

Decoding Stonehenge – Lionel Sims

Lionel Sims is Emeritus Head of the Department of Anthropology, Development and Politics at the University of East London. He continues to be research active, is Vice President of The European Society for Astronomy in Culture.

Lionel gave us his explanation of how he believed Stonehenge was formed and an interesting insight into his research as to why it may have been built.

Stonehenge is perhaps the world's most famous prehistoric monument. It was built in several stages: the first monument was an early henge monument, built about 5,000 years ago, and the unique stone circle was erected in the late Neolithic period about 2500 BC. In the early Bronze Age many burial mounds were built nearby. Two types of stone are used at Stonehenge – the larger sarsens (sandstone slabs) and the smaller 'bluestones'. The sarsens were erected in two concentric arrangements – an inner horseshoe and an outer crescent or ring; some were assembled into the iconic three-pieced structures called trilithons that stand tall in the center. The bluestones were set up between them in a double arc.

Probably at the same time that the stones were being set up in the centre of the monument, the sarsens close to the entrance were raised, together with the four Station Stones on the periphery. About 200 or 300 years later the central bluestones were rearranged to form a circle and inner oval (which was again later altered to form a horseshoe). The earthwork Avenue was also built at this time, connecting Stonehenge with the river Avon.

Stonehenge's sarsens, of which the largest weighs more than 40 tons and rises 24 feet, were likely sourced from quarries 25 miles north of Salisbury Plain and transported with the help of sledges and ropes; they may even have already been scattered in the immediate vicinity when the monument's Neolithic architects first broke ground there.

The smaller bluestones, on the other hand, have been traced all the way to the Preseli Hills in Wales, some 200 miles away from Stonehenge. How, then, did prehistoric builders without sophisticated tools or engineering haul these boulders, which weigh up to 4 tons, over such a great distance?

According to one longstanding theory, Stonehenge's builders fashioned sledges and rollers out of tree trunks to lug the bluestones from the Preseli Hills. They then transferred the boulders onto rafts and floated them first along the Welsh coast and then up the River Avon toward Salisbury Plain; alternatively, they may have towed each stone with a fleet of vessels. More recent hypotheses have them transporting the bluestones with supersized wicker baskets or a combination of ball bearings, long grooved planks and teams of oxen.

As early as the 1970s, geologists have been adding their voices to the debate over how Stonehenge came into being. Challenging the classic image of industrious Neolithic builders pushing, carting, rolling or hauling the craggy bluestones from faraway Wales, some scientists have suggested that glaciers, not humans, did most of the heavy lifting.

Stonehenge had 30 uprights in the outer sarsen circle bearing connecting lintels and they were given the numbers 1 to 30 by the archaeologists. However, stone number 11 is exactly half the height, half the width and half the breadth of all of the other uprights. 29 and a half is the average length of the synodic month, from one full moon to the next. While this does not prove that Stonehenge has something to do with the moon, the fact that that stone number 11 was chosen to be half the height, half the breadth and half the width of all the other stones nevertheless contributes to some sort of confidence that there might be some connection.

There is an avenue approaching Stonehenge and archaeologists' summer solstice sunrise theory states that people would stand in the middle of the monument and look out towards the north-east along that avenue. But if it is an avenue *approaching* Stonehenge, then surely you would walk *towards* the monument along it. So, if the summer solstice sunrise theory is correct, you would be walking along that avenue with your back to the rising summer solstice sun.

There is no religion in the world which validates turning your back on the object of veneration, in this case the rising summer sun. Or do you walk up the avenue towards the centre of Stonehenge and then turn round to see summer solstice sunrise? That would mean turning your back on the largest stones in the monument. It seems counterintuitive. Would you not in some way validate those largest stones?

Would it not make a lot more sense to say that those taking part would walk along the avenue looking *towards* Stonehenge and at the largest stones in the monument? The avenue itself provides a clue as to the way in which the people who built it wanted the monument to be seen. Stonehenge is built on the side of a steep hill, not on a level surface like a sundial, and the avenue leads up that hill. Therefore you raise your eyes to see Stonehenge when you are walking towards it.

There is an archaeo-astronomer called John North who has written *Stonehenge, Neolithic man and the cosmos* and he points out that Stonehenge has a very unusual paradoxical property. A plan diagram reveals numerous gaps between the stones - Stonehenge is like a colander, full of holes. But there is something very unusual about it. When you walk along the avenue, you can see that the stones are arranged in such a way as to make Stonehenge appear an almost solid wall. North calls this an obscuration device.

As you walk along the avenue, from about ten metres before the Heel stone the monument suddenly appears solid, except for a couple of gaps. In the reverse direction it does not work in the same way. Stonehenge, which is full of holes in plan, appears as almost solid stone when you look at it in elevation view walking up the avenue.

In his 1996 book, John North pointed out that there are two gaps in this otherwise apparently solid wall. Standing on the right-hand side of the Heel stone you see the lower gap and standing on the left-hand side you see the upper gap. We must ask ourselves why the illusion of an almost solid wall of stone with a lower and upper gap was created. What are the gaps for?

If you walk at a sedate pace from the Heel stone looking towards the centre of Stonehenge, your eye rises as you continue uphill at the same pace as the sun goes down, giving the impression of time standing still for something like five to seven minutes. That is how it was designed.

Winter solstice

The sun has two solstices every year - December 21 and June 21. The sun's rising positions on the eastern horizon take a year to complete. It is the same with the sunsets on the western horizon. However, the moon's movements are far more complicated.

In order to understand, it is necessary to think in terms of prehistoric 'astronomy', which is geocentric - meaning that the centre of the universe is thought to be the earth. The earth is believed to be flat. Therefore the sun and the moon descend below the earth and emerge from the underworld on the other side of it.

Once every 19 years something called the major standstill of the moon occurs. The moon rises 10 degrees further north than the sun ever rises at summer solstice. However, the moon does not stay in that position for three days, as the sun does at its solstice. The very next day the moon rises further south. Between 13 and 14 days later, the moon is rising further south on the horizon than the sun ever reaches. The range of the moon's movements once every 19 years at the major standstill is far greater than the extreme movement of the sun on the horizon - the moon's movements happen over days, not months.

However, from these extreme rising positions, the moon's range of positions contract and contract, and around nine and a half years later its limits have contracted to 10 degrees within the extreme range limits of the sun's movements in its solstice positions. This is called the minor standstill of the moon. Stonehenge in fact allowed people to see the winter solstice sun setting in the lower window, and the southern minor standstill of the moon setting in the upper window.

However much mystery still surrounds Stonehenge. It has undergone several restorations over the years, and some of its boulders have been set in concrete to prevent collapse. Meanwhile, archaeological excavations and development of the surrounding area to facilitate tourism have turned up other significant sites nearby, including other henges.