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Neolithic Astronomy

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Archeoastronomy – The Stone Circle Builders of Europe

One of the most intriguing periods of any study into ancient astronomy lies back in the Stone Ages, where ancient peoples erected great stone monuments designed to help predict astronomical phenomena.

Most people have heard of Stonehenge, created in 3000 BCE, but many monuments scattered around the world, from North America to India, suggest a level of sophistication in ancient engineering and astronomy. For the first agriculturists and semi-nomadic peoples, who lived close to the cycles of the earth and the seasons, tracing the passage of time was important.



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Archeoastronomy and Confirmation Bias

The problem with any investigation of megalithic science is that it has undergone a revival in recent years, as people look deep into the past for spiritual identity. They often ascribe spirituality, mysticism, and magic to the many monuments that cover the earth, reading far more into these structures than actually exists.



Stonehenge (Public Domain)

We can safely assume that megalithic people did imbue their stone circles and megaliths with religious and ceremonial functions, and that many were attuned to the solstices. That is as far as it goes, at least until better evidence is unearthed that does not suffer from accusations of confirmation bias. Their work already shows the sophistication, innovation, and advanced technology of ancient man, without ascribing attributes that are simply not there, and which ultimately does ancient peoples a great disservice. Many people will remember the work of Gerald Hawkins, who claimed that Stonehenge was a sophisticated calendar used to plot many astronomical solar and lunar phenomena. My old physics teacher, the great Alan Davies, a man with a passion for megalithic structures, destroyed most of this when he was asked to co-author a book with Hawkins, pointing out that it was based upon wishful thinking rather than hard evidence. To be fair to Hawkins, he was instrumental in ensuring that astronomers and archaeologists took the idea of astronomical alignments seriously, rather than seeing megalithic structures as temples. Many enthusiasts state that ancient cultures designed their sites to reflect constellations, such as Orion or Cygnus, as a sign of their reverence for the stars. It is far too early to make that judgment, and the statistics do not support it; high profile studies claiming that the Pyramids line up with the belt of the constellation Orion, for example, are nothing more than conjecture. All that we can be certain of is that the great monuments were aligned with the solstices and, possibly, lunar events, so the razor of the famous Occam comes in useful. Considering the amount of time and effort spent in constructing the structures, and the undoubted astronomical prowess of the ancients, there may well be more to many of these sites, but such claims require much more statistical and archaeological analysis before we can say for certain. Currently, the more fanciful of the claims owe much more to imagination and confirmation bias than facts.

Archaeoastronomy: Neolithic Astronomy in Britain



Carnac (Creative Commons [1])

The most discussed archaeoastronomic period, with the possible exception of the Mayans, is in North West Europe, where huge structures such as Stonehenge, Carnack and Newgrange

adopt a mystical quality and seem to transcend the boundaries between the earth and the realms of spirit for those with a romantic streak. However, this romantic view, built upon very little evidence, has led to a New Age movement based around these sites. There is, of course, no problem with that, as people are welcome to believe what they wish but, as scientists, we must push that aside and try to find out exactly what astronomical phenomena these sites measured. Trying to find information online, or in a bookshop, is difficult, due to the amount of poorly conducted pseudo-science, making the process of finding information about the purpose of these sites exceptionally difficult.

Archaeoastronomy: Stonehenge and the Solstice

All that we can say is that Stonehenge is aligned to the solstice, more likely to be the winter solstice than the summer solstice, because that event would give ancient farmers a guide of when to prepare for spring planting. Stonehenge is an architectural and engineering masterpiece, so adding the extra layers to its meaning does ancient man a disservice.



Stonehenge, Summer Solstice (
[Creative Commons](#) * [2])

There is little doubt that megalithic people plotted the course of the sun with accuracy, and the sheer amount of effort required, both in quarrying and transporting the stones, as well as shaping them and erecting them into position, speaks volumes of the ingenuity and intelligence of the builders. Tentatively, we can assume that the sun was seen as a life giver with a divine status. Stonehenge is one of the most famous sites in the world and has been subjected to intense scrutiny, by archaeologists and astronomers alike. This monument was built around 3000 BCE and was an awesome feat of engineering, with some of the stones fetched from Wales, over 130 miles away. There have been many speculations about exactly what celestial phenomena the stones lined up with, but uncovering how Stonehenge evolved is difficult, because the site gradually grew over the centuries, from a wooden henge to the enigmatic monument we know today. As well as lining up with the solstices, many archaeoastronomers suggest that the monument also reflects the rising and setting of the moon during the seasons. Others have suggested that a row of pits around the henge was for predicting lunar eclipses, or that the stones documents the greater processional cycles of the universe. However, there is little evidence to support these, as yet, so they are largely speculative.

Archaeoastronomy: Other Use for Stone Circles

Other stone circles and monuments scattered around suggest similar phenomena, with the great tomb at Newgrange, in Ireland, only allowing light into the center during the winter solstice. However, this does not mean that every ancient monument was astronomical in

function, and many of them were placed in locations that help navigation between landmarks. This was very important in ancient times, where the land was heavily wooded and traveling overland difficult, making it easy for a traveler to lose their bearings.



Newgrange ([Creative Commons](#) [2]
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Certainly, the fact that such huge and labor-intensive monuments were constructed around the rising of the summer or midwinter sun shows that the ancients placed great importance upon documenting the passing of the seasons. For a hunter-gatherer and agricultural society, this was crucial: Knowing the right time to plant crops, or when to journey to the rivers to catch migratory fish was crucial, and could be a matter of life and death. It is hardly surprising that they placed such great importance to the solstices and were prepared to invest heavily in erecting labor-intensive structures; imagine trying to live your life without watch, calendar, or clock. This explanation, using Occam's razor, is enough to explain the huge monuments, while suggesting that ritual was hugely important. Going further than that and talking of vast civilizations, or observatories designed to pay homage to the stars, is too fanciful. However, given the sophistication of the society, the future promises to be interesting and there will be many more surprises waiting for the archaeoastronomers!

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