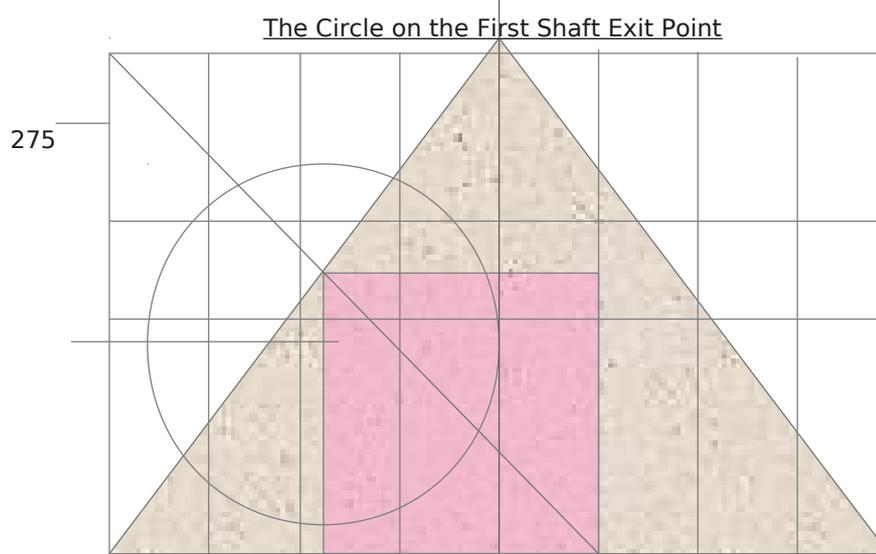
They now had to decide what size it would be. Once they knew the base angle in the tangent of 1.2727 they could choose any size but they had opted for a pyramids 275 feet and 280 feet high and it is very clear to see why. They had taken these dimensions from the levels of the squares whose sides were 2.75 feet, and 2.8 feet, and then multiplied them by 100. In other words, the stone pyramid, otherwise known as the Great Pyramid, had come directly from the ancient circle geometry and from the pyramid squares. Once they knew that the height would be 280 feet, they also knew that the half base would be $280 / \text{Tan } 1.2727 = 220$ feet, making the full base 440 feet. Having decided what the half base was to be it was an easy matter to find the equivalent heights of the two remaining pyramids. The next pyramid would be $220 \times 1.20 = 264$ feet high, and the last would be $220 \times 1.10 = 242$ feet high. Now they could plan the Great Pyramid section in more detail. Somewhere along the way they changed the unit dimensions from feet to cubits. Perhaps they had thought that their stone pyramid 280 feet high was still too small and since they did not want to change the numbers they changed the units. The new unit would be larger and they found it on the square of the pyramid height. They wanted the square of the pyramid height, minus the height $\times 10$, divided by the base, to be 100 times greater than the number of feet per cubit.

$$(280 \times 280) - 2800 / 440 = 171.8181 \text{ cubits}$$

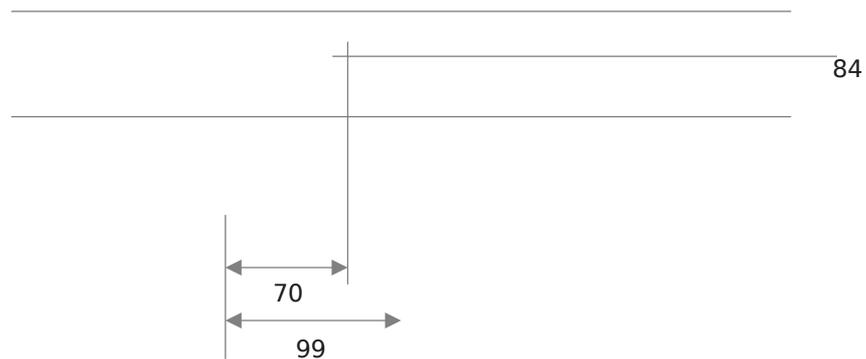
It was all very ingenious. That meant of course that the cubit would equal 1.71818 recurring feet and carry with it the number 1818 recurring, which was Isis once more and with 7 seen with Set. There would then be $440 \times 1.7181 = 756$ feet on the built pyramid base, and that was within inches of the lengths found on the original pyramid corner stones in 1925.

Then they decided that the diagonal on the square would be directed into the northern sky on the Giza Plateau and the star Orion named after Osiris, their god, and since they also knew that the star Sirius was dedicated to Isis and would follow Orion, it was all perfectly logical and the basis for the detailed geometry that was to follow.

Now they had to decide where they were to place their upper chamber. In order to locate this the diagonal on the upper south shaft was built 99 cubits long and if it was also going to pass out of the pyramid at the level of the original 2.8 feet as taken from the circle geometry (for a pyramid 5.0909 feet high) it would occur at $2.8 \times 280 / 5.0909 = 154$ cubits above base. The existing stones on the existing exit point at the pyramid are already at around 154 cubits above base as found by the survey of 1965. There is little doubt that this is correct and that would have put the exit point at $280 - 154 / \tan 1.2727 = 99$ cubits south of pyramid centre. Since the shaft was also 99 cubits long it was also the diagonal of a square of sides 70 cubits, and the perimeter would be 280 cubits, the pyramid height. The reason why they had chosen a shaft 99 cubits long was obvious. But $154 - 70 = 84$ cubits, and that was the level on the entrance corridor ceiling and the upper surfaces of the shaft where it changes direction from inclined to the horizontal, as found by survey. The level on the entrance ceiling would then be 2 cubits above the chamber floor, making the chamber floor 82 cubits above pyramid base and the entrance was 2 cubits wide. The entrance was nominally square on section.



154



The line of the upper south shaft forming the diagonal of a square of sides 154 cubits had therefore decided the level of the King's Chamber and that would explain why it was built some distance south of pyramid centre. There would be much more of this kind of logic to follow relating with the remaining three shafts. The reason why the two lower pyramids were based on squares of sides 4 feet was now clear because that was also the eventual half base at 220 cubits. That would comply with the next half heights of 132 cubits above base for the south lower shaft, and 121 cubits above base for the north lower shaft, both converging on pyramid centre at 44 cubits above base. The ancients had decided that the two lower shafts would converge on pyramid centre and on a second lower chamber at a level of 44 cubits above base, also as found by survey, and both would carry a common square of sides 220 cubits. The inclinations would therefore represent the religious entities Isis, and Set, and they would achieve this by using their ancient numbers of identity within the values of the slope angles. That too was intriguing. There were four pyramids to the Great Pyramid.

CONCLUSION

The Great Pyramid was mathematical. That is the absolutely undeniable statement coming from the multitude of numbers, integrating perfectly with one another, that clearly make up the geometry of the pyramid. If the monument was ever intended as a tomb then that was secondary. In fact it seems evermore unlikely that this pyramid was ever a tomb. There was no evidence. The only evidence there is comes from the pharaoh's causeway and the boat pit that is located outside the pyramid and bearing the name of Knufu. That is simply to say that the pharaoh had built something close to the pyramid, never that he had built it as well. The chances are therefore that the Great Pyramid was adopted, it already existed, the dating was wrong, and the true dating remains unknown. It is perfectly possible that it had pre-dated all of the pyramids of Egypt to explain why it was unique, for there is no doubt at all that the mathematics emphatically say that it was.

Then there was the question of Pi. Never let it be forgotten that the value of 3.14165 is at the Great Pyramid and it is to five decimal places. No number such as this could possibly exist there by chance with that kind of accuracy and if it had by some miracle existed there by chance. then the chance itself is beyond comprehension. The value does exist there and it comes from the slope angle $\tan^{-1} 1.2727$, and no other. Any pyramid with base angles of $\tan^{-1} 1.2727$ will hold the value of Pi and this pyramid was once 280 cubits high and 440 cubits on its base.

We know this is true because it is confirmed on the stone that remains. It was confirmed on the four corner stones, on the corridor ceilings, on the corridor angles, on the Great Step, on the Queen's Chamber dimensions, on the recess, on the King's Chamber dimensions, on the uneven floor, on the five voids above, on the two upper shaft exit points, and finally on the existing stones at the summit.

The Great Pyramid was planned in advance and with very great care and detail but that carries with it a number of important and disturbing implications.

The first is that if the pharaoh Knufu had supposedly built the pyramid according to current orthodoxy, he must have been a mathematician with extraordinary abilities and with highly advanced knowledge. He was in possession of constructional skills that he had no historical right to possess if he had indeed planned the pyramid at all. He must have been familiar with the four figure tables of sines, cosines, and tangents, first made known by Rheticus and Napier in the 16th century, and he had learned how to use them by adopting the principles of trigonometry first used in 17th century Europe for geographical survey operations, and even then only by a very few scientists and engineers. So, not only had he been able to use the trigonometrical tables but he had also been able to devise the enormously clever pattern of pyramids, triangles, squares, rectangles, distances, angles, and numbers, in cubits, using tangents, that had made up the whole incredible structure.

It is totally beyond comprehension that an ancient pharaoh had been busying himself with computers and slide rules at a time when Stonehenge was being built in England. The idea is ludicrous and there lies the problem.

August 2002

SUMMARY OF DATA

The Unit Cubit

The Great Pyramid was designed and built in Egyptian Cubits where 1 cubit was equal to 1.718181 recurring feet if the original pyramid based on a true square. The King's Chamber floor was built in whole number cubits and it acts as a standard measure for the cubit.

The Geometrical Tangent

Without the use of tangents it would be quite impossible to know anything about the secret geometry of the Great Pyramid. The tangents give angles in mathematical certainty and in number form to enable distances to be found on a right-angled triangle. The base angles for the Great Pyramid were in the tangent 1.2727 recurring.

The Squares and Triangles

The Great Pyramid was designed and conceived on the basis of the geometrical relationship between the pyramid isosceles triangle and the pyramid square attached to it by its corners and on the slopes of the triangle. Everything evolved from these basic principles.

The Four Shafts

The chamber shafts were geometrical lines of construction when seen in section through the corridor systems east to west, and also from a distance. They were the diagonal of a square and two rectangles integrated inside a square grid of sides 55 cubits, 440 cubits long.

The Shaft Exit Points

The slope angles of the diagonals were also the shafts and the levels where upper surfaces had passed out of the pyramid slopes were the exit points and they were critical.

THE EXISTING GREAT PYRAMID

Height = Approximately 262 cubits

Base = Approximately 420 cubits

Base angles = Unknown

THE ORIGINAL GREAT PYRAMID

Height = 280 cubits

Base = 440 cubits

Built height = 264 cubits truncated

Tip pyramid height = $11 + 5 = 16$ cubits

Slope angle = Tan 1.2727 recurring

Slope angle = 51 degrees 50 minutes 30seconds

THE FIRST INVISIBLE PYRAMID

Height = 275 cubits

Built height = 264 cubits truncated

Base = 440 cubits

Slope angle = Tan 1.2500

Slope angle = 51 degrees 19 minutes 30 seconds

Tip pyramid height = $11 + 5 = 16$ cubits

THE SECOND INVISIBLE PYRAMID

Height = 264 cubits

Built height = 264 cubits

Base = 440 cubits

Slope angle = Tan 1.2000

Slope angle = 50 degrees 20 minutes 22.5 seconds

THE THIRD INVISIBLE PYRAMID

Height = 242 cubits

Base = 440 cubits

Slope angle = Tan 1.1000

Slope angle = 47 degrees 45 minutes

THE SOUTH SHAFT, KING'S CHAMBER

Associated pyramid height = 280 cubits

Associated pyramid base angles = Tan 1.2727

Shaft exit point above base = 154 cubits

Slope on shaft = Tan 1.0000

Slope on Shaft = 45 degrees

THE NORTH SHAFT, KING'S CHAMBER

Associated pyramid height = 275 cubits

Associated pyramid base angles = Tan 1.2500

Slope angle = 51 degrees 19 minutes 22.5 seconds.

Shaft exit point above base = 151.25 cubits.

Shaft slope angle = Unknown.

THE SOUTH SHAFT, QUEEN'S CHAMBER

Associated pyramid height = 264 cubits
 Associated pyramid base angles = Tan 1.2000.
 Associated base angles = 50 degrees 70 minutes 00 seconds
 Slope on Diagonal exit level = 132 cubits.
 Slope on Shaft exit level = 127.6 cubits
 Slope on Diagonal slope angle = Tan 0.8000.
 Slope on Shaft slope angle = Tan 0.8000
 Shaft slope angle = 38 degrees 39 minutes 36 seconds
 Optimum Square sides = 165 cubits.
 Level of lower datum = 44 cubits above base
 Base Triangle height = 0.7333 cubits.
 Base Triangle length = 0.9166 cubits.
 Height of Double Square = 36.6666 cubits

THE NORTH SHAFT, QUEEN'S CHAMBER

Associated pyramid height = 242 cubits.
 Associated pyramid base angles = Tan 1.1000
 Common shaft exit point = 121 cubits converge.
 Slope on Shaft angle = Tan 0.7363.
 First Slope on Diagonal angle = Tan 0.7000.
 Second Slope on Diagonal angle = Tan 0.7333

THE KING'S CHAMBER

Length = 20 cubits exactly.
 Width = 10 cubits exactly.
 Height = 11 cubits on 82.5 cubits level
 Volume = 2200 cubic cubits
 Entrance width = 2 cubits exactly
 Lowest level on the floor = 82.00 cubits
 Highest level on the floor = 82.16 cubits
 Level on ceiling = 93.20 cubits
 Design level on the ceiling = 93.50 cubits
 Datum on shafts = 84 cubits above base

Datum on floor = 82.5 cubits

Centre shafts to east wall = 4.70 cubits.

East shaft sides to east wall = 4.50 cubits.

THE QUEEN'S CHAMBER

Length = 11 cubits

Width = 10 cubits

Original height = 8.25 cubits

Original volume of chamber = 907.5 cubic cubits.

Original height to ridge = 11.75 cubits

Volume on pitched roof = 192.5 cubic cubits.

Total volume of chamber = 1100 cubic cubits.

Original level on chamber floor = 41.25 cubits

Existing level on the chamber floor = 40.46 cubits

Original level on top of walls = 49.5 cubits

Existing level on top of walls = 49.42 cubits

Original level to top of ridge = 53 cubits

Existing level to top of ridge = 52.42 cubits

Datum on shafts and corridor ceiling = 44 cubits

Original level on corridor floor = 42 cubits

Existing level on the corridor floor = 41.45 cubits

Original corridor height = 2 cubits

Existing corridor width = 2 cubits

Step down to pyramid centre = 16 cubits.

Two Queen's Chambers = One King's Chamber.

ASCENDING CORRIDOR

Slope angle = 26 degrees 2 minutes Petrie

Slope angle = 26 degrees 18 minutes Edgar

Corridor width = 2 cubits

Corridor height = Varies due to uneven floor

Level on Great Step = 82 cubits

Height of intersection above base = 10 cubits

DESCENDING CORRIDOR

Slope angle = 26 degrees 31 minutes 23seconds Petrie

Slope angle = 26 degrees 18 minutes 10 seconds Edgar

Height on slope = 2.29 cubits

Height on horizontal = 2 cubits

Corridor width = 2 cubits

Lintel on exit level = 34.42 cubits.

Intersection to entrance on floor = 53.98 cubits

							Natural Tangents from 0 - 45 degrees								
							Differences								
0'	10'	20'	30'	40'	50'		1'	2'	3'	4'	5'	6'	7'	8'	9'
0°	0.0000	0.0029	0.0058	0.0087	0.0116	0.0145		3	6	9	12	15	17	20	23
26															
1	0.0175	0.0204	0.0233	0.0262	0.0291	0.0320	3	6	9	12	15	17	20	23	26
2	0.0349	0.0378	0.0407	0.0437	0.0466	0.0435	3	6	9	12	15	18	20	23	26
3	0.0524	0.0563	0.0582	0.0612	0.0641	0.0670	3	6	9	12	15	18	20	23	26
4	0.0699	0.0729	0.0758	0.0787	0.0816	0.0846	3	6	9	12	15	18	21	23	26
5	0.0875	0.0904	0.0934	0.0963	0.0992	0.1022	3	6	9	12	15	18	21	24	26
6	0.1051	0.1080	0.1110	0.1139	0.1169	0.1198	3	6	9	12	15	18	21	24	27
7	0.1228	0.1257	0.1287	0.1317	0.1346	0.1376	3	6	9	12	15	18	21	24	27
8	0.1405	0.1435	0.1465	0.1495	0.1524	0.1554	3	6	9	12	15	18	21	24	27
9	0.1584	0.1614	0.1644	0.1673	0.1703	0.1733	3	6	9	12	15	18	21	24	27
10	0.1763	0.1793	0.1823	0.1853	0.1883	0.1914	3	6	9	12	15	18	21	24	27

11	0.1944	0.1974	0.2004	0.2035	0.2065	0.2095	3	6	9	12	15	18	21	24	27
12	0.2126	0.2156	0.2186	0.2217	0.2247	0.2278	3	6	9	12	15	18	21	24	27
13	0.2309	0.2339	0.2370	0.2401	0.2432	0.2462	3	6	9	12	15	18	21	25	28
14	0.2493	0.2524	0.2555	0.2586	0.2617	0.2648	3	6	9	12	16	19	22	25	28
15	0.2679	0.2711	0.2742	0.2773	0.2805	0.2836	3	6	9	13	16	19	22	25	28
16	0.2867	0.2899	0.2931	0.2962	0.2994	0.3026	3	6	9	13	16	19	22	25	28
17	0.3057	0.3089	0.3121	0.3153	0.3185	0.3217	3	6	10	13	16	19	22	26	29

18	0.3249	0.3281	0.3314	0.3346	0.3378	0.3411	3	6	10	13	16	19	23	26	29
19	0.3443	0.3476	0.3508	0.3541	0.3574	0.3607	3	7	10	13	16	20	23	26	29
20	0.3640	0.3673	0.3706	0.3739	0.3772	0.3805	3	7	10	13	17	20	23	27	30
21	0.3839	0.3872	0.3906	0.3939	0.3973	0.4006	3	7	10	13	17	20	24	27	30
22	0.4040	0.4074	0.4108	0.4142	0.4176	0.4210	3	7	10	14	17	20	24	27	31
23	0.4245	0.4279	0.4314	0.4348	0.4383	0.4417	3	7	10	14	17	21	24	28	31
24	0.4452	0.4487	0.4522	0.4557	0.4592	0.4628	4	7	11	14	18	21	25	28	32
25	0.4663	0.4699	0.4734	0.4770	0.4806	0.4841	4	7	11	14	18	21	25	29	32
26	0.4877	0.4913	0.4950	0.4986	0.5022	0.5059	4	7	11	15	18	22	25	29	33
27	0.5095	0.5132	0.5169	0.5206	0.5243	0.5280	4	7	11	15	18	22	26	30	33
28	0.5317	0.5354	0.5392	0.5430	0.5467	0.5505	4	8	11	15	19	23	26	30	34
29	0.5543	0.5581	0.5610	0.5658	0.5696	0.5735	4	8	12	15	19	23	27	31	35
30	0.5774	0.5812	0.5851	0.5890	0.5930	0.5969	4	8	12	16	20	24	27	31	35
31	0.6009	0.6048	0.6088	0.6128	0.6168	0.6208	4	8	12	16	20	24	28	32	36
32	0.6249	0.6289	0.6330	0.6371	0.6412	0.6453	4	8	12	16	20	25	29	33	37
33	0.6494	0.6536	0.6577	0.6619	0.6661	0.6703	4	8	13	17	21	25	29	33	38
34	0.6745	0.6787	0.6830	0.6873	0.6916	0.6959	4	9	13	17	21	26	30	34	39
35	0.7002	0.7046	0.7089	0.7133	0.7177	0.7221	4	9	13	18	22	26	31	35	40
36	0.7265	0.7310	0.7355	0.7400	0.7445	0.7490	5	9	14	18	23	27	32	36	41
37	0.7536	0.7581	0.7627	0.7673	0.7720	0.7766	5	9	14	18	23	28	32	37	42
38	0.7813	0.7860	0.7907	0.7954	0.8002	0.8050	5	10	14	19	24	29	33	38	43
39	0.8098	0.8146	0.8195	0.8243	0.8292	0.8342	5	10	15	20	24	29	34	39	44
40	0.8391	0.8441	0.8491	0.8541	0.8591	0.8642	5	10	15	20	25	30	35	40	45
41	0.8693	0.8744	0.8796	0.8847	0.8899	0.8952	5	10	16	21	26	31	36	41	47
42	0.9004	0.9057	0.9110	0.9163	0.9217	0.9271	5	11	16	21	27	32	37	43	48
43	0.9325	0.9380	0.9435	0.9490	0.9545	0.9601	6	11	17	22	28	33	39	44	50
44	0.9657	0.9713	0.9770	0.9827	0.9884	0.9942	6	11	17	23	29	34	40	46	51

Natural Tangents from 45 - 90 degrees

	0'	10'	20'	30'	40'	50'	Differences								
							1'	2'	3'	4'	5'	6'	7'	8'	9'
45°	1.0000	1.0058	1.0117	1.0176	1.0235	1.0295	6	12	18	24	30	36	41	47	53
46	1.0355	1.0416	1.0477	1.0538	1.0599	1.0661	6	12	18	25	31	37	43	49	55
47	1.0724	1.0786	1.0850	1.0913	1.0977	1.1041	6	13	19	26	32	38	45	51	57
48	1.1106	1.1171	1.1237	1.1303	1.1369	1.1436	7	13	20	27	33	40	46	53	60
49	1.1504	1.1571	1.1640	1.1708	1.1778	1.1847	7	14	21	28	34	41	48	55	62
50	1.1918	1.1988	1.2059	1.2131	1.2203	1.2276	7	14	22	29	36	43	50	58	65
51	1.2349	1.2423	1.2487	1.2572	1.2647	1.2723	8	15	23	30	38	45	53	60	68
52	1.2799	1.2876	1.2854	1.3032	1.3111	1.3190	8	16	24	31	39	47	55	63	71
53	1.3270	1.3351	1.3432	1.3514	1.3597	1.3680	8	16	25	33	41	49	58	66	74
54	1.3764	1.3848	1.3934	1.4019	1.4106	1.4103	9	17	26	35	43	52	60	69	78
55	1.4281	1.4370	1.4460	1.4550	1.4641	1.4733	9	18	27	36	45	54	63	73	82

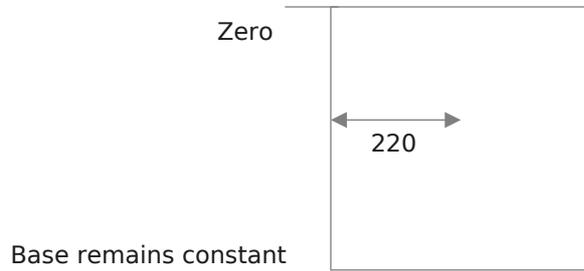
56				1.4826	1.4919	1.5013	1.5108	1.5204	1.5301	10	19	20			
38	48	57	67	76	86										
57	1.5399	1.5497	1.5597	1.5697	1.5798	1.5900	10	20	30	40	50	60	71	81	91
58	1.6003	1.6107	1.6212	1.6319	1.6426	1.6534	11	21	32	43	53	64	75	85	96
59	1.6643	1.6753	1.6864	1.6977	1.7090	1.7205	11	23	34	45	56	68	79	90	102
60	1.732	1.744	1.766	1.767	1.780	1.792	1	2	4	5	6	7	8	10	11
61	1.804	1.816	1.829	1.842	1.855	1.868	1	3	4	5	6	8	9	10	12
62	1.881	1.894	1.907	1.921	1.935	1.949	1	3	4	5	7	8	10	11	12
63	1.963	1.977	1.991	2.002	2.020	2.035	1	3	4	6	7	9	10	12	13
64	2.050	2.066	2.081	2.097	2.112	2.128	2	3	5	6	8	9	11	13	14
65	2.145	2.161	2.177	2.194	2.211	2.229	2	3	5	7	8	10	12	14	15
66	2.246	2.264	2.282	2.300	2.318	2.337	2	4	5	7	9	11	13	15	16
67	2.356	2.375	2.394	2.414	2.434	2.455	2	4	6	8	10	12	14	16	18
68	2.475	2.496	2.517	2.539	2.560	2.583	2	4	6	9	11	12	14	16	18
69	2.605	2.628	2.651	2.657	2.699	2.723	2	5	7	9	12	14	17	19	21
70	2.747	2.733	2.789	2.824	2.850	2.877	3	5	8	10	13	16	18	21	23
71	2.904	2.932	2.960	2.989	3.018	3.047	3	6	9	12	14	17	20	23	26
72	3.078	3.108	3.140	3.172	3.204	3.237	3	6	10	13	16	19	23	26	29
73	3.271	3.305	3.340	3.376	3.412	3.450	4	7	11	14	18	22	25	29	32
74	3.487	3.526	3.566	3.606	3.647	3.689	4	8	12	16	20	24	29	33	37
75	3.732	3.776	3.821	3.867	3.914	3.962	5	9	14	19	23	28	33	37	42
76	4.011	4.061	4.113	4.165	4.219	4.275	5	11	16	21	27	32	37	43	48
77	4.331	4.390	4.449	4.511	4.574	4.638	6	12	19	25	31	37	44	50	56
78	4.705	4.773	4.843	4.915	4.989	5.066	7	15	22	29	37	44	51	59	66
79	5.145	5.226	5.309	5.396	5.485	5.576	9	18	26	35	44	53	61	70	79
80	5.671	5.769	5.871	5.976	6.084	6.197									
81	6.314	6.435	6.561	6.691	6.827	6.968									
82	7.115	7.269	7.429	7.596	7.770	7.953									
83	8.144	8.345	8.556	8.777	9.010	9.255									
84	9.514	9.788	10.08	10.38	10.71	11.06									
85	11.43	11.82	12.25	12.71	13.30	13.73									
86	14.30	14.92	15.60	16.35	17.17	18.07									
87	19.08	20.21	21.47	22.90	24.54	26.43									
88	28.64	31.24	34.37	38.19	42.96	49.10									
89	57.29	68.75	85.94	114.59	171.89	343.77									

APPENDIX 1

The Great Pyramid had demonstrated that another pyramid inside a pyramid square abutting its slopes, of sides half the height of the Great Pyramid and of same slope angle would always carry a tip level at half the height of the enclosing pyramid. The rule was true within the limits of a specific range of slope angles. It would not apply, for instance, with pyramids of infinite height, or pyramids of zero height. At these two extremes the enclosing pyramid would disappear into a vertical line, or a horizontal line, and there were stages between.

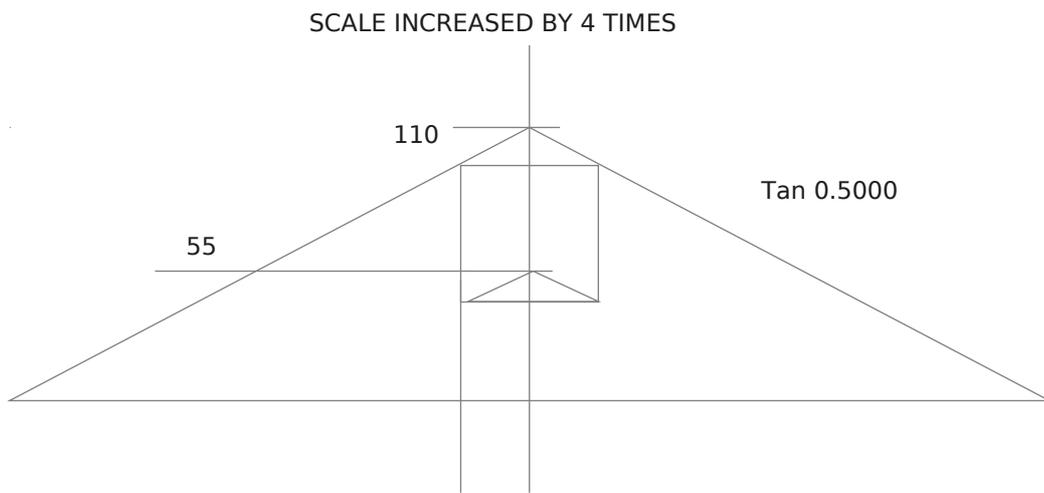
The Intermediate Pyramid

Tan 4.0000 max



The enclosing pyramid is now 880 cubits high on the same base and its slopes angles are now $880 / 220 = \text{Tan } 4.0000$. The sides of the pyramid square are half that height at 440 cubits, but the sides now the same length as the pyramid base. The pyramid square cannot move any further on the slopes of the enclosing pyramid if the height becomes any greater, and if it does, the pyramid square will detach from its enclosing pyramid and it will run free.

The Pyramid approaching Zero Height





The pyramid is now 110 cubits high on the same base of 440 cubits to give a slope angle of $110 / 220 = \tan 0.5000$. The pyramid square is half at 55 cubits and its half width is 27.5 cubits to give a pyramid $27.5 \times \tan 0.5000 = 13.75$ cubits high. The square will abut the slopes at $110 - 13.75 = 96.25$ cubits above base and the bottom of the square will be $96.25 - 55 = 41.25$ cubits above pyramid base. The pyramid inside the square will be 13.75 cubits high, and the tip will be $41.25 + 13.75 = 55$ cubits above base and the enclosing pyramid has been halved. The rule applies until the pyramid has no height and the pyramid inside the square disappears.

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