Were the Pyramids Built by Aliens?

Benjamin John Welch

Were the Pyramids Built by Aliens? This question has been asked time and time again throughout the 20th and 21st centuries. The mysterious nature of the Great Pyramids of Giza stems from their sophistication at a time of very primitive technology. The tallest of the three, the Great Pyramid of Khufu, looms at a height of 455 feet and consists of approximately 2.3 million chiselled stone blocks, some of which weigh more than 50 tonnes. Dr Viktor Ivanovich, a former scientist for the Russian Kremlin, claimed in 2001 that “this particular visitation took place about 11,000 BC”. It is understandable how people get drawn into these conspiracy theories; the pyramids are truly awe-invoking. However, no matter how exciting these conspiracies may be, there is also evidence that the pyramids were built by humans. In this essay, I will explore both sides of the argument using Mathematics.

One of the most well-known mathematical principles that can be found in the Great Pyramids is Pi. It was originally an English author, John Taylor, who proposed that Pi had been incorporated in the pyramids. In 1859, he presented his ideas in his book, “The Great Pyramid: Why Was It Built? And Who Built It?”. He discovered that if you divide the Great Pyramid’s perimeter by its height, you obtain a very close approximation of 2π. Equivalently, the slope of each face of the Great Pyramid is very close to $\frac{4}{\pi}$. This relationship is 99.96% accurate or better depending on the measurements used. This relationship is so close that it is incredibly unlikely that is it a coincidence.

The earliest written evidence of a civilisation having knowledge of Pi dates back to ancient Egypt and Babylon. A clay tablet found in Babylon dated 1900 - 1600 BC treats Pi as $\frac{25}{8}$ or 3.125, an approximation that is 99.47% accurate. In Egypt, the discovery of the Rhind Papyrus gave us an insight into ancient Egyptian maths. It is dated 1650 BC but was copied from a document from 1850 BC and gives Pi as $(\frac{16}{9})^2$ or roughly 3.16. The Great Pyramids are estimated to have been built before 2504 BC, at least 604 years after the earliest evidence of an understanding of Pi. However, this length of time isn’t so great as to make it impossible that the Egyptians did understand Pi when building the Great Pyramids. In fact, many people have claimed that the Egyptians treated Pi as $\frac{22}{7}$ as early as the Old Kingdom due to the apparent incorporation of Pi in the pyramids. These claims, however, have been met with scepticism by experts as there is little evidence to support it.

If you assume that the Egyptians had not discovered Pi before building the pyramids, an assumption that is perfectly reasonable, then how is Pi found so perfectly incorporated in them, over 4,000 years later? One possible answer is aliens. It seems impossible that the connection to Pi is a coincidence but if the Egyptians didn’t know to make this connection then who did?

Perhaps an advanced alien race. John Taylor believed that the Great Pyramid was intended to be a representation of Earth, the height representing the radius joining the centre of the Earth to the North Pole and the perimeter corresponding to the Earth's circumference at the Equator. If this is indeed the case then it is possible that this representation of our planet could have been designed by someone, or something, not from the same planet.

However, even if you assume that an alien race existed and had advanced knowledge and understanding of the universe, would they have a working understanding of Pi, an aspect of human Mathematics? Professor of Mathematics at Warwick University, Ian Stewart, investigated this very question. He proposed that "Mathematics, the reasoning goes, is universal". According to him, while aliens might use different notation, the basic Mathematical principles remain the same. This is due to the fact that humans didn't 'invent' Pi; we discovered it in circles. This would make it very possible that aliens could have intentionally incorporated Pi into the Pyramids. This is assuming they exist of course, an assumption that there is little to no evidence to suggest.

However, despite this theory being exciting, there is mathematical evidence to suggest that the connection was made accidentally. The Rhind Papyrus tells us that the ancient Egyptians measured lengths in terms of 'cubits', 'palms' and 'fingers'. A cubit is equal to 7 palms and a palm is equal to 4 fingers. Therefore, 1 cubit is equal to 28 fingers. 5 palms and 2 fingers are equivalent to 22 fingers and, if you divide this by 1 cubit in terms of fingers, you find $\frac{22}{28}$. This is the same as the Pi-based inverse-slope of the two faces that have the same slant angle. Also, the rational number $\frac{22}{7}$ happens to be an excellent approximation for Pi. The denominator, seven, is the number of palms in a cubit. Admittedly, there is no obvious reason for the selection of the numbers five, two and twenty-two; however, despite that, this evidence may be more convincing than the evidence for aliens.

Another perhaps slightly more convincing explanation for this can be found in the measuring devices that could have been used. Little is known about Ancient Egyptian measuring tools with the exception of measuring rods. Measuring rods were cubit-length rods of wood or stone that were divided into palms and fingers. Some of these measuring rods, typically discovered in ancient tombs, have marks for the Remen measurement which was used in the construction of the Pyramids. Due to this, it is likely that measuring rods were used for measurements in the Pyramids. Unfortunately, there is no connection between Pi and measuring rods. However, one cubit is tiny in comparison to the dimensions of the Pyramids. Each side of the Great Pyramid of Giza is roughly 440 cubits or 440 measuring rods long. Considering the meticulous nature of the Pyramids' construction, it is almost certain that other measuring tools must have been used for aspects of them.

One possibility is a unit circle-based device. In the modern world, a Surveyor's Wheel is a circular device that 'clicks' every time it completes a rotation which normally equates to one metre. The Egyptians could have used a similar device in which they counted the number of

times that a circular piece of wood or stone rotated by watching a certain point on it as they rolled it along a length. The circumference of a circle is equal to its diameter multiplied by Pi and so all measurements taken using a similar device would be multiples of Pi. Using this model, the perimeter of the Great Pyramid would be equal to twice as many rotations as the height. Depending on the device and how it was used, this could provide a possible explanation. However, this theory isn't perfect. It is reasonable to suggest the perimeter was measured in this manner but, considering the height is only in the centre of the structure, how and why it would have been measured by rolling a circle along it is unclear. Also, no evidence for a similar ancient device has been found in sources such as the Rhind Papyrus in which other measurement tools and units are described.

In conclusion, the incorporation of Pi in the Pyramids is mysterious and, unfortunately, there are no definite answers. It is impossible to rule out the involvement of an advanced civilisation but there is limited evidence to support it. There are, in contrast, a number of non-extraterrestrial possible explanations for it. So were the Pyramids built by aliens? We may never know.