Alignments in Profusion and Confusion

The Growing Pains of Archaeoastronomy

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Abstract

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Archaeoastronomy is an interdisciplinary research field investigating how people of past cultures have perceived and responded to celestial phenomena. It has been most widely known for its search for astronomically orientated alignments. The possibilities and limitations of this approach are discussed for some notable archaeological sites in order to assess its merits for adding new knowledge to our understanding of prehistoric cultures.

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Introduction

Modern archaeoastronomy emerged as a new branch of scientific research in the 1960s with investigations of the possible astronomical significance of the orientation of megalithic structures. It has not yet gained acceptance as an independent academic discipline with its own departments, although university courses are occasionally offered in archaeoastronomy. Most research has been carried out by dedicated individuals as a sideline to their ordinary assignments. They have generally been astronomers, as archaeoastronomy basically relies on astronomical concepts, methods and knowledge. The lack of daily contact with other scholars in the same field is to some extent compensated by the great many conferences regularly offered to archaeoastronomers, such as the *Oxford International Conferences on Archaeoastronomy* held at three-year intervals, annual conferences organized by the *European Society for Astronomy in Culture* and conferences on the *Inspiration of Astronomical Phenomena*. The exchange and flow of ideas is also facilitated by the publication of refereed articles in scholarly journals, such as *Archaeoastronomy Supplement to Journal for the History of Astronomy* and *Archaeoastronomy Journal*.

The complex astronomical and mathematical arguments used by archaeoastronomers have often been seen as more or less incomprehensible by archaeologists, who usually lack even an elementary background in the natural sciences. They have therefore been bound to view archaeoastronomy with some caution, not quite able to make up their minds whether to treat it as a true science or as just another fringe science or pseudoscience. This attitude is all the more understandable as astronomical theories are extensively used in interpreting the past in fringe archaeology (Bauval *et al.* 1995; Hancock 1995). The failure of earlier attempts by archaeoastronomers to introduce an astronomical perspective on the interpretation of prehistoric monuments has added to the archaeologists' lack of confidence in archaeoastronomical work.

Furthermore, the detailed mathematical calculations used in assessing the likelihood of an astronomical alignment have unfortunately led many archaeologists to the erroneous conclusion that one also needs a thorough knowledge of mathematics in order to set out such an alignment properly. The flair archaeoastronomers often display for finding an astronomical explanation for almost any orientation is viewed with intense scepticism, and prehistorians are most upset by the extreme claims for prehistoric man's intellectual achievements, made by researchers who have little or no formal training in archaeology. The archaeoastronomers have no doubt contributed to the archaeologists' dismay and disbelief by their fondness for publishing their conclusions under provocative titles, such as *Stonehenge Decoded* (Hawkins 1963), *Stonehenge: A Neolithic Computer* (Hawkins 1964), and *Megalithic Lunar Observatories* (Thom 1971).

The early archaeoastronomers felt an innate curiosity about possible astronomical orientations of megalithic structures, and found a great intellectual delight in searching for them. They moved into a virtually virgin research field that promised great rewards to its pioneers. The alignments they found mattered a lot to astronomers, but more often than not they were of little interest to prehistorians. It is also not unusual to find that investigators who have been known to adhere to the strictest standards of scientific work in their native fields, when moving into archaeoastronomical research seem to forget their obligation to rational and critical reasoning, misreading or over-interpreting the evidence of the archaeological record to the point of coming dangerously close to pseudoscience in their work.

The archaeologists' criticism and their accusation of pseudoscience have often been misunderstood by the archaeoastronomers. They have seen it as primarily directed at the basic principles they have employed for making their claims and not so much at the claims themselves. Many felt that their professional competence in astronomy was questioned.

In the field of archaeology, pseudoscience is characterized by the aim of proving myths and legends of religious nature to be true, by the belief in the conspiracy of orthodox science, and by the pretentious claim of having found the one and only truth (Andersson 2000). Archaeoastronomers today make a great effort to avoid these trappings of pseudoscience by showing modesty in their claims and by pointing out alternative interpretations.

Stonehenge – a case of pre-eminence

One problem that has long plagued archaeoastronomy is how to distinguish structures designed to incorporate celestial events from those with the same orientation which appear by pure chance. Not even Stonehenge, the famous prehistoric monument on Salisbury Plain west of London in southern England, is a clear-cut case of solar orientation, although it is visited every year on Midsummer Day morning by large crowds of people who want to watch the sunrise from the monument.

That part of Stonehenge which is supposed to have a solar alignment was built around 2500 BC. It consists of thirty huge blocks of stone, erected along a 31 metre wide circle, and crowned by an unbroken ring of stone lintels. Inside this so-called Sarsen Ring, five trilithons were set up along a horseshoe-like curve with its opening towards the north-east, 49.9 degrees east of north. The importance of this orientation is accentuated by a 530-metre-long earthwork, referred to as the Avenue, stretching out towards the horizon in the same direction and incorporating a portal made up of two tall stones strad-

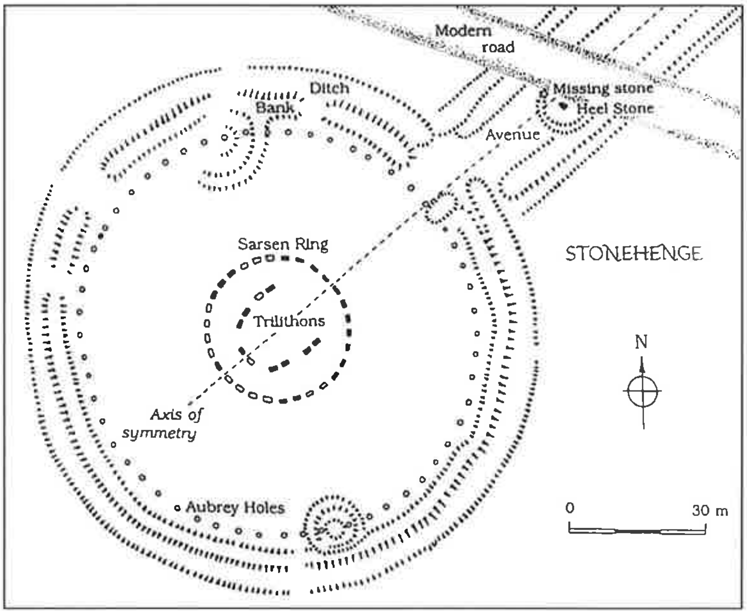

Figure 1. The first ray of sunlight at the summer solstice 4,500 years ago would have entered Stonehenge along its axis of symmetry. The ground plan is based on a map provided by the Department of the Environment, London (Newall 1959).

dling the centre line of the Avenue, 61 metres outside the Sarsen Ring. Today, only one of the stones, known as the Heel Stone, remains.

Calculations show that the first ray of sunlight that emerged from the horizon at the summer solstice 4500 years ago would have travelled along the centre line of the Avenue, entered the portal of the Heel Stone and its missing companion and continued through an opening between two stones in the Sarsen Ring. It would have followed the axis of symmetry of the Trilithon Horseshoe, penetrating the narrow gap between the two uprights of the Inner Trilithon and finally leaving the Sarsen Ring through an opening opposite its entrance – Figure 1. The sight of this first light would have been an exclusive spectacle with strong symbolic implications (Burl 1994, pp. 91 f.). The orientation of the whole structure is accurate within a few minutes of arc from the theoretical value for the sunrise on the longest day of the year.

Although impressive and precise, the agreement of the orientation of Stonehenge with the direction of sunrise on an important date in the solar calendar could be just coincidental. Other explanations for the orientation can be put forward. It could have been chosen for the easy uphill gradient in this direction to allow processions to proceed with dignity up towards the monument. It could also have been intended to provide a symbolic access to the watertable at Stonehenge Bottom at the end of the Avenue. Furthermore, the high precision of the alignment is rather illusory, as the sun's rising point at the solstices at the latitude of Stonehenge may vary by almost a whole degree, depending on the state of the atmosphere (Schaefer 1993, p. 163).

The fragility of a hypothesis based solely on the precision of an alignment is aptly demonstrated by three post-holes found in the Stonehenge car park. They were hailed as the most positive astronomical discovery because they were in line with sun and moon setting positions with an extreme accuracy (Newham 1972, p. 23). Yet radiocarbon dating soon revealed that wood from the holes came from trees that had been growing thousands of years before Stonehenge was built (Burl 1979, p. 65).

Newgrange – an illuminating case

Another site with a supposedly deliberate solar orientation is the imposing Newgrange passage tomb in the Boyne Valley in eastern Ireland. At sunrise during the week before and after the winter solstice, a ray of sunlight enters a uniquely designed aperture, known as the roof-box, above the entrance to the tomb, and penetrates the seventeen-metre-long passage all the way up to the chamber, dramatically and brightly illuminating the stones in its path (Patrick 1974).

No matter how impressive this interplay with the sun is, it might be totally fortuitous and not at all intended by the builders. The roof-box might equally well have been constructed as an opening through which the departed souls of the dead could come and go (O'Kelly 1982, p. 123), or through which people could communicate with their ancestors (Lynch 1973, p. 152), or it could simply have functioned as an air vent.

Martin Brennan is an artist who claims that the elaborate engravings in the form of multiple semicircular arcs on stones around the perimeter and in the passage of the Knowth passage tomb adjacent to the Newgrange tomb, might represent the lunar crescent in a sophisticated calendar (Brennan 1983, pp. 135 ff.). According to the cartographer Philip Stooke (1994), these same arcs might depict the lunar maria visible to the unaided eye as the *Man in the moon*. If their interpretations are correct, it would suggest the existence of a Stone Age lunar cult in the Boyne Valley, and that the moon and not the sun would have been the likely motivation for the orientation of the Newgrange passage tomb. The same drama of light as that enacted by the sun on midwinter mornings, although not as bright and distinct, is indeed occasionally seen on summer evenings with the rising of the full moon.

The magic power of the sun's perpetual success in rejuvenating nature in spring and early summer might well have been the object of ritual observances at the rise of the summer solstitial sun at Stonehenge. Likewise, if we accept a solar orientation for the Newgrange tomb, the play of light taking place inside it at the winter solstice may have given people an assurance that the sun would stay on its accustomed course and not overshoot its southernmost standstill, plunging the earth into the perils of an eternal winter (Gelling *et al.* 1969, p. 49).

From myths and legends, we know of several places where the rising or setting solstitial sun was revered. In Egypt at Karnak behind the Great Temple of Amun, an upper chamber dedicated to the sun god Re-Harakhty is aligned towards the midwinter sunrise at 26.9 degrees south of east (Hawkins 1973, pp. 209 ff.). On the east coast of the Japanese main island on the day of the summer solstice, the sun can be seen from the holy twin islets, Meoto-Iwa, the wedded rocks, to rise along the northern slope of Mount Fuji 200 kilometres away (Aston 1905, p. 336; Hawkins 1973, p. 271). The sun goddess Amaterasu has been venerated on the rocky islets since the eighth century AD and she still is.

Shared directions

Interpretations based on a single site like Stonehenge or Newgrange might be misleading, if they are not corroborated by the results from other sites. Both Stonehenge and Newgrange are unparalleled among their kinds. Stonehenge is the only henge built in stone and with a clearly defined orientation towards the point on the horizon where the sun was seen to rise at the summer solstice. The Newgrange tomb is the only one in the Boyne Valley fitted with a roof-box and orientated towards the rising winter solstitial sun. Only a consistent and coherent pattern of directions, shared by a fair-sized sample of closely related monuments, can be accepted as evidence of an astronomical origin for their orientations. Such a statistical approach has been attempted by Aubrey Burl (1981) on a rather small number of passage tombs at Clava in the Inverness region of Scotland. The same strategy has been applied to a much larger group of tombs centred on Falköping in south-western Sweden (Henriksson 1989; Lindström 1997), and to a similar group around Évora in central Portugal (Roslund *et al.* 2000).

The tombs in Sweden and Portugal show a remarkable similarity in orientation, considering their separation by a distance of 2,650 kilometres – Figure 2. The entrances to the tombs in both areas face a narrow stretch of horizon between the east and south-east. The statistical dispersions for the orientations are as small as ±16 and ±11 degrees from their mean values, 22 and 12 degrees south of east for the Falköping and the Évora tombs, respectively. The coherence in orientation extends in each group over too large an area for the tombs to have been lined up towards a single distant terrestrial feature. Rather, it strongly suggests a celestial object as the target for the orientations. The fact that the Swedish tombs generally point more to the south and have a broader distribution in orientation is exactly what can be expected from the difference in latitude between the two regions for observations of the same celestial object.

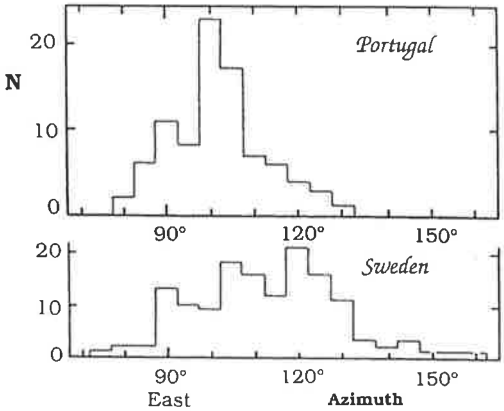

Figure 2. Normalized distributions of orientations in five-degree intervals of azimuth for the outward direction of the passage in passage tombs in the Évora region in Portugal at latitude 38°34′ N (Roslund *et al.* 2000), upper diagram, and in the Falköping region in Sweden at latitude 58°10′ N (Lindström 1997, p. 115), lower diagram.

Ceaseless sun and changing moon

An obvious celestial target for an alignment would be the sun. Sunrises and sunsets are spectacular events, easy to observe because the intense brilliance of the sun is reduced to a manageable level at the horizon. The sun's motion in the sky is orderly and predictable. Settled people living at a place with distinct horizon features would easily have noticed that the sun's rising and setting points varied with the seasons, and that the sun returned to the same horizon marks on the same date every year.

In March at the vernal equinox, the sun rises exactly in the east and sets in the west, and the length of the day equals that of the night all over the world. From then on, it rises a little further north of east and sets a little further north of west each day, finally coming to a standstill on the longest day of the year at the summer solstice in the northern hemisphere. The movement of the sun's rising and setting positions then reverses. The sun again passes east and west on its way south at the autumnal equinox, reaching its southern standstill at the winter solstice on the shortest day of the year, whereafter it resumes its northerly trek.

The movement of the moon in the sky is similar to that of the sun but not as simple and predictable. While the sun shines with constant light and is always seen as a circular disc, the moon changes its appearance from a thin crescent at new moon when it is only seen in the west at nightfall, to a full circle at full moon when it shines the whole night through, and finally again to a crescent as the waning moon only seen in the east at dawn. The same phases are repeated anew after a period of 29.5 days.

The moon is an intriguing object to watch. While it takes the sun six months to travel from its extreme northerly to its extreme southerly limit, the moon covers this distance in just a fortnight. Whereas these limits are invariably the same for the sun, they move slowly back and forth for the moon in a regular manner over a period of 18.6 years.

It is an easy task to establish where on the horizon the sunrises and sunsets reach their standstill points. For the moon, on account of its much faster motion, the situation is totally different. There are occasions when the moon at the latitude of Inverness may not come closer than two degrees from a standstill point in its monthly swing on the horizon. Nevertheless, Burl (1981) has found that the passages of some of the Clava passage tombs, discussed earlier, point at the direction of the extreme southerly setting position of the moon.

Wandering planets and immutable stars

The movement of the planets is complex and seemingly erratic. Whether an alignment with a planet was intended can only be ascertained under special circumstances. One such case is the ceremonial centre of Uxmal on the Yucatán Peninsula in Mexico. A sightline from the central doorway on the eastern facade of the building called *Casa del Gobernador*, or Palace of the Governor, points exactly at the ruins of a pyramid, Nohpat, on the otherwise flat and uneventful horizon. This line also marks the most southerly rise of the planet Venus around AD 750, when the Palace is thought to have been built. More than 350 Venus symbols sculptured on the frieze of the Palace show a likely connection between Venus and the orientation of the Palace (Aveni 1975, pp. 183 ff.).

The fixed stars move along unchanging paths in the sky. Only over centuries do they noticeably alter course due to an effect called the precession of the equinoxes. For practical purposes, they rise and set at the same points on the horizon night after night, which would have been of some advantage when setting out an alignment. However, the high opacity of the atmosphere obscures stars near the horizon. An alignment could be either with the first or the last point in the sky where the reference star was seen, or with an extrapolation of the star's path down on to the horizon.

It has been suggested that a star in the constellation Scorpius, which rose exactly due east and consequently set due west at the time when the great Egyptian pyramids from the pharaohs Huni to Mycerinus were being built, could have been instrumental in aligning them towards the four cardinal points within half a degree (Haack 1984). This coherence in orientation could not have been achieved by sighting between them as they are strung out along a 70-kilometre-long stretch of the Nile. The small clockwise drift in orientation that the pyramids underwent during the reign of these pharaohs could have resulted from the precession of the reference star's nightly trail across the sky – Figure 3.

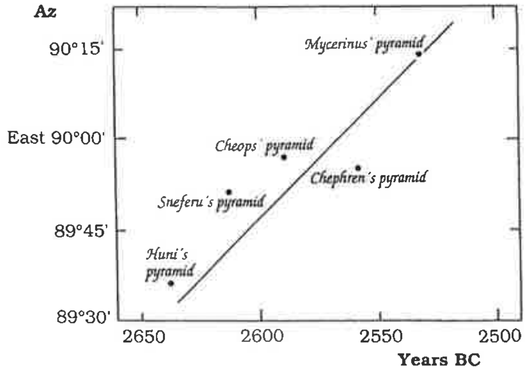

Figure 3. The slow drift in azimuth of the rising point of the star β Scorpii due to the effect of precession during the time when the great Egyptian pyramids were built, compared to the measured orientations of the pyramids. If the builders really aligned the pyramids towards this star when it became visible over the horizon, the largest sighting error would have been ten minutes of arc.

Ambiguous interpretations

As a result of the analogous behaviour on the horizon of the sun and the moon, the same set of data can lead to conflicting conclusions about which object was responsible for an alignment. For the Falköping passage tombs mentioned earlier, Göran Henriksson (1989) attributed their alignment to the sunrise on the date halfway between the winter solstice and the vernal equinox. This is the date in Sweden when the lengthening of the daylight hours and the increasing radiance of the noonday sun make themselves felt. Jonathan Lindström (1997), on the other hand, came to a conclusion, based on information on early medieval time reckoning in Scandinavia, that the tombs, together with graves well into historical times, might have been aligned towards the sunrise at the beginning of the winter half-year at the onset of cold weather and first fall of snow about 14 October in the Julian calendar. He argued that the alignment of the tombs might also have been part of an old system of cardinal directions, turned clockwise about twenty degrees compared to the present directions of the compass.

For the Évora tombs, Curt Roslund *et al.* (2000) claimed with support from grave finds in the form of polished slate plates adorned with engravings of zoomorphic features deemed to be symbolically linked to the moon, that the tombs could have been aligned towards the rise of the first full moon after the vernal equinox, that is the Easter full moon. The moon with its cycle of phase changes and monthly reappearance, echoing the fortunes of life and the prospect of resurrection from the dead, would in spring have held a great allure to adherents of a cult committed to the renewal of life.

It is not always obvious which feature on a site was aligned astronomically. At first glance, it would appear that the outward direction of the passage in passage tombs would constitute such a feature, because that is the direction in which one can see what happens outside the tomb. However, tombs were hardly meant as observatories for the interred. The builders might have held the belief that it was what took place on the celestial vault in the opposite direction behind the chamber that mattered to the dead. In that case, the setting of the Easter new moon might have been the target for orientating the Évora tombs and not the rising of the Easter full moon.

Nor is it clear how high up in the sky an object would have been when an alignment was set out. Usually, it is assumed that the object would have been on the horizon. This may be true for the sun because of its blinding glare when it is high in the sky. The dilemma is that we do not know what the horizon a few thousand years ago looked like, due to the widespread deforestation that has taken place in the landscape since then. For the moon, there is no compelling reason for setting out an alignment when it is on the horizon. Instead, this task might have been deferred until the moon had reached nearly full brilliance a few degrees above the horizon.

Another case of conflicting conclusions concerns the orientation of the rectangular street grid of the ceremonial centre of Teotihuacán in the Valley of Mexico. The city plan displays a directional conformity of the order of one degree (Millon *et al.* 1973) – Figure 4. It is generally agreed that the orientation of the city was not based on its main linear feature, the imposing boulevard *Calle de los Muertos*, or Avenue of the Dead, pointing 15.5 degrees east of north and 15.5 degrees west of south. An astronomi-

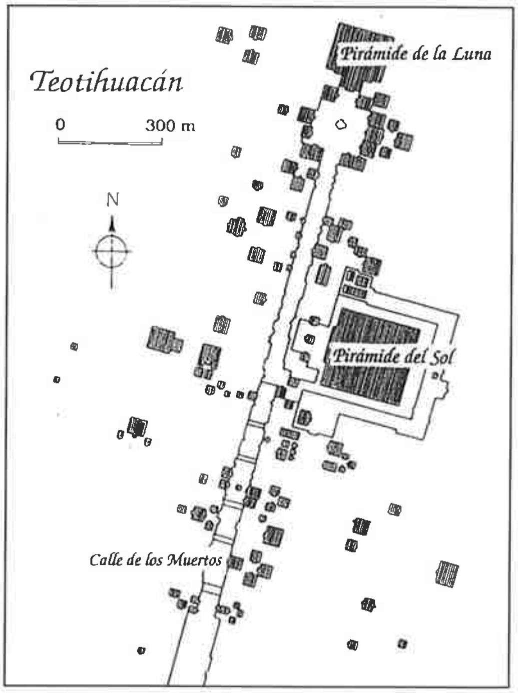

Figure 4. The directional conformity of the city plan of central Teotihuacán is apparent on this map based on information provided by the Teotihuacán Mapping Project (Millon *et al.* 1973).

cally more promising explanation would seem to be a line at right angles, pointing 15.5 degrees north of west. This is the direction in which the dazzling cluster of stars, called the Pleiades, set about AD 150 when the city plan is believed to have been conceived. It is, however, also the direction in which the sun sets every year on 13 August and again 260 days later on 30 April. Arguments can be put forward in favour of each object (Malmström 1997, pp. 100 ff.). The Pleiades are ranked among the foremost asterisms accorded a place in Mesoamerican star lore, and the figure 260 is the base for the Mayan sacred calendar. Finally, the reason for the orientation might have been something totally unrelated to astronomy. The urban area is small enough for the street grid to have been set out without recourse to astronomical means.

Lines in the landscape

Other prehistoric features that have provoked considerable astronomical interest are lines seen or visualized in the landscape. In the chronicles written down in the early part of the seventeenth century by the Jesuit Father Bernabé Cobo, it is said that forty-one straight imaginary lines once fanned out in all directions from *Coricancha*, the Temple of the Sun in Cuzco, the Inca capital high up in the Andes in modern Peru. The lines were called ceques and were up to fifteen kilometres long. On some of the ceques, pillars were reported to have served as horizon markers for sun rising or setting positions, as observed from Coricancha on important dates in the Inca calendar. Although none of the pillars remains today, Anthony Aveni (1981) and Tom Zuidema (1981) have succeeded in verifying the correctness of some of Cobo's assertions regarding the pillars' calendrical function by actual measurements.

On the coastal plain north of the small Peruvian town of Nazca, hundreds of straight lines appear in the desert. The lines can best be described as shallow furrows, only a few centimetres deep, anything between half a metre and two metres wide and up to a few kilometres in length. The mystery surrounding the lines in one of the most inhospitable regions of the world is heightened by the mathematician Maria Reiche's long-standing claim that the lines are astronomically orientated (Reiche 1949). Later studies by Gerald Hawkins (1973, pp. 113 ff.) and Aveni (1990) have not supported her claim. The lines seem to point fairly evenly along the whole length of the horizon.

Recently, there has developed a sort of game in England with people sitting bent over maps, trying to fit straight lines through an assortment of prehistoric sites, ancient monuments and old parish churches. The lines they find, called ley lines, are said to be factual features in the landscape, variously described as old trackways or as the visible manifestations of paranormal forces or unexplored energies. Statistical analyses, however, disprove their existence. The ley lines do not appear more frequently on a map than chance would predict for lines through randomly placed points (Williamson *et al* 1983, pp. 94 ff.). They can with good reason be relegated to the realms of pseudoscience.

Lines in question

A ley line claimed to be astronomically orientated is the famous *St Michael's Line*. It has got its name from the many churches dedicated to St Michael located on or near the line (Miller *et al.* 1989, pp. 21 ff.). The line is 580 kilometres long and stretches across southern England all the way from Land's End in the west to the East Anglian coast in the east, in a direction in which the sun is said to rise on May Day morning. However, over such a vast distance, the fact that the earth is a globe has to be taken into account. The sighting over a spherical surface follows a great circle. St Michael's Line defined as such would have bypassed most of the places said to lie on it. It would have changed its direction from 58.9 degrees east of north at its western end to 64.7 degrees at its eastern end, while St Michael's Line proper points 61.8 degrees east of north over its entire length. The claim that it is orientated towards the sunrise on May Day can certainly not be true for the whole line, regardless of whether it is defined as a straight line or as a great circle.

Ley hunters have also tried to fit hillside chalk figures into their network of ley lines, often giving them an astronomical interpretation. Recently, John North (1996, pp. 201 ff.), historian of philosophy and exact sciences, has proposed that the seventy-metre-tall hill figure the *Long Man of Wilmington* on the north side of a low ridge was cut already in the fourth millennium BC to resemble the stellar constellation Orion, which at this time could be seen in the south walking in winter nights with the stars' daily motion along the ridge above the hill figure.

The constellation Orion also plays a leading role in speculations about the meaning of Scandinavian Bronze Age petroglyphs. Henriksson (1996) claims that a human male figure often seen in rock art holding a boat in his raised arms represents Orion regardless of the engraver's viewpoint. He further claims to have solved the enigma of the rock carvings, stating that they all portray astronomical events. He lists support for his thesis from cup marks arranged around alleged solar symbols in configurations resembling those of planets seen around the sun at particular solar eclipses. He also states that he has identified apparitions of the comet Encke in the same way. The fact that one can find a few examples of eye-catching resemblance between configurations of planets and those of cup marks among the one hundred thousand cup marks found in Sweden alone, does not in itself mean that the engraver intended this to be so. Henriksson's method of computing planetary positions may be mathematically ever so impeccable, but attributing scientifically precise observations to Bronze Age people is more likely an example of investigators projecting their own concern for exact measurements on to the culture they are studying.

The way ahead

A fruitful collaboration between a natural scientist and an archaeologist took place in connection with an investigation of a site near the small hamlet of Kintraw in Argyll on the Scottish west coast. Alexander Thom, professor of engineering science and famous as an indefatigable surveyor in his spare time of hundreds of prehistoric monuments in Britain and Brittany, had proposed that a narrow ledge on a steep slope above Kintraw had served as a platform for observing the setting of the winter solstitial sun in a col between two mountain tops, Beinn Shiantaidh and Beinn a' Chaolais, on the island of Jura 42 kilometres to the south-west (Thom 1971, pp. 37 ff.). If archaeological excavation could prove that the ledge was man-made and not a natural feature, it would lend credence to an astronomical interpretation of the site, as it is difficult to find any other plausible explanation for a terrace built on a steep hillside above a deep gorge with a fast-moving stream at the bottom. Although the archaeologist Euan MacKie (1974) did not find any potsherds or other artefacts and no artificial structures, an exposed layer on the ledge showed signs of having been paved with stones (Bibby 1974).

Closer teamwork between astronomers and archaeologists is desirable in the future in order to make meaningful contributions to our understanding of prehistory. This collaboration should not only apply to the interpretation of obtained data but all the work from the formulation of a research strategy and the execution of fieldwork to the final analysis of the information gathered. Their approaches and perspectives are different but complementary. With his/her knowledge of celestial phenomena, an astronomer can call attention to relationships which are not apparent to an archaeologist. An archaeologist trained in making deductions from archaeological finds can on the other hand point out connections that are not perceptible to an astronomer. Ideally, an archaeoastronomer should be thoroughly acquainted with both astronomical and archaeological research issues, but for many established astronomers and archaeologists, this would imply a change of intellectual priorities that most would not be prepared to make.

Closing words

The aspirations of archaeoastronomy have changed during its formative years. The orientation of an architectural structure is no longer the object itself but what it can tell us about the culture that incorporated it into its activities. By regarding recurrent celestial phenomena as a cultural resource, which can be reconstructed with considerable accuracy, prehistoric monuments can be brought into a broader cultural context. It has even been suggested that the name archaeoastronomy should be replaced by the more appropriate "study of cultural astronomy" in order to emphasize the imprint of celestial order on culture. The study of cultural astronomy could then include both ancient and modern societies. The scope and role of cultural astronomy have been discussed among others by Clive Ruggles and Nicholas Saunders (1993) and by Stanislaw Iwaniszewski (1995).

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