Gods, Genes and Climate

Appendix 1 only
The full book can be purchased from Amazon.

By Roger Broadie.

ISBN: 978 0 9957142 0 5

Published by Fresh Insight Books, an imprint of Broadie Associates. Fresh Insight Books aims to present the edge of new knowledge in ways accessible to people not expert in the fields the books address.

Associated website: http://www.GodsGenesAndClimate.com

First published digitally October 2016.
First paperback edition 2 January 2017.

Appendix 1 – What kinds of evidence of the gods to look for.

We need to consider where to look for the evidence, what to look for and why. The majority of the archeological and historical evidence available to us was inevitably created by mankind. To separate from this what is evidence of a very small group of gods requires careful analysis.

Theses things may be tangible constructions and objects or stories. Around 5500 years ago written languages started to appear and written stories that have survived start to proliferate. These capture much older stories that will have been transmitted from generation to generation orally.

Sorting out what really happened between 11,000 years ago and 2000 years ago when written histories start to become reliable is very complicated. If for example you try to study what happened in the middle East just in the period from 3000 BC to 0 BC, from which we have a lot of evidence, you will be faced with trying to untangle history as recorded by the Mesopotamians, Persians, Egyptians, Greeks, Romans and others. You will find that each had their own names for gods and even for each others' kings and pharaohs. And the archeologists cannot agree on which are the sensible names to use, so unless you are seriously studying this and can commit to memory the various names used for the same god or king, you have to continually check back, which makes reading scholarly studies rather tedious. It is difficult to get the overall picture, and this is compounded by the tendency of archeologists to study a particular area, without reference to what was happening or had happened in other areas. This book takes the opposite approach and looks at the big picture.

Once you have this overall picture in your mind you can then try to match various things you find in books about a particular area back to an underlying rationale. This will be based on time and geography as the story progresses from here. We will hopefully through this find the thread that links everything together. We will need some ways to decide what to take notice of and what to ignore. I will be honest that I have neither the time nor patience to research deeply into the body of myths and legends that each culture has. There is just too much material unless you are dedicating your whole life to this study. Archeologists often dedicate their lives to studying just one culture, we need to take account of what is reported by any culture, that may have a bearing on the existence of the gods.

I have occasionally taken the time to read a major work on a specific culture, but I tend to rely on others who have read widely, who have made their own selections of what is important. In reading their books I have often reached sections that propose evidence of the activity of gods or aliens that I have read with a pinch of salt, believing only part of what I have read. I draw from such sections only high level facts that I consider are checkable, indisputable or at least possible. I label all the rest of these sections on a sliding scale from interesting but unlikely to wild far-out speculation that is highly unlikely. This area of reading really is a minefield and you have to be prepared at times to wade through unlikely speculation and theories to find the nuggets that might fit into your own developing theories about what you believe to be true.

Some books, that in bookshops get shelved in the same area as the way-out books, can be solidly based on real evidence and very scholarly. I was amused when last I visited Foyles bookshop in London, that when I asked the assistant where to find the kind of books I was looking for, she took me to shelves holding in her words ‘pseudo-archeology’. There, alongside some way-out books I found Collins’ book on Gobekli Tepe and Hancock’s Underworld, both of which report on and discuss solidly archeological findings.

However the speculative and sometimes ‘way-out’ books are often the best place to find indisputable facts that you don’t find in books in the archeology section of the bookshop. Experts quite often ignore objects that have been found that don’t fit the archeology community’s accepted wisdom. So these objects tend to be ignored and marginalised and you have to turn to more speculative books to find details, pictures and discussion of what might be their purpose. A good example is the obed schist bowl in the Cairo museum (see http://www.ianlawton.com/am12.htm). Scholars have no idea about its purpose or how it was made, but it most certainly exists. And it is a most peculiar ancient artefact that has been created to fine tolerances by processes we couldn’t replicate with the tools we believe were available when it was made.

So what will be our ways to distinguish what it is worth taking notice of? These fall into several categories. First is artefacts and constructions that we don't believe mankind was capable of creating. Some such as the schist bowl mentioned above, and the antikythera mechanism have been found on their own, though they are related generally to places. The schist bowl was probably created in Egypt and the antikythera mechanism was lost at sea in the Mediterranean. Some are intimately related to a particular place, such as the platform and wall at Baalbeck and the great pyramid at Giza. The problem with these is that they are often very hard to date, particularly if they were not buried when found. The schist bowl might have been passed down for very many generations as an object of wonder and awe, from very ancient times.

The second category is special places. By this I mean places that are special because of both what they are and where they are. Baalbeck is special because of its height above sea level, proximity to where agriculture started (or re-started) and closeness to the Mediterranean. Other examples are Stonehenge and the Nazca plains.

The third category I use is the high-level ideas and the commonalities that we can gain from myths and legends. The Flood legends are a good example of this. A second example I have mentioned is whether legends relate to whole pantheons of gods or single deities.

The myths and legends eventually get recorded in written texts. When considering these there is no way of telling how much the stories may have been embellished. However I do give rather more credit to a fourth category of possibly believable evidence, texts that are verifiably old that go into some considerable detail. One of these is Plato’s Timaeus, another is Ezekiel's vision of god. You can make your own personal judgement on these. You can put their validity into one of three categories. You can decide they are completely invented, or you can consider them to be a description in good faith but maybe with some things wrong and perhaps with later embellishment by others. Or you can decide that the description is genuine and the only thing wrong is our interpretation of what it says or our inability to believe it. The story about Atlantis and the Flood in Timaeus I think is in this latter category. It is a clear description without embellishment so you have to choose if you believe it to be invented, or true but difficult to believe. It rather comes into the category of being so unbelievable that it might just be true. It has sufficient detail to enable you to conjure with the story but doesn’t have the kind of ‘justification’ detail that the inventor of a story might build in to try to convince you it’s true. Good lies are built on lots of detail. Plato's Atlantis story is just put baldly out there for you to agree or disagree with as truth.

In relatively recent times in this category, the times of ancient Greece, there is the myth of Jason and the Argonauts. There are details in this story about happenings on their journey that were thought to be myth but which relatively recent writers have suggested might relate to real experiences of seafarers in the Mediterranean at the time of the explosion of the Thera volcano. The turning of day into night and the blotting out of the sun sounds impossible unless you can relate this to natural happenings. Really huge volcanic eruptions don’t happen very often, the last one in recent times, Krakatoa, now being beyond living memory. The Thera explosion was bigger than Krakatoa, so the strange detail in the story can now be seen to possibly make sense. The dust from Thera would have completely darkened the sky well outside the area of immediate impact of the explosion. And being in a boat Jason would have not have been bothered by the tsunami if sufficiently far from shore.

Also in this story is the idea of a golden fleece which sounds a little strange. This illustrates how an apparently strange and mythical bit of detail, once explained, can hugely increase the veracity assigned to the story. A sheep fleece made of gold would have been a huge amount of gold. Why might it have been created? Then someone suggested that an ancient method of panning gold from streams could have been to stake out a sheep's fleece on the bottom of the stream, to catch small particles of gold. If the stream bed was stirred up upstream of the fleece, as the debris raised into the stream flowed over the fleece the lighter dirt would have flowed past while the heavier gold sank onto the fleece. You could use the fleece over and over again at different places in the stream until it had caught lots of gold particles. If this was the process used then when the fleece was removed it would indeed be a golden fleece, sparkling with all the minute grains of gold and very valuable. It sounds a really sensible method, as to extract the gold all that would be necessary would be to place it in a ceramic pot and burn off the fleece leaving the gold behind, which would have been easy to separate from the ash. Often looking in depth at small details in a story can point to truths much better than the story as a whole does.

The myths and legends might also be related to where in the world they occur in a way that adds to the possibility of my story being true. If the gods were active differently in different areas of the world we might expect three different kinds of memories of the gods being among mankind to have come down to us. In parts of the world distant from their base as mankind developed after the Flood, that we are assuming is around Baalbeck, gods would only appear occasionally. They might drop in for a quick check on how mankind was developing, or they might have gone on a mission to help mankind with a particular development, such as agriculture or irrigation. The memory will be of distant gods who don't interfere much with daily life but who are respected and venerated. They might appear by ship or might fly in so that the gods don't have to spend months at sea. And as the gods will have been highly visible to mankind in their local area, any compunction about not showing themselves much to mankind, that might have existed when they were in Antarctica, would probably have been lost. They would have developed ways to show themselves while still maintaining the belief amongst the local people that they were different and exalted beings, even if they looked pretty much the same as humans as regards their body-shape.

In parts of the world that the gods can travel to easily we might expect memories of individual gods, or small groups of gods visiting. This might be when they needed to improve how the humans they were developing were acquiring required materials, perhaps copper or tin if the Gods were still around at the start of the bronze age. Or it might be when they needed to establish a facility that could not be established close to Baalbeck. The obvious candidate to think about in this context is astronomical observatories. Some observations will be possible or more accurate in more Northern latitudes that are not possible or less accurate nearer the Equator. Though the Gods presumably had their own instruments to observe the world's position in and movement around the solar system, this is one of those things that mankind would need to learn.

In the areas around their home base the memories of the gods will have been quite different. For a start, there are lots of gods in quite a small area. And different gods might have been delegated the jobs of keeping a close eye on different groups of humans. So the Mesopotamians may have had one God keeping an eye on them, while the Egyptians had another and the humans in current Turkey (Anatolia) had yet another. As there is likely to have been growing contact between these groups of humans, the existence of different gods will have become known. One can imagine a tribe having allegiance to 'their' god and being wary and fearful of the gods of other tribes. In developing the required allegiance and good behaviour, one can imagine each god with responsibility for an area persuading their tribes that they were more favoured than the tribes being controlled by other gods. Is this where ideas such as 'the chosen nation' arose?

In addition to the regional gods, there could well have been gods in the team who were specialists, helping mankind to develop certain skills. There could have been a god particularly skilled at developing agriculture, and another skilled in helping mankind with health. And another skilled in maritime affairs and how to build better ships that could sail against the wind, as Arab dhows can. There might have been a god who was called in to help them learn how protect themselves against other groups of humans, who would quickly become known as the god of retribution and war.

In short, in these areas local to the gods' base there will have been a whole pantheon of gods, the memories of whom will have entered into mythology and folklore. Stories of the interventions of the different gods, and any tensions between the gods themselves, will have circulated widely.

Assessing whether constructions and artefacts might be the work of the gods.

The remains of buildings and other constructions are one of the main kinds of evidence archeologists use. To differentiate something the gods may have built from all the things that might have been built by humans, we need to think a bit about the ways the gods' constructions might be different to those of mankind.

The first thing that differentiates the gods from mankind is the long length of life we have assumed they have. If they lived for more than a thousand years, they would surely expect their buildings to last for a similar length of time. Having to replace buildings every 100 years or so would be the equivalent of us knocking down and rebuilding our houses, factories and public buildings every 7 years. Though our capitalist system does sometimes make it financially worthwhile to replace buildings this fast, it is not a very sensible way to proceed if you live in a stable society that is not expanding and your whole outlook is long term.

A second factor that might differentiate the gods from mankind, that would impact on buildings, is size. Most of the various races of mankind and the precursor species have usually been less than six feet tall, with only a few individuals above this, excepting the increasingly well documented giant races in America, of 7 or 8 feet height. Some medieval houses in the UK reflect the fact that average height in those times was only a little over five feet, so doorways and room ceilings tend to be lower than those we now build. There are some buildings built tall for effect, such as cathedrals and manor houses, but doorways such as side-doors often still reflect the height of the users, as do ancillary rooms not built to impress. There are some very ancient buildings built on a very large scale. We might conceive of these as having been built to suit much taller beings, but as this can be easily confused with buildings built tall for effect it is not going to be at all easy to draw conclusions from them. However the remains of many constructions are not sufficiently complete to allow us to know for certain what the door and ceiling heights were. Often all that remains is foundations or lower courses of the materials the building was built with, because the rest has fallen down or been robbed-out to make other buildings. But these too can still tell interesting stories, such as when extremely finely worked hard stone blocks get incorporated into walls built of blocks much less finely worked and of softer stone.

Why our approaches to building don't last.

Any buildings that we can find that may have been built by the gods will be old. If they are still around for us to find they have lasted a long time. In our modern age we are getting rather careless about creating buildings that will last. Over the last century, in fact mainly over the last 70 years, Western countries have developed a throw-away culture. This has been driven by easy and cheap access to resources such as metals and plastics. But the main driver has been capitalism, the desire to make money. If your aim is to make as much money as you can, and you make it by producing and selling goods, for example cars, you want to keep on selling them. As people only really need one car each, once this point is reached, in order to sell more you have to persuade people to get rid of the car they currently have.

In the 1950s there was still expansion in the number of households in the Western world who managed to afford a car, there was a growing market. But through the 1960s the market started to saturate with not many households left to sell to who did not already have one. There was still a healthy market for cars as 1960s cars tended to rust very quickly, so they had to be replaced. This changed by the 1980s and rust-proofing started to be demanded by the purchasers. As cars lasted longer another way had to be found to persuade people to buy another car. So manufacturers started adding all sorts of new features to cars, such as music systems, electric windows, more interior comfort and so on. In the UK they changed the system of number plates so that it was easy to tell how old a car was, to stimulate more sales through the desire of people to have the status symbol of a new car. There is now a huge glut of older cars and second hand cars are extremely cheap. When the UK government wanted to stimulate production and purchase of new cars to help the UK economy get out of recession, they introduced a scheme to incentivise the scrapping of cars; cars that in many cases were still perfectly serviceable and pleasant to drive.

What has this diversion to do with buildings? Well the same capitalist considerations apply to buildings too. Houses are differentiated not so much by how long they last but by the luxuries they provide. What I would like you to consider is what you would do differently to modern practice if you were building a house to last centuries. There are two main things to consider, how well the materials last and how stable the structure is. The materials available for the main structure of a house are wood, brick, concrete and stone, which we will now discuss. Building houses in metal is possible but there are major problems in using metal for a permanent structure from the way that metal rusts and how it expands and contracts due to heat.

Building in wood.

There are wooden buildings still with us today that were built in medieval times. The Urnes Stave Church in Norway was built in 1150. In England there are many beautiful houses made of wood that have lasted many centuries. The oldest such as cruck houses date from the 1300s, with more surviving from 16th century Elizabethan times. The frames are made of very large section oak beams, oak being chosen because it one of the longer lasting woods and in plentiful supply in England at the time. The main reason such buildings decay and eventually fall down is because not enough care was taken to ensure that those beams that stand on the foundation are kept dry. Often it is the bottoms of the beams that rot, causing the house to sink and tilt.

Wood is also subject to surface decay because of the ravages of the wind, sun and rain, and to attack by insects. The examples above are of buildings in temperate climates. In tropical climates insect attack is a much more serious problem and wooden buildings only last tens or a few hundred years, unless extremely carefully looked after. Wood is of course also flammable, which has been the cause of the end of many fine wooden buildings and in some cases whole towns or major parts of cities.

Different kinds of wood last for different lengths of time. Of the kinds of tree that grow in temperate climes, Oak is one of the longest lasting. Pine, which was used to build the Urnes Church is fairly resinous and lasts well because of this. The heart-wood of cedar trees lasts well and is useful in warmer climates as it repels insects. The kinds of softwood used in window frames only lasts a few tens of years, unless it is kept well painted and hence waterproofed. As soon as water penetrates the paint surface the rot can start. It is interesting to note that the building trade is now using a lot of plastic for window frames and doors. This does have the advantage in that it does not need to be painted regularly, so it appears at first look to be a better material than wood. Plastic though has another problem, it oxidises and becomes brittle. With the right care wood will last hundreds of years, but there is no care that can be applied to plastic to stop it oxidising. The ultra-violet rays in sunlight speed the oxidation and make plastic progressively more brittle so that when it does break it is likely to do so catastrophically. There will be a good trade in replacing plastic window frames and doors once this happens to the houses now being built.

If you want to make something in wood last a long time, it is wise to make it out of a hardwood. Hardwoods are more difficult to work and are more expensive, which is why they are not often used for window frames nowadays. Hardwood doors are more common, as strength is important in a door and hardwoods are stronger. In the context of this story, a key point to note about hardwoods is that they tend to grow in the tropics. There are some that grow in semi-tropical climates, such as the cedars of Lebanon, but to get Mahogany you have to go to places such as India or Indonesia.

500 years is in our terms a good time for a house to remain standing, and with great care about weather-proofing and insect control a wooden building could last more than 1000 years; we have examples of 1000 year old wood that is still strong, as mentioned above. But if you could expect to live 1000 years you would know that if you use wood, you or your descendants will have to replace your house at some point, or continually renew sections of the wood.

If the gods built wooden buildings we would be unlikely to find evidence of them now. Very careful archeological excavation can reveal holes in the ground that can be reliably interpreted as post-holes. When a number are found together it can be inferred that they were part of a building. But the only way we would find wooden constructions from 20,000 years ago would be if they had been submerged in anaerobic conditions or frozen under stable ice. Our Adventurers might have found wood very useful for constructions but I suspect they would view wooden constructions as temporary.

Building in brick.

In recent history brick started to be used in England for houses around the 15th century, instead of stone and wood. Initially it was a very up-market material used for the houses of the rich. The poor people still lived in wattle and daub cottages with thatched roofs. Brick appeals strongly in areas that do not have good local stone. You don't find many brick houses in the Cotswolds, because they have lovely honey-coloured stone that is local and easy to work. And you don't find many in Yorkshire because Yorkshire stone was easy to quarry as the sedimentary layers in the stone make it easy to split into slabs and building stones of the right size.

There is of course much older brick in England, in the remains of buildings built by the Romans. And before that in many countries of the world mud-brick was used. Creating stable bricks that do not crumble and that resist rain requires high temperatures in their firing, an art that the Romans knew but which was then lost for many centuries. The Roman buildings show us that fired brick can last for two thousand years. The Roman brick walls, for example those at Wroxeter are however very thick, many bricks wide. The outer surface is now rather crumbled and decayed. Bricks suffer from small surface cracks that permit water to enter, which can freeze and expand, pushing the surface of the brick off. It is possible to find houses built of brick as recently as the second part of the 20th century that have bricks that are seriously crumbling. Engineering bricks that are used to build structures such as railway viaducts are harder and more impervious to water, due to the more carefully prepared clay and higher firing temperatures, which makes them more difficult and expensive to make.

The other thing that happens with bricks is that the mortar between the bricks decays. When we needed to make some changes to the old cottage we once lived in, that had been built about 1780, the wall that we needed to dismantle could be taken apart by hand. The bricks just lifted off as the mortar had turned to dust. If a brick house in this state were in an earthquake zone, even a very small earthquake could cause the building to become unsafe. It seems that brick also does not provide a very good solution to building a house to last 1000 years, though it does have advantages over wood.

Brick of course also has some big disadvantages relative to wood; it is not used for roof beams. You can build a house completely of wood, but when building in brick wood is needed for floors and the roof. The reason is the kind of strength these materials have. Both brick and wood are strong under compression, brick rather more so than wood. Wood is also strong under tension, when it is being pulled or bent, because it is made of its long cellulose fibres. Brick is pretty weak when under tension. Floors and roof beams have to withstand the bending forces of the things bearing down upon them, the weight of the tiles on the roof and the people and furniture in the buildings. When you bend something down, the bending action stretches the top part of the material, in other words puts it under tension, and squashes (compresses) the bottom part. In bricks the particles of dried clay cling together initially through physical rather than chemical forces. When it is dried and baked the clay starts to cling together through chemical forces which are stronger. If clay is fired at high temperatures it can become a ceramic, which means that the individual molecules have been fused into a crystalline structure, which is stronger still. Heat it more and it will become molten and will turn into a glass with even stronger molecular bonds. But when being bent it takes only the first molecular bond on the surface that is under most tension to snap for the beginnings of a crack to form. The crack will then quite rapidly propagate right through the material, progressively stretching and breaking the molecular bonds. Read J E Gordon’s fascinating book “The New Science of Strong Materials, Or Why You Don’t Fall Through The Floor” if you would like a better understanding of this.

While I can fully believe that the gods would be able to make much stronger bricks than we can, brick does not strike me as what we should be looking for if we want to find buildings built by them. It doesn't have many advantages over stone, except the ability to mould it to precise sizes and different shapes, rather than having to cut it.

Building in concrete.

How about concrete? The Romans made a form of concrete that can still be seen surviving today, so it obviously can last a couple of thousand years. The surface of concrete, when it is made from very finely ground materials, can be made more impervious to water than brick as a chemical reaction happens when the cement is mixed with water. There are therefore fewer cracks to permit water to enter and degrade the surface. However you will see that the Romans used concrete in places where the concrete is not under any tension. Concrete can withstand compression very well, but can't withstand much tension. We see concrete used so widely now for bridges and for beams in buildings because Joseph Monier invented reinforced concrete, or ferroconcrete. The ability to withstand tension forces is achieved by embedding steel bars in the concrete. This works very well, as we can see from the number of concrete buildings and bridges that have been built around the world.

There is however one major problem with ferroconcrete; the steel bars have to be completely encased in a sufficient thickness of concrete to stop water finding its way in to the metal. This requires the concrete to be mixed extremely carefully so that all parts of the aggregate are properly coated with cement and no air bubbles are left. If water does find its way in the steel bars will of course rust. If they rusted away they would no longer take the tension forces and the concrete would become weaker. But that is not the main problem if water gets in. Long before a steel bar in ferroconcrete rusts away it destroys the concrete. Rust occupies more space than the metal before it rusts. This expansion exerts a huge force on the concrete around the bar, prising the concrete apart. It pushes on the concrete and I have already explained that concrete cannot withstand the tension forces created by this pushing. The more the concrete cracks, the more water enters and the faster this process develops. You don't often see this happening on buildings, though it is the most common cause of the failure of concrete in bridges and buildings, but if you keep an eye out for fences made with concrete stanchions you will fairly quickly find examples. Concrete stanchions for fences are often made a lot less carefully than the concrete used in buildings and can be seen completely broken apart by the rusting steel rods.

Considering the 1000 years that the gods needed their homes to last, and given the disastrous consequences of the failure of concrete beams, concrete does not look to me like a good material to use.

There is another problem with concrete. It requires a great deal of messy processing to make the cement needed to make concrete, and noisy and dusty quarrying and stone-breaking is needed to create the small stones for the aggregate the cement is mixed with. No doubt the gods could create the kinds of machines we use nowadays for this, but logically it seems a strange idea to grind up stones into small bits just in order to then recombine them into large sections. A strange idea that is, if there is an easier way.

We have nowadays very large and powerful machines. We can destroy whole hills with our quarrying machines, we have 50 ton lorries thundering around our roads, we can build ships that weigh and carry tens of thousands of tons. But the thing we find most difficult is lifting heavy things. Our answer to this problem is to chop things we wish to lift into small bits, which can then be lifted in suitably sized containers or on conveyor belts. We are getting better at lifting heavy things. Concrete beams for bridges are now sometimes made in factories rather than on-site at the bridge, because the quality control of the concrete can be higher. They then cause major traffic jams on roads as huge low-loaders transport them slowly to the bridge.

Just think how different our approaches could be if lifting heavy things was easy for us.

Building in stone.

Having dismissed wood, brick and concrete as being unsuitable for houses and other structures that have to last 1000 years or more, that brings us to stone. Stone can be very strong under both tension and compression. It is stronger under compression than under tension, but stone made of very fine and uniform particles has good tensile strength. Around Yorkshire in England, where there is plentiful good building stone, there are many examples of stones used as the lintels for doors and windows, to bridge across the openings of inglenook fireplaces, and even as bridges over rivers, such as the clapper bridges at Wycoller Country Park near Pendle, Lancashire.

Stone is originally made from very small particles deposited in even layers which creates sedimentary rock, or minerals melted by volcanoes that creates igneous rock. Selecting the right stone for a job is critical and there is a great deal of difference in strength between the different kinds of rock. Sedimentary rocks such as limestone and sandstone can be easy to quarry as they often have weaknesses between the layers that have been deposited that makes it easy to split the stone out. But good thicknesses of very uniform sedimentary stone can still be strong. Igneous rocks created by volcanoes, of which granite is one type, are harder to quarry and vary in their crystalline structure depending on how rapidly the molten rock cools, and of course what minerals are in it. Igneous rock is considerably stronger than sedimentary rock. Then there are metamorphic rocks such as marble to consider as well, which are sedimentary rocks that have been changed through volcanic heat.

Having chosen the right kind of rock from which to make your building stones, when stone is quarried it does start to slowly decay. Having been under huge pressure in the ground, when this pressure is removed the stone very slowly starts to expand. Layers can eventually flake off but this does take a long time. The other thing that happens once quarried is that the stone is exposed to weathering. For some soft sandstones weathering can be quite fast. However we only have to look at the stone buildings and other constructions that have survived to see that in general stone lasts much longer as a building material than brick or concrete.

The best protection against the problems of surface flaking and weathering of stone is to use large pieces. It is only the outside layers that suffer from these problems. But there is a trade off between the difficulty of lifting and placing large stone blocks and the size of stones that can be used. Before machines were used in quarrying it was worthwhile to accept that more effort would have to be put into the lifting and placing, because the effort of cutting was high. Once machines were available to cut stone with less human effort, the sizes of stone used in buildings was reduced, so that stonemasons could handle and place the stones when building, without the use of machines. If you look at stone buildings built in the 17th, 18th and 19th century you will see that the sizes of stones used got smaller, as cutting stones to size became more mechanised and easier.

From this comparison of building materials there are two conclusions. The first is that stone would surely have been the building material of choice for the gods. The other alternatives don’t offer the longevity necessary for long-lived beings. There are lots of different kinds of stone available. The only problems are that you have to go and get it from wherever it is on the Earth and you have to be able to cut it and transport it.

The second conclusion is that stone can be used to greatest effect in buildings if you can cut, carry and lift large sections of stone. If so then you have a material that has sufficient tensile strength for roof beams as well as the compressive strength for walls, to support the great weight of the stone roof beams. To get really long beams that are stable on their end-supports, and building stones that will make a strong wall with rigidity, it is necessary to have stones carefully squared, with right angle corners. The bigger the stone the harder this is to achieve.

We can make deductions from the ways that mankind has tackled the problems of using stone, compared to how the gods might have done it. We chop it into small lumps to make building stones that can be lifted and placed, joined with mortar. To use stone to span long distances, in bridges and cathedrals, we make the roofs with arches so that all the stone is under compression and none is required to take tension forces. And then in recent years we have invented ferroconcrete so that we can make 'stone' beams that will bridge a decent distance between walls without the complexities of making arches. If we could have easily cut, squared-up, carried and lifted into place huge stones to be the roof beams, there would have been no need for all this cleverness and invention with arches.

Key differentiators that we will need to look for, between structures created by mankind and those created by the gods are therefore the size of the stone blocks used and whether they have been cut to have properly flat surfaces and squared corners.

A good example of the kind of building that archeologists claim was built by mankind, and that those who think there was a race of people with very high technological skills beyond our current skills who were responsible for it, is the Osirion at Abydos. The size of the stones used for the central 'nave' does not make any sense in a human constructional context. It is possible and considerably easier to enclose a space of this size using much smaller and lighter stones. For comparison look at the main temple at Luxor. The size and arrangement of the Osirion pillars and lintels must have been done to impress, or for longevity, or both. And it is not only the size of these stones which is impressive, their alignment is also impressive. To make a rectangle of these stones the pillars must have been placed with extremely high precision. Given the length of the joins between the stones and the size of the whole building, any slight height difference in the pillars or any slight angular displacement from truly level would show up in changes in the width of the joins between the stones. A 1 metre wide pillar that was half a degree out of level would have the join 0.5 cm wider at one side than the other, which would be easily visible.

Archeologists reckon that the Osirion dates to the same date as the temple of Seti that it adjoins, a little after 1300BC, even though the architectural style is very different. However the Osirion foundations are at a lower level than the temple of Seti, and are below the current water-table. The floor of the Osirion is often flooded. Straightforward logic dictates that the Osirion must surely have been built at a time when the water-table was lower. Which must cause us to ask when that was and what could have caused the water-table to rise. It is easy to imagine that a water-table can quite suddenly become lower, if some new cracks opened up in the rock below the temple. And I guess that if there were rock movements that closed-up underground water drainage cracks then the level could rise. However in this case the level of the groundwater is controlled by the rive Nile, about 6 miles away. The water level in the Nile has been a matter of great concern to Egyptians because of the periodic Nile floods, which create the fertility of the Nile valley, so those who built the Osirion must have known they were creating a building that would flood. They would in any event quickly discover this as it surely took more than a year to build. It would appear that it was designed to be flooded for the effect this would create, a design decision that will have much complicated the building process.

What to look for – metal.

We have decided to look for very large well-squared stones as evidence for structures built by our Adventurers. However there are other things to consider as well as the main construction material. Our buildings also contain many other materials that are often found in archeological digs. It is worth a bit of time to consider whether the presence or absence of these things means anything, if found alongside any structures we feel might be the work of our Adventurers. For example I didn't consider metal as a possible building material for the reasons given above, but some metal might have been used for specific features, fixtures and fittings, so we should spend a few moments considering what happens to metal over long periods.

All metals except gold react with air and any water vapour that is around. The nitrogen dioxide in air is not particularly reactive on its own, but the oxygen is. Water vapour can vastly accelerate the rate at which metals react with the air, for example iron rusts very slowly if completely dry but can rust extremely rapidly if there is any dampness at all in the air. The carbon dioxide in our air can combine with water vapour to create carbonic acid, which is a weak acid. But water vapour can also react with the nitrogen dioxide and any sulphur dioxide emitted by volcanoes to create the strong acids, nitric acid and sulphuric acid. Acid rain is not just a creation of industrialised economies. Acids and metals react together rapidly.

There are a few places on Earth that have a very low concentration of water vapour and these desert areas are used to store aeroplanes that are no longer economically useful. Desert airparks are really an appalling testimony to how wasteful our culture is. Huge effort and a great deal of mainly non-renewable energy has been expended to mine metal ores and extract the metals but such is the way our global economics and capitalist system works that companies find it more sensible to more-or-less abandon the planes in the desert than to recycle them. Nominally they are being stored so that spare parts can be scavenged for use on other planes but in reality they have been dumped. Thankfully we are now beginning to grapple with how to make cars and other metal products recyclable and how to build this into the economics of their initial creation, but we have a long way to go before, as a world, we could call ourselves good at recycling.

Metal can be used in buildings even though it rusts or oxidises. The lead used for flashings on the roofs of buildings becomes very thin in only a few hundred years, as its surface is oxidised. It doesn't appear to rust as rapidly as unprotected iron, but it is still oxidising all the time. Copper is sometimes used to cover roofs. It turns green as it oxidises and can survive for tens of years before needing to be replaced. Iron rust, which is iron oxide, is not a totally bad thing from the point of view of how long metal survives, as it is a very stable chemical which has already oxidised and therefore does not oxidise any more. Rust on a flat surface of iron does a fairly good job of protecting the iron from further degradation. Railway lines last for many years. But rust is not as strong as iron so the surface tends to break up over time as it is battered by rain and wind. Thin sections and corners will quite quickly break and hence expose un-rusted iron which will then rust.

Iron can be protected by creating a less reactive surface coating. This is what zinc plating or phosphoric acid treatments do, as zinc metal and iron phosphate do not oxidise as fast as iron does. However such surfaces are thin and over time, as the iron heats up and cools down during the day and night, expanding and contracting, these coatings eventually break down. Objects made of iron or other metals might well survive for 10,000 or more years if protected from the weather, so it may be possible to find such objects that date to well before we know human beings started smelting and working metals. There are those very intriguing little metal objects on the so-called 'Gatenbrink's door' found in one of the shafts that lead up from the queens chamber of the great pyramid at Giza. By any reckoning the metal they are made of is 5000 years old, and if some theories about the great pyramid are true, they may be 10,000 or more years old. They have been protected by being deep inside the pyramid.

Double this number of years or more would make it much more unlikely that any exposed metal would survive. So if the gods made metal objects more than say 20,000 years ago, that were exposed, we would be unlikely to find any evidence of them. But metal would survive for very long times if completely protected from air and water, perhaps by being embedded under stones in a thick wall, with no gaps through which damp air could enter. The problem with this is getting permission to invasively investigate to find such metal.

In general though, it is likely that any metal used in constructions would have been reserved for purposes that required particular capabilities of metal not possessed by stone - such as electrical conductivity.

What to look for – dating material.

It is not easy to decide if a stone construction is particularly ancient and possibly built by the gods. One difficulty is that stone itself cannot be dated, though a technique to assess when it was last exposed to light before being built into a wall has been developed by Ioannis Liritzis. This is known as surface luminescence dating. This is a recently discovered technique so it has not been much used so far. It also involves sampling material from inside the wall so it is a bit invasive. Archeologists would be unlikely to get permission to drill into Stonehenge for example, to sample stone in the joints between the uprights and trilithon top stones.

Another difficulty is that very often stone in old constructions is scavenged to build new buildings, as this is a lot easier than quarrying stone. A stone that looks as though it might be the work of our Adventurers might not be in its original structure. This is most likely to happen to fairly small stones, which we might consider have been fashioned in ways we think early mankind could not have achieved. The very large stones that we don’t believe early mankind could have shifted obviously could not be used in this way. The fact that very massive stones in some ancient buildings had not been scavenged is itself testament to how difficult ancient mankind found it to cut or move these stones. But as human beings have shown themselves capable of building quite marvellous structures in stone we need to be certain that a structure could only have been built by our the gods. We need to discuss how large stones need to be in order for them to be evidence for the gods - a matter to be discussed in a moment.

To overcome the problem of dating stone structures, archeologists put great store on dating material they find while excavating. Things such as coins will not be relevant to our discussions. An advanced group such as the gods will have found other ways to deal with the function that money serves. Besides money is really a tool for societies where there is scarcity of food and resources, that have to be shared out in some way. The gods would have had a society of plenty and a mind-set that avoided consumerism.

Pottery shards and glass are the most useful dating artefacts to archeologists, as they last for a very long time and stages of development of pottery can be traced. However these come very largely from the habitation of buildings. Pots are used for storage and cookery. They occur in quantity in many archeological sites because they break and have to be discarded. The gods would not have put up with something so breakable. And as we are assuming they have a strong desire to live sustainably and to recycle, they are most likely to have removed all such utensils when they left a site. So in general it looks as though we will be unlikely to find any evidence of this kind. The only exception might be objects whose creation could not have been achieved by early mankind, which if they were left behind by the gods would probably have been salvaged by mankind and moved to other sites, such as the jars made of stone found in Egypt.

What to look for – foundations.

Structures need something to stand on and here we might have more luck in a search for evidence. For a good long-lasting structure you need a solid and level surface for it to stand on. This level surface must also be capable of supporting the weight of the structure or object that is to stand on it. So a good question to ask is whether we know of any places in the world where there are very well leveled surfaces capable of supporting considerable weights. There are two that I know of. The Giza plateau in Egypt on which the great pyramid stands has been leveled very carefully. It must have taken a considerable amount of work. It has also been done to a high precision, it is very level. The other is the area that the Baalbeck temple stands on.

There are techniques that enable leveling of ground without resorting to technology such as lasers, which human beings might have been able to achieve. Measuring lengths, getting right-angled corners and ensuring the surface is flat (as opposed to level) is not very hard. Within the limits of the strength of a rope, a stretched rope can be pulled reasonably straight. Points can also be sighted across considerable distances, so with good eyesight it is possible to tell if the sides of a square and its diagonals are straight both side to side and up and down. Sighting across the surface can detect if there are high parts and a tightly-stretched cord on the surface will show up low parts. Right angles can be achieved through a knowledge of geometry; Pythagoras may not have been the first to know that the square of the hypotenuse is equal to the sum of the squares of the other two sides of a right-angle triangle.

But you cannot with these methods know if each corner is precisely at the same height relative to the Earth and gravity. And if the surface is not completely level whatever is constructed on it will lean and hence not be as stable as it should be. A possible method for ensuring the surface is level would be to float a reasonably long piece of wood on water, and to sight along this and compare it to your leveled surface. The accuracy would not be high but this might be acceptable for small constructions. Another approach would be a tube full of water which can allow you to level points as far apart as the length of the tube that you can make to hold the water. Before plastics and fully waterproof textiles such tubes could probably only have been made from animal intestines. I am no expert at stitching intestines together but I imagine with care they could be joined and the joints waterproofed with naturally occurring tar. These leveling tools would after all have been the high technology of the time and these and the other things needed to level the Giza plateau might have cost the equivalent, relative to their society, of what our modern societies have spent on tools to build the Large Hadron Collider. If the rock surface that you are trying to level is impermeable then channels could be cut into it and flooded with water, which some people think is the approach used at Giza.

The ‘bottom line’ of this discussion is that is going to be far from easy to differentiate between stone structures constructed by mankind and those that could only have been built by the gods. It is perhaps best to approach this the other way, by starting with the assumption that the most likely answer to the origin of a structure is that it was built by humans. The key question then becomes what the limits are of what ancient mankind could achieve. Ancient human beings had no metal tools of even the simplest kind before the advent of copper working some 6000 years ago. This implies that they could not have had any metal machines and certainly no power-tools. But they were clever. Through re-constructions and experiments to explore how they might have achieved things that appear impossible at first sight, we have re-discovered various things that show how clever ancient people were.

Making the assumption that the majority of ancient structures were built by mankind makes our search for structures built by our Adventurers much easier. We only need to look at those few structures where there is a chance that we can prove they were significantly beyond the capabilities of mankind. It really only needs one structure where we are sure it is beyond mankind's capabilities to show that there must have been a group of people more technologically advanced than we know mankind was, at the time it was built. Large structures cannot be forged as the Piltdown skull was, all we have to do is interpret what we are seeing correctly.

What could ancient mankind have built? - quarrying.

The methods ancient people may have used to cut and quarry stone, and to smooth and to level stone surfaces are worthy of consideration. With our metal tools and explosives it is hard to imagine how ancient people quarried without them. But techniques are available. The first is that hard stone can smash soft stone. If you have a very hard stone it is possible to smash somewhat softer stone quite quickly. Hardness is measured on the Mohs scale of mineral hardness, which compares the hardness of minerals on a scale of 1 (talc) to 10 (diamond). But the scale is not linear, it is a scale designed to easily compare very different hardnesses of materials, so we also have the concept of absolute hardness. Limestone at 3 on the Mohs scale has an absolute hardness of 9, granite around 6 on the Mohs scale has an absolute hardness around 72 and diamond at level 10 on the Mohs scale has an absolute hardness of 1600.

Though it is heavy work quarrying relatively soft rocks like limestone and sandstone it is not that hard, it just takes quite a long time. Granite, particularly hard granite, is very considerably more difficult to quarry. It is usually quarried now by wearing it away with gemstones or corundum powder rather than by trying to pulverise the stone around the block required. Wires are now used to pull the powdered corundum or gemstones along the cut being made in the granite. In ancient times if this method was used there was no wire so ropes would have had to be used. This would work but they would wear out quickly. Grooves can also be cut using a thin (harder) stone to pound away the stone being cut. This would only work down to the depth the stone could reach and still be dragged back and forth along the cut. To get deeper than this it would be necessary to cut a wide groove that could be worked to an arms-length depth. Beyond this the groove would have to be wide enough for a person to get inside to continue pounding. To cut underneath the ends would have to be undercut and then the stone supported on logs so that people could lie underneath the stone as they cut it, rather as miners used to work eighteen inch coal seams. Difficult and dangerous work but possible.

Drilling stone could be achieved similarly to wire or rope cutting. Gemstones can be embedded in the end of a sturdy stick which is used to move the grinding paste that will form in the bottom of the hole as bits of the gems break off. Modern drills have a spiral cut along the shaft to remove the material being drilled out of the stone, with the material being forced into this by the downward pressure on the drill. It is possible to imagine a spiral groove being cut into the wooden drill shaft, but only if it was thick enough to permit this without weakening the wood shaft of the drill to the point where it would not exert sufficient pressure to grind the granite. Ancient humans might have had to regularly remove the cut stone from the hole by inserting a stick with fat or a natural glue on the end. Of course the key reason holes are drilled in modern quarrying is to place explosives, so this reason for drilling holes would not have been relevant in ancient quarrying. Cutting grooves all the way round the required stone would have been the main method of creating stones of specific size and shape. Where we find drilling of stone artefacts, such as the granite box in the great pyramid and the finely cut stones in South America, we need to investigate closely whether or not this would have been possible for humans.

Stone also fractures, so continued hammering at the right point can propagate cracks that will eventually break very large stones. I have already recommended J E Gordon's book if you want to understand how this happens. If you can find an existing crack there is another and easier method than pounding, which is to hammer a piece of dry wood, or better still several into the crack. Then put a wet cloth over the wood. As the wood absorbs water it exerts an enormous force on the rock. You can see the kinds of forces that are possible in this way whenever you see a buddleia bush growing in a wall and prising the bricks apart, or when you see a dandelion forcing it's way up through tarmac. The problem with this method of quarrying is that the shape of the stones you get is dependent on where the natural cracks and weaknesses are. This is fine if you just want to build a circle of stones, such as that at Avebury in England, but not very good if you want shaped stones such as those at Stonehenge. To get these you would have to split-out a stone much larger than the stone you need, then carefully shape it by pounding the surface with rocks.

If you have very solid rock without cracks, and no angles from which to attack it to create cracks, there is yet another way. Make a nice hot wood fire against the rock and get it very hot for long enough for the heat to spread into the rock to a considerable depth. Then persuade someone to throw cold water onto the rock. The sudden cooling of the surface of the rock will make it contract, but as rock does not conduct heat anything like as well as metal, the cooling and contraction will not spread into the rock fast enough to eliminate the strains between the contracted rock on the surface and the still warm and expanded rock inside. The result is likely to be explosive breaking of the rock, which is why I suggested you find someone else to throw the water. This is one of those things you should not try at home!

Ancient mankind may also have had a different sense of time to us now. We know that even in the last 1000 years people have been prepared to take much longer to achieve the buildings they wanted. Some cathedrals took 70 years or more to build completely. The Cathedral Church of the Holy Family, in Barcelona, started in 1882 is still unfinished, with an estimated completion date of of 2026. All that is needed is sufficient drive by those that are organising the building and sufficient sense of purpose or reward to persuade the labourers.

What could ancient mankind have built – transporting and erecting.

With our familiarity with machines for the performance of heavy tasks, those of us in the Western world have rather lost sight of what human muscle-power can achieve. If you take up archery and try using a longbow you will discover what huge arm strength archers had at the time of the battle of Agincourt. Or consider the muscle power necessary to cut a large tree into planks in a saw pit. 'Top dog' would have had to continually pull up the heavy saw and control its position on the trunk, while 'Underdog' put the cutting force into the blade as he pulled it down. All day, every day. Women continually carrying water from the well would also have had considerably more strength than most Western-world people do now.

It is tempting to look at large stones, such as the stones of Stonehenge, and to imagine it is beyond the capability of human beings to move them. The biggest trilithon uprights weigh some 50 tons. However I understand from talking to the guides at Stonehenge that it has been demonstrated that a well trained team of 180 men can move such weights. They used tree trunks as rollers works for the smaller stones of say 20 tons. The very largest stones would tend to crush the rollers and push them into the ground, but using a very large wooden sled to spread the weight of the stones this can be avoided. They achieved surprisingly high speeds once they had got the sled moving.

Erecting very large stones can be achieved by using the stone's own weight. By dragging it up a ramp until say a third of the stone extends beyond the ramp, the weight of that part will help it to pivot down with the application of a relatively small force applied by ropes to make it tip. Raising the stones that form the top part of trilithons is somewhat harder but these are not as heavy as the upright stones. Again ramps and the stone's own weight can be used. Drag the stone up a ramp at the end of which are a couple of three foot high walls of stone or tree trunks, with the walls say a couple of feet apart. A relatively small force pushing down on one end will now cause the stone to pivot on the wall nearest to that end. This creates a gap between the stone and the other wall which can be filled with some more wall material. Now push the stone down at the other end and you get a gap above the other wall. The stone can be rocked back and forth with the walls being raised a little at a time until you have got it to the height you want. If the walls are then extended between the upright stones the top stone can be dragged across to the right place. The walls can then be demolished to allow the top stone to drop onto the locating bulges on the top of the upright stones.

All it takes is determination, careful control and sufficient manpower. A 50 ton stone balanced at its mid-point will have 25 tons sticking out each side. To lever up one side with a force pulling down on the other end, you can imagine all the weight of that side being concentrated in the middle of that section, which is its centre of gravity. As you are raising the centre of gravity of the side going up by pulling down on the other end twice the distance from the pivot, you only need half the force, in other words 12.5 tons, about 12,500 Kg if we are talking metric tons. A 10 stone human is a bit over 60 Kg, so getting 208 people pulling with all their weight on one end will lever the other side up. As you can push up on the other end as well and they would choose the biggest people for this kind of job, the 180 men shown to be able to drag the stones to Stonehenge could no doubt do the raising of the stones as well.

There is no reason to suppose the involvement of the gods in the building of the trilithon circle at Stonehenge. It was most likely a vanity project by a powerful (and human) leader. Whether the gods were involved in creating earlier phases of Stonehenge is a different matter, as discussed in the story.

In assessing whether we have any real evidence of building by the gods rather than by ancient mankind, it is wise to err on the safe side and look for things that are considerably beyond what it has been demonstrated ancient societies could achieve.

Stone constructions beyond ancient mankind's capabilities – Baalbeck.

Consider the Temple at Baalbeck in the Lebanon. The Wikipedia entry on Baalbeck contains the following:

“The Roman construction was built on top of earlier ruins that involved the creation of an immense raised plaza onto which the actual buildings were placed. The sloping terrain necessitated the creation of retaining walls on the north, south and west sides of the plaza. These walls are built of about 24 monoliths at their lowest level each weighing approximately 300 tons. The western, tallest retaining wall has a second course of monoliths containing the famous trilithon: a row of three stones, each over 19 metres long, 4.3 metres high and 3.6 metres broad, cut from limestone. They weigh approximately 800 tons each.

A fourth, still larger stone called Stone of the Pregnant Woman lies unused in a nearby quarry about 1 mile from the town. Its weight, often exaggerated, is estimated at 1,000 tons. An even larger stone, weighing approximately 1,200 tons, lies in the same quarry across the road.”

Recently an even larger stone has been found buried in the quarry. In exploring how such huge blocks relate to the lifting capacity of modern cranes, an answer on answers.yahoo.com states

"Liebherr the heavy equipment company have developed a new all terrain nine axle mobile crane that is the worlds most powerful. The Liebherr LTM 11200-9.1 has a maximum lifting capacity of 1,200 tons with its powerful 100 metre (328 ft) telescopic boom."

It is clear that cutting and moving such huge stones is right at the limit of what we could achieve with our technology. Plenty of people have had a go at debunking the idea that aliens with some kind of anti-gravity technology were necessary to move such large stones. Their proposals, such as the one reported on the PaleoBabble website, suggest the use of huge numbers of oxen with pulleys and/or capstans to generate the necessary forces. It is quite believable that all sorts of techniques and various forms of power were employed in moving these very large blocks. Even if you have an anti-gravity machine, you still have to move the mass of the stones. As has been shown in the stonehenge example above, this is unlikely to be an insuperable problem once you can overcome friction, but you will still need a firm surface for the feet of men or oxen that are pulling. Or if you are using machines such as capstans, then these will have to be anchored to the ground in a way that allows them to take the force exerted by the ropes. Men or Oxen each with their feet pushing against the ground could produce the necessary force if you have enough. But if all the ropes from many men or oxen go through a pulley or round a capstan, to change the direction of pull, the anchoring of that pulley or capstan has to take the whole force. It is possible to create strong anchor points by hammering stakes into the ground and roping them together in a way that increases leverage. I have done it while building aerial runways with the scouts. But you need ground into which you can hammer deep stakes so this is not a technique you can use on stony ground at the top of a mountain, which is where the Baalbeck platform is. And as you move the block you would then have to re-anchor the capstans.

It is overcoming friction that is the real problem. First of all the surface you are dragging the stone along has to be very flat if you are just dragging the stone along the ground, or nearly flat if you are using rollers or a sled. But what would you use as rollers? Wooden rollers would not work, they failed on the much lighter stones of Stonehenge. If you created a huge sled it would be in danger of being crushed by an 800 ton stone, even if made of hardwood not softwood. If stone rollers had been created they would likely still be around to be seen. If you manage to solve the problem of rollers then the next problem is the extra effort to lift the stone going uphill from the quarry and then lifting the stones so that they are ready to be slid into position on top of the lower course of stones. Finally you get to the point of sliding the stone into position on top of the lower course of stones, for which rollers can no longer be used. At this point you would need to change to using some kind of lubricant. A liquid on its own would be useless as it would flow out under the pressure exerted by the stone, so you would use some combination of liquid and solid that would resist being squashed out sufficiently to give a semi-fluid layer under the stone, such as a layer of gravel that would squash into a slurry. But no such cement layer can be seen.

The techniques suggested for constructing the Stonehenge trilithons are not going to be applicable here. An 800 ton stone is 16 times as heavy as the biggest Stonehenge stones. That would imply needing the weight of nearly 3000 people pulling down on one end to raise the other end on a pivot. Oxen might be used to pull a huge stone along flat and hard ground but ox teams would not be controllable enough for final positioning.

But the most intriguing question, discussed in the story, is why would you bother? When you have started building the wall with 300 ton monoliths, why do you need to build the second course with 800 ton monoliths? It is plain to see that when the Romans built their temple on top of the already existing structure they used much smaller stones. Understanding why structures we think might have been constructed by the gods were designed and built in the ways that they were adds very considerably to the assessment of whether or not it was built by the gods.

If we believe that the combined problems of moving, lifting and placing 800 ton stones were beyond the capabilities of ancient mankind, then there are two possibilities for how the gods achieved it. One is that they had huge and very strong machines, presumably made out of metal as this is the only material we know of that can take the forces involved. The cranes we have that can do this are not mobile when carrying such weights, and it appears the biggest stones at Baalbeck came from quarries a mile away. The crane would have had to be continually moved and re-erected in order to pick up the block and move it a short distance at each crane position.

The other possibility is that our Adventurers had some way of counteracting gravity. If we had such a capability, combined with the capability we do now have of cutting very large stones, we might also construct megalithic buildings. There is an intriguing report from a Dr Jarl stating that he witnessed Tibetan monks levitating stones with sound. You could also explore the history of Edward Leedskalnin and the Coral Castle he built in Florida (see http://coralcastle.com/), apparently single-handedly. And you could explore what science is discovering about acoustic levitation. We do not yet know everything that science could tell us. Unfortunately it would be pretty hard to get research funding to explore anti-gravity as the scientific community has this idea pretty firmly placed in the ‘not possible’ box.

Whoever cut and moved these stones, the fact that they are there indicates that some society, at some point in history before the Greeks and Romans, had the capability to cut and move very large stones, presumably reasonably easily. There are quite a few other buildings in the world built with stones that seem to modern eyes impossibly huge to cut and move.

However it is not necessary to answer the question of whether the gods brought advanced technology and anti-gravity to bear to move exceedingly huge stones. The case I am building in this book does not depend on any specific kinds of evidence, as none of them can be proved without doubt. The judgement we need to make is that of ‘beyond reasonable doubt’. And it is more likely that we will be able to say that beyond reasonable doubt humans could not have constructed the building we are assessing, than to say beyond reasonable doubt that it was made by the gods as described by this story. But if humans did not make it, who did?

****