

# **Pyramids, pyramyths & pyramidiots**

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What is a pyramid? Is it a polyhedron whose base is a polygon and whose sides are triangles having a common vertex? Well, yes it is, but it is far more than that. The pyramid, which in its megalithic manifestation played a very important role in the histories of two early civilisations, has excited more speculation and fantasy than has any other solid geometrical shape. Cubes and dodecahedrons have never had the press of the pyramid.

Before we investigate some of the more fantastic myths that have attached themselves to pyramids, we should review some of the facts which, to the inquiring mind, are far more fascinating than the fantasies.

## **The Pyramids of Egypt**

The heading of this section is the title of the book widely regarded as the definitive work on the topic. Written by I.E.S. Edwards, keeper of Egyptian antiquities at the British Museum from 1955-72, this book presents the facts in a most readable form and is the reference for the archaeological information in this article.

The history of Dynastic Egyptian civilisation covers more than 3000 years, of which the Pyramid Age accounts for fewer than 500, although this form of construction continued, in a much debased form, for a further 500. There are more than 80 known pyramids in Egypt, some of which are so ruined as to appear only as heaps of rubble.

It is not surprising that many people have exercised their imaginations to speculate on the purpose of these massive stone structures and on the methods used in their construction. Although there is much that is unknown about the Egyptian pyramids there can be little doubt that they were built according to the funerary rites of the Egyptian religion and that the construction methods used were quite possible within the limits of the technology of the time.

The Egyptian religion was firmly based on the existence of an afterlife, which depended for its continuance on the protection of the mortal

remains of the former citizen. In pre-dynastic times, important people were buried under a mound of sand the shape of which seems to have gained some religious significance. During the First and Second Dynasties this mound was made more elaborate and became a rectangular, decorated mud brick structure, called a mastaba. Naturally enough, the mastaba of the Pharaoh was the most imposing, although many fine examples have been found of those of nobles and officials.

In the Third Dynasty, circa 2680 BC, the Pharaoh of the time, Zoser, was fortunate in having as his Chancellor, one Imhotep, who is credited with the building of the first pyramid (and, incidentally, the world's first large stone building). Imhotep was deified by later Egyptians, possibly the first recorded instance of someone "coming up through the ranks".

It is tempting to speculate that Imhotep thought to himself one day "If I put another mastaba on top of the first one and then another on top of that, until I reach six, then my Pharaoh will be much more important than his old Dad", but excavations of Zoser's Step Pyramid reveal that many changes in design occurred during its construction.

First, an unusual square mastaba was built in the unusual material of stone. Then it was added to, in various stages, until it became rectangular, then built upwards to become a four step pyramid, then extended on two sides and upwards to become a six step pyramid, which was its final form. All of this indicates that there was no sudden infusion of new ideas from "somewhere else" that suddenly changed "primitive" Egyptians into brilliant engineers and stonemasons, a theory beloved of the more irrational speculators on matters Egyptian. It is clear that Imhotep was an unusually intelligent man but it is equally clear that his ideas did not spring from mysterious sources. His learning curve is inscribed in stone.

From the first step pyramid, we can trace the development of this form of architecture through the first true pyramid, to the apogee of pyramid building, the Great Pyramid of Khufu at Giza. This is the one about which all of the fantasies have been constructed and it certainly is a remarkable piece of engineering. The first notable fact about the Great Pyramid is that the time which elapsed between the invention of pyramid architecture by Imhotep and the construction of this, the largest and best of them all, was only a little over a century.

The Great Pyramid is unique in many ways. When it was built, it was the heaviest building (at around 6 million tonnes) ever built. It still is. It consists of approximately 2.3 million blocks of stone, with an average

weight of 2.5 tonnes. Its base is 227 metres square, accurate to within 20cm on each side. Its original height was 150m, although the top 15m have disappeared. It is accurately aligned to the four, cardinal points, with its least accurate side, the east, diverging by only 5' 30" from true north-south, which, for a civilisation that had no compass, was not bad. Its base covers 13.1 acres, its sides make an angle to the ground of 51° 52' and it was built using technology no more sophisticated than the lever, the roller, the inclined plane, stone and copper tools, intelligent minds and hard work.

We should clear up a few popular misconceptions at this stage, misconceptions largely propagated by the works of wilfully ignorant authors such as Erich von Daniken, who surely must hold the distinction of being more wrong about more things than any other person on Earth.

The Egyptians were not primitive people at all. They were every bit as intelligent and sophisticated as we are today, and, although their technology was simple, it was adequate for the task and they were expert in its application.

The Egyptians did not use slaves to build the pyramids but citizens who were paid in food for their work (there is even evidence that the Egyptians invented the strike for better wages). We know that the expert work on the pyramids was carried out by a full time team of craftsmen, and we can assume that much of the heavy labour was carried out by unskilled "casual labour", probably the local farmers who had nothing to do while their land was inundated by the annual Nile flood.

The Egyptians moved large blocks of stone on wooden sleds pulled by teams of men with ropes. Von Daniken would have us believe that the Egyptians had no rope and that wood was in short supply because "trees did not grow in abundance along the Nile". Both statements are lies. Many ropes have been found in Egyptian tombs, and the Egyptians used a lot of wood, much of which they acquired on trade with neighbouring countries, and many examples of which have been found.

The Egyptians did not carry out human sacrifice in dynastic times (although there is some evidence that pre-dynastic Egyptians did) and there is no evidence that live humans were sealed in pyramids with their dead Pharaoh. This latter is almost certainly a Hollywood invention.

Mummification was carried out for the purpose of preserving the remains of Egyptians for the afterlife and not, as von Daniken would have it, for resurrection by returning astronauts. The techniques of mummification are available to us in some considerable detail, from existing texts. The internal organs were removed and stored separately from the body, and the body was treated with various salts and resins and wrapped in linen.

All of this may have been counter productive, as some older mummies of earlier Egyptians, merely buried without treatment, have survived better than those of Pharaohs. The evidence suggests that dessication caused by internment in dry sand is a far better preservative than any of the treatments given to pharmonic corpses.

What really gives the lie to von Daniken, however, is the fact that the brain was removed in pieces, through the nose, and not preserved. The Egyptians believed that the heart was the seat of the soul, and that the brain was not of particular importance. In the case of von Daniken, this may well be true.

## **Motivation**

We will look further at some of the fantasies that have been built around the Great Pyramid later, but first let us consider "why build a pyramid in the first place?"

The answer to that is that we do not know. There are many logical hypotheses (and many more illogical ones) but there is no doubt that the purpose was of a religious nature. It may be that the pyramid was seen as a "stairway to the heavens" for the dead Pharaoh to ascend to his rightful place alongside the sun god.

There is no direct evidence that the pyramids were the actual burial site of the kings, as no pharmonic remains have ever been found inside or under a pyramid. The pyramids may have been built as a memorial and not as a tomb, although, in the absence of direct evidence, the latter purpose seems to be more likely.

One hypothesis, proposed by German/British physicist Kurt Mendelssohn, postulates that the existence of the pyramids was secondary to the fact of their construction. Mendelssohn proposes that the rulers of the recently unified Egyptian kingdom needed some work of national importance to weld together the various regional groups into a cohesive and centralised state.

Mendelssohn's theory, propounded in his book "The Riddle of the Pyramids", argues this case very well and, whether true or not, it is certainly logical and it does explain some of the mysteries that surround these giant structures. This hypothesis falls within the parameters of reasonable speculation, as do many others associated with a period of history which, while better documented than many other ancient eras, is far from comprehensively understood.

What surviving texts tell us about the ancient Egyptians is at considerable variance with the popular mythology that surrounds them. They were practical and intelligent people, not given to excessive mysticism which is an error generated by the fact that the majority of surviving literature is concerned with death, which in turn is explained by the fact that their tombs survived the millennia in far better shape than did their mundane dwellings.

Although there is clear evidence that the Egyptians had sufficient knowledge of astronomy to enable them to devise an accurate calendar, and thus to be able to predict their most important annual event, the flooding of the Nile, there is no suggestion that they developed astrology, a fact that should endear them to all sceptics.

In general, the Egyptians come down to us as remarkably likeable people, with little of the cruelty and brutality that characterises so many ancient civilisations, and not a few modern ones.

We do not know why the pyramid became such an important structure to the Egyptians, but there may be a clue in the sheer pragmatism of the shape. Once the decision is made to build on a monumental scale, the pyramid makes the most sense to people who had not devised arches or free standing columns. Once you build a pyramid, assuming you do it properly, it tends to stay put. Staying up is far simpler than failing down for a well-built pyramid. (This is not the case for all shapes, as some well-built Skeptics who attended the annual convention dinner will attest.)

We should also address the claim commonly made by those who know nothing of Egyptian history and culture and who seek to achieve wealth and fame by writing books which are firmly rooted in that ignorance. This claim is that "it would be impossible for us today to build the Great Pyramid".

This claim is both arrant nonsense and likely to be true - nonsense because the reasons cited for the claim lie in techniques the Egyptians were alleged to have and that are no longer available to modern

people, and true for an entirely different reason in that it would be hard to conceive of a politician or company director convincing the electorate or the board of the desirability of expending so much wealth on an intrinsically useless structure. (Cynics should not use the new Parliament House as a rebuttal of this argument.) This question is addressed in Ronald Story's book "Guardians of the Universe?"

A Japanese construction company estimated in 1980 that the cost of erecting a replica of the Great Pyramid, using modern techniques, would be US\$563 million. If the labour intensive methods employed by the Egyptians were used, then the cost would approach US\$18 billion. It would be a brave government indeed that would suggest pyramid building as a cure for unemployment.

As for the "lost" techniques, there is plenty of physical evidence of how the Egyptians chiselled the stones, carried them to the site, used ramps to get them to the necessary elevation and moved them around when there. What techniques have been lost?

Yet another mystery which bedevils proponents of paranormal explanations is how the concept of pyramid building sprang up in two widely separated cultures as those of Egypt and Central America. The suggestion is that Egyptians colonised Central America and taught the Indians how to do it.

This suggestion is difficult to sustain when we consider a few facts.

The Central American pyramids were designed for an entirely different purpose to those of Egypt – ceremonial rather than funerary. All Central American pyramids are at a far lower angle than the Egyptian and were designed to be climbed after construction to the temples located on top of them. In the case of the Aztecs, human sacrifice seems to have been the major activity carried out on the pyramids, although this probably was not the case with the Maya.

Methods of construction differed greatly from those used by the Egyptians and, generally, the Central American pyramids were not used for monuments or burial, although one has been found to contain a body of some important person.

The crucial fact that makes any cross cultural exchange seem to be unlikely is that the earliest pyramids of Mexico are the so called Temples of the Sun and the Moon at Teotihuacan, about the builders of which little is known, but who have been identified by some mystics as the Lost Tribes of Israel (who else!). These pyramids are

comparable in size to those of Egypt, and are dated at just before the beginning of the Christian era. It would seem to be highly implausible that Egyptians, at the final stages of their long history, would venture half-way around the globe and then teach the natives a technology that they themselves had abandoned nearly two millennia earlier. It is far more likely that the practical significance of the pyramid shape for large construction appealed to two different cultures, neither of whom had developed the arch, quite independently.

We can dispose of the absurd pseudo-scientific claims of ancient astronauts, time travellers and remnants of pre-existing high-tech civilisations as espoused by the likes of von Daniken by a simple examination of the facts which have been discovered by genuine archaeologists and other scientists. Such claims can be put down to wilful ignorance on the part of their proponents. Of more interest are some of the weird cults that read mystical significance into the measurements of the pyramids, particularly those of the Great Pyramid of Khufu.

### **Pyramyths and Pyramidiots**

It would appear that the driving force behind the desire to mix measurement with Biblical prophecy, that drove many 19th century British authors to ascribe unwarranted significance to the Great Pyramid, was distaste for the metric system of measurement, introduced after the, French Revolution. No self-respecting and God-fearing Briton was going to take this example of atheistic Frog perfidy lying down. (Readers of middle years or older may have some sympathy with this view.)

Among the first to address this problem was a retired publisher, John Taylor, who believed that the pyramid had been built by Noah, to God's specifications, and who decided that 25 inches was the size of the Biblical cubit.

Taylor was the first to realise that the dimensions of the Great Pyramid suggested that the Egyptians had knowledge of the ratio pi (the ratio of the circumference of the pyramid to its height gives a fairly accurate ratio of 1/2pi). As it was known that the Egyptians had not developed mathematics on a theoretical level to that extent, this convinced Taylor that the Pyramid was divinely inspired and presented a genuine problem to more scientifically inclined scholars.

One possible explanation that has been advanced is that, if the Egyptians used a rolling drum to measure long distances, then pi would have become part of the computation quite fortuitously and Egyptians would have discovered the ratio without being conscious of the fact.

Whatever the truth of the matter, Taylor, who was an adherent of the proposition that the British were descended from the Lost Tribes of Israel, was convinced that the Pyramid had been built by these proto-Britons. Obviously the Egyptians could not have done it, as they were worse than the French.

Taylor's ideas were taken up by no less a personage than the Astronomer Royal for Scotland, Charles Piazzi Smyth. (The real mystery in this story is how someone with such a foreign sounding middle name got to be Astronomer Royal.) Smyth had been a pupil of Sir John Herschell and, like Herschell and Taylor, he objected to the use of the metric measurement system, which may help to account for some of the extraordinary theories he later propounded.

Finding that one of the casing stones of the Great Pyramid was approximately 25 inches, equal to Taylor's cubit, Smyth decided that the inch (one twenty-fifth of a cubit and approximately one 10 millionth part of the Earth's polar radius) must have been the divine unit of length. When it was discovered that the original easing stone was a bit over 25 inches (25.025 in fact), Smyth proposed that the "Pyramid inch" of 1.001 was the actual divine unit (the British unit presumably got worn down a bit in the pocket of one of the Lost Tribesmen).

Of course it did serve to prove that the British measurement system was divinely inspired, which was one in the eye for those nasty French. Smyth used the pyramid inch and various other measurements made at the Great Pyramid to calculate the density of the Earth, its population and, for all we know, the winner of the third at Ascot.

It is obvious that, given the number of measurements one could make in a huge structure like the Great Pyramid, and with suitably preconceived ideas, one can come up with any answers one likes. This Smyth did.

His book, "Our Inheritance In the Great Pyramid", contains over 600 pages of these calculations and predictions. The big problem was that all of this was theory - no actual dimension of one pyramid inch had been found. This was put right when Smyth, on a visit to Egypt, found a mason's boss on a slab of stone and declared it to be the Divine

Standard. The "science" of Pyramidology was now firmly established. It survived the revelation that one of Smyth's followers had been caught trying to file down the boss to make it more accurate and the discovery that surviving Great Pyramid casing stones were all of different sizes.

With the bit firmly between his teeth, Smyth and his many followers, who included the founders of the Jehovah Witnesses, using his Pyramid Inch decided that various internal structures of the Great Pyramid were a record of the past history of the world (naturally beginning in 4004 BC) and that was not all. Further measurements showed that the future history of the world was also contained in the stones. The end of the world was variously predicted as happening in 1874, 1914, 1920 and 1925.

As with all failed predictions, when it does not happen you revise the data to get a new date (see Nostradamus). What Smyth and his followers were doing was bending the data to achieve their preconceived outcomes, a practice still followed by many practitioners of the paranormal.

Smyth could multiply any dimension by a suitably large number and come up with a significant measurement, such as the distance to the sun derived from the height of the pyramid ( $481\text{ft} \times 1000\text{ million} = 90$  million miles). Not very accurate, and certainly not as accurate as God or a space travelling ET would know them, but they certainly fooled the customers.

Unfortunately for Smyth, like an earlier personage of Egyptian fame, he was nursing a viper in his bosom. His theories, largely because of his position, were treated with a degree of respect that they obviously did not deserve. One of his most ardent supporters was a chemical engineer, who along with his son, decided that to further refine Smyth's theories more accurate measurements were needed to be made on site. These two set to work to design more accurate instruments to make the measurements at exact as possible. As this took a long time, the engineer finally decided that he was too old to travel to Egypt and his son was sent out alone. He conducted several very accurate triangulations of the site and succeeded in proving conclusively that Smyth was talking through his hat (chapeaulallia?).

The young man, Williarn Matthew Flinders Petrie, stayed on in Egypt to become the greatest Egyptologist of his time and to be regarded by many as the father of scientific archaeology. He was, incidentally, the grandson of the explorer of Australia's coastline, Matthew Flinders.

The fact that Smyth was wrong has done nothing to dissuade a lot of people from believing his predictions and his theories continue to be recycled to this day.

## **Pyramid Power or Much Ado About Nothing**

All of the foregoing can be explained by the inability of some people to accept that ancient civilisations were capable of carrying out major works of construction or that these monolithic structures are intrinsically useless.

The next stage in the saga of pyramidiocy leaves the world of tangible pyramids and enters the realm of pyramid as shape. More particularly, we will look at the effect of pyramids on that shibboleth of the New Age, "energies unknown to science", or euts as we will refer to them for typographical reasons.

It was probably inevitable that someone, sometime, would hit upon the idea that the pyramid itself had something to do with the process of mummification. This idea flies in the face of all the evidence of how mummification was carried out, including the records left by the Egyptians themselves, but it is in accord with the thinking of those who persist in seeing a problem where none exists.

Martin Gardner, in his entertaining book "The Magic Numbers of Dr Matrix", traces the first reference to this idea to the early years of the twentieth century. At that time a "French occultist" as Gardner describes him discovered that a dead cat became mummified after being placed in a model pyramid. As there appeared to be no great call for mummified cats in the ensuing half century, no more research seems to have been carried out.

Then, in the late 1950s, a Czech named Drbal claimed that a razor blade placed under a cardboard pyramid retained its edge for longer than would normally be expected.

Next, we find that various film actors (who may well be the descendants of the Lost Tribes of Israel) claim to be able to meditate better while sitting under a pyramid. Others have claimed that foodstuffs kept in a pyramid retain all of their freshness, wishes come true when written on paper and placed in a pyramid, pyramids kill bacteria. This is all remarkable stuff, if true, but how true is it?

Let us first consider euts, whether they obey rules, and how a pyramid might channel them.

Whenever a pseudo-scientist or a paranormalist is challenged to explain some phenomenon that science decrees to be highly improbable, he responds with euts. While not wishing to suggest that there are no such things as euts, we are not very encouraged to believe in them by the claims made for them.

It appears that they can do anything and are not governed by any rules at all. Proponents of pyramid power have claimed that pyramids can inter alia, mummify flesh, preserve food in a natural state and resharpen razor blades. It would appear, to the casual observer, that these three acts call for three different applications of energy.

To mummify flesh presupposes an ability to remove water molecules; to sharpen razor blades requires the ability to add molecules; and to preserve food means preserving the status quo. As the material from which the pyramid is constructed does not appear to effect any of these processes (they are available in cardboard, wood, polystyrene, copper, polycarbonate, steel and many other materials) and as they appear to have no control systems, how is the required process determined? Can the euts itself decide that the object in the pyramid is a razor blade or a dead cat?

If that is so, and that appears to be the only logical conclusion that follows from the claims, then we appear to be dealing with some form of sentient energy. This is an extraordinary concept and would require far more persuasive evidence for its existence than is offered by its proponents. Imagine the problems Einstein would have faced with relativity if gravity could think for itself!

Next we ask, "What is inherent in the pyramid shape that allows it to channel this energy when other geometrical solids do not?" We do not hear about Cube Power or Sphere Power (although this article may generate such thoughts in some minds – it has happened before). The answer is that there is nothing about a pyramid that should give us reason to suppose that this shape holds a privileged position in the world of solids. Far more likely that the proponents of this fallacy are seduced by the supposed mysteries of the Egyptian pyramids and that as a result have invested the shape itself with mystical powers.

There is no reason to believe that pyramids exert some sort of influence on energy, be it known or unknown to science. This, of course, would not matter If there were examples of tests that "proved" the opposite while there are many references in pro literature to such tests, it is difficult to find reference to any properly conducted tests that give factual results rather than subjective opinions. Those tests that

have been conducted using a double blind methodology give no comfort to the proponents of pyramid power.

In a test of French wine, as reported in the Winter 1987-88 edition of *The Skeptical Inquirer*, wine kept in pyramids was judged to be no different in quality from wine not so stored.

Proponents of pyramid power must fall back on the ... law that states "No paranormal event will occur in any location that contains a sceptic". This law is better known by its common title of "The Psychic's Cop-Out", which explains a lot of things other than the failure of pyramids to perform.

To conclude this section on pyramid power, we should refer to the influence of American author and respected sceptic, Martin Gardner, on the level of belief in this unlikely form of energy. In a satirical article in the June 1974 edition of *Scientific American*, Gardner made a number of outrageous claims for the powers of pyramids, which were being promoted by his character Dr Matrix. Gardner was astonished at the amount of mail generated by this article, from people who were seeking more details of how pyramids could help them.

Some of Gardner's tongue-in-cheek claims still form part of the lore of pyramid power, so do not be surprised if cube or sphere power become New Age phenomena in the future.

Although there is nothing particularly mysterious about pyramids, they certainly have exerted an influence upon the imagination of many people for millennia.

Merely reading about how people from early civilisations set about the tasks of construction and how modern people have wrested the secrets from the stones appeals to our romantic instincts. It makes us realise the remarkable mental and physical accomplishments of which the human species is capable and has been capable since the beginning of recorded history.

It also makes us realise just how limited must be the imagination of those who cannot take pride in the accomplishments of our species and who must invent super beings to take credit for what humans have done.

As sceptics, we should not resent such people as Erich von Daniken, Charles Piazzi Smyth and the many others. We should pity them for the narrowness of their vision and the meanness of their spirit.

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