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Stonehenge and the Neolithic counter-revolution

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When people walked towards the monument as the sun set, they would have seen the greatest efflorescence of stars that could possibly be visible, because this was the longest, darkest night at winter solstice. This entirely fits and is consistent with the idea of appropriating the logic of the Palaeolithic sex strike, and respect for the dark moon, while at the same time displacing it onto a solar timescale.

Stonehenge is not just about the sun. It also shows complex knowledge of the moon, suitable for explaining a lunar-solar cosmology, in which the sun is appropriating, at its setting at winter solstice, exactly the magical properties of the dark moon that would fit an ancient lunar timescale respecting dark moon symbolism. Stonehenge was designed to continue that tradition, but confiscate it for the new purpose of an emerging agricultural society ruled by priests and cattle-owning wealthy men.

Fredrick Engels, fulfilling a promise to Marx, finished the book *The origins of the family, private property and the state* in 1884. In it he made some very large claims. He claimed we humans are a revolutionary species. He argued that, at our origins, under the leadership of women in matrilineal clans, we were fully equal. There was no oppression, no misogyny, no classes, no state. We are an astounding revolutionary species - that is what he said in championing the discoveries of Lewis Henry Morgan.

If we cannot defend Engels in these claims we are weaker as socialists. If we *can* defend these claims, we are stronger as socialists. Clearly Engels was held back by the low level of development within anthropology and archaeology at the time.

The main argument he proposed was the 'two modes' theory, in which the earliest human cultures and societies in some dim, unconscious way avoided incest. The way that this was achieved was through mothers making sure that their own children did not inbreed with close relatives. Because women had multiple partners, only the mothers could control who was having sex with whom. There was a slow growth of incest-avoidance strategies through an evolution of family forms and through progressively increasing the extent of taboos.

We started out at an animal level and - by avoiding incest and becoming more intelligent in the process - slowly becoming human. We began making technical discoveries and gradually the forces of production developed from hunting, through agriculture, to ultimately an Iron Age technology, so that for the first time a mode of production - a way of producing above and beyond subsistence level - was achieved. This is the 'two modes' theory - a mode of reproduction and a mode of production moving together in parallel and dragging us out of animality.

The problem with this argument, of course, is that this places those who are at a hunter-gatherer level of existence on a lower

cultural level than those who are producing food, the agriculturalists. In fact Engels uses highly questionable terms, such as savagery, and describes hunter-gatherers themselves as savages. He implies throughout his book that they are always on the edge of starvation, that their grip on survival is extremely tenuous indeed.

All of anthropology has attacked this argument, correctly. Its racist implications are that hunter-gatherers are at a lower cultural level than subsequent herders or agricultural societies. Anthropology will have no truck with this. Everyone is fully human and hunter-gatherers are as cultural - if not more cultural, as we would argue - than agriculturalists.

Another implication in the argument is that it is not until agriculture and food *production* that for the first time in human history there are sufficient surpluses to allow not just survival, but a relaxed lifestyle. And yet Engels cannot praise the earliest cultures enough, including hunting cultures, in which the quality of society is judged particularly by the treatment of women by men - the respect accorded to women and their leadership role.

The passages in Engels' book which are about matrilineal societies and the politics of the long house are inspiring. Using Morgan's work on the Iroquois people in North America, he conveys enormous admiration for the way in which they treat each other, their highly moral approach to life.

And yet, within that, because these societies are not agricultural, there is a real paradox in the way in which Engels makes his case. He argues that it is only through full-scale agriculture that for the first time surpluses can be produced to guarantee survival. However, at the same time he argues that, with the Neolithic, agriculture brings with it a counterrevolution, in which for the first time social classes emerge.

So we have communism, egalitarianism, respect between men and women in societies which *do not* have surpluses, according to the argument. Societies in which hunter-gatherers

at winter solstice sunset, is always dark moon. It is the time when the phases of the moon exactly coincide with the solstice movements of the sun.

This is what the monument builders had worked out. They had discovered that this 19-year cycle of the sun and the moon predictably generates a moment when the southern standstills of the moon will always be at winter solstice at dark moon. We have at Stonehenge, therefore, a monument which, in its double governing of the sun and the moon, creates a combination which culminates in predictably synchronising winter solstice sunset with dark moon - the longest possible, darkest night, not the start of the longest possible, brightest day.

This is an invariant property in which the phases of the moon can always predictably generate dark moons that coincide with solstices. The monument was used by a new religion which was simultaneously a continuation of an ancient religion in which dark moon was the moment for ritual seclusion, in which ritual sanctity was being switched on. That was when women collectively secluded themselves and made themselves inviolable. If this was the ancient religion of the hunters, and if it happened every month, then we can predict that any counterrevolution would have to deal with it by *appropriating* it, and projecting it onto a new, agricultural timescale - a solar timescale.

Counterrevolution

If this ancient religion of the magic and seclusion of dark moon was appropriated and now projected onto solar events, then that would fit the argument that the Neolithic is a counterrevolution in which a solstice timescale for agriculture is appropriating an ancient, lunar timescale which respected the dark moon.

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.

The monument synchronises winter solstice sunset with the southern minor standstill of the moon. During a minor standstill, we find that dark moon happens at winter solstice sunset. The southern minor standstill of the moon, once every 19 years,

are on the verge of extinction because of starvation. Only with agriculture, with surpluses. In other words, the surpluses provided by agriculture equate with social classes, but the scarcity associated with hunting and gathering equates with communism.

The argument is inconsistent with what we would predict as Marxists: namely we would expect to find abundance through an egalitarian lifestyle, including that of hunter-gatherers. But that is not what is argued by Engels.

There has been a wholesale attack on Engels within anthropology, and archaeology has adopted an approach in which they take the worst aspects of his weak arguments to argue that in hunter-gatherer societies before the Neolithic nothing much happened. That hunter-gatherers leave hardly any marks in the archaeological record and that this results from their low level of culture. Only with agriculture, and with it monuments, palaces, kings, queens, armies and prisons - things which are in the archaeological record - do we supposedly see culture and civilisation begin to flourish. Archaeology has very much made the argument that the Neolithic is the time in which real history begins, in which culture has been stabilised around a food-producing economy.

In the Radical Anthropology Group, using Chris Knight's model, we have argued that hunter-gatherers are fully cultural and that in their societies women have a leadership role. Chris has precisely formulated the way in which this could have happened. He has developed an abstract model, in which lunar cyclicity and lunar time rituals were crucial for the organisation of these societies.

Women organised a monthly sex strike and secluded themselves at dark moon as a means of encouraging men as husbands to separate off, to refind their solidarity amongst themselves and organise the hunt for big game. A hunt that is completed round about the times of full moon. The full moon rises as the sun sets, enabling such animals to be tracked. The pe-

riod between dark moon and full moon acts as a worldwide, universal clock for all hunting cultures.

Chris's model can get over Engels' big problem, which implies that the technology of hunters in the earliest times is so low-level that it could not guarantee success. It is located within the Palaeolithic, when, in the grasslands, the savannahs and the steppe lands, there is mass, big-game plenty. This was a Garden of Eden for hunting cultures. As long as there was solidarity amongst men and women, as long as there was a relatively simple fire and flint technology to panic, ambush and kill big-game animals, there was no need for anything much more complicated. Synchronisation between dark moon and full moon would be a way to guarantee that everyone knew exactly what they should be doing at any time of the month.

The material, economic assumption for this model to work is mass, big-game plenty. We know from archaeology that big-game animals died out around 10,000 years ago at the end of the Palaeolithic - the period known, certainly in the British Isles, as the Mesolithic. That was when the monthly big-game hunt would not have been assured of success in the way that it probably was right up to quite late in the Palaeolithic.

So, I would ask, what would be going on in the Mesolithic and the Neolithic, when the economic underpinning of the sex strike theory could no longer be assured? Would an understanding of that allow us to form certain hypotheses, which would then help us interpret what was going on in later prehistory - in the Mesolithic and the Neolithic? To use Marx's phrase, when did all the crap begin?

Re-interpretation

If all the crap began right in our origins, if we were savages, then the idea that we are a revolutionary species, that we were born in communism, will not work. But if we can say, no -

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. If all this is true - and it can be tested and shown to work - 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.

Once every 19 years - and the next occasion will be in 2014 - the moon sets in the upper window of the grand trilithon at Stonehenge. This is called the southern minor standstill moonset. For 13 lunations over the course of the minor standstill year the moon, in different phases, will set in that upper window.

These stones come from 30 miles away on the Marlborough Downs and weigh 50 tons. They have been pounded to make them quadrangular - these are not naturally shaped stones, but have been artificially shaped and made so smooth that you cannot but marvel at the millions of hours of work that must have gone into shaping them.

However, John North's theory about the monument's design just does not match the hard work and the extensive investment put into the attempt to achieve this combination of the sun appearing in the lower gap and the moon in the upper gap. North did not ask why the sun and moon were paired in this way: he just considered them separately. But that is the question that I have asked.

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. Another little known fact - 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 been almost totally ignored by scholarship. His work *Stonehenge, Neolithic man and the cosmos* is a fantastic book. It is North who 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

classes, oppression, rank divisions, exploitation began late in history; and if we can devise hypotheses that would allow us to test that theory, then that would be another way to support Engels and provide a way to re-interpret the archaeology of the Mesolithic and the Neolithic.

The archaeologists do not like this. They want to excavate sites to find ancient temples, monuments, artefacts, grave complexes. But Palaeolithic and Mesolithic hunter-gatherers leave very little traces. On the other hand, wherever we dig, certainly in north-western Europe, we find monuments from the Neolithic. So their assumption is that hunter-gatherers were not fully cultural. Certainly not as cultural as food-producers. That the Neolithic represented our final evolution into modern humans and the transformation from savagery to civilisation. Therefore it is only with the Neolithic that a revolution takes place.

Within RAG we would argue quite differently. We agree with Chris Stringer that modern humans fully evolved way back in the Palaeolithic in Africa and, further, that we achieved this through a revolutionary break with primate sexual politics by organising monthly sex strikes and big-game hunts. Following Engels, we argue that what happened in the Neolithic with food production was a counterrevolution. But the archaeologists state the opposite. That we are not fully human until we can produce masses of wealth - that it is only with agricultural production that our species is assured.

Can we test this criticism of Engels made by the archaeologists? If they are correct that agricultural producers in the Neolithic have a much higher level of culture and civilisation than previously known, that would mean that the material culture we find in the Neolithic would be emerging out of the dark past of savage hunter-gatherers. If that theory were true, the invention of gods would have occurred relatively late in history. Similarly any cosmology discovered would be relatively simple because of this low cultural level of hunter-gatherers.

The first cosmic god would be the sun, because it is relatively easy to map the movements of the sun, compared to those of other bodies.

The archaeologists also argue that the Neolithic is led by men, and that elite males are the crucial drivers of the agricultural revolution. Therefore the function of religion would be to consolidate this emergent male rule that would be taking place in the Neolithic around 4,000 BC in the British Isles.

By contrast, RAG holds that the revolution took place much earlier. It started in the early Palaeolithic, between 150,000 and 120,000 years ago. There were tens of thousands of years in which hunter-gatherers elaborated their cosmology, their myths and their rituals in what were already very sophisticated societies.

Women had a key leadership role within this model. Very importantly, they would have been able to call upon their matrilineal brothers whenever they needed them to ensure that their seclusion rituals were been respected by their temporary husbands. Therefore we can predict that solidarity between brothers and sisters in the matrilineal clans would have been a key politico-social force within these cultures. However, once big-game hunting is no longer assured, that matrilineal solidarity of brothers and sisters would have started breaking down about 10,000 years ago.

If that is true, and if religion and cosmology are now reacting to these new conditions, then this would mean that the new religion of the Neolithic and the Mesolithic would have the complex job of both preserving and changing the old religion appropriate to a big-game hunting culture. We would therefore predict that, rather than the religion of the Mesolithic and Neolithic being simple, it would immediately be complex. It would be elaborated to accommodate the new conditions, while trying in some way to preserve the old. We would predict that it was a counterrevolution rather than a revolution.

Now, if the number 56 is so important for a lunar eclipse prediction device, then you would expect it would turn up in later versions of Stonehenge. But it did not. And, by the way, the Aubrey holes held oak posts, which were later taken out and the holes were then used for cremations, not as markers of the sun or the moon.

To my knowledge there is no other stone circle in the British Isles or in north-west Europe which has 56 posts. So if the number 56 is so important, why was it not replicated in the monument-building tradition?

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. Richard Atkinson, who directed excavations at Stonehenge in the 1950s and 60s, developed two theories from this. First, they ran out of correct-sized stones and they just made do. Second, a lightning bolt struck the stone and sliced it in half. I am an atheist, but I will believe in god if lightning can reduce a stone to *exactly* half its former size. That does not convince me at all.

Synodic

So there are 29 and a half uprights in the outer circle. Well, 29 and a half is the average length of the synodic month, from one dark moon to the next, or 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 indeed be some connection.

There is an avenue approaching Stonehenge - it is called an avenue by the archaeologists. Their summer solstice sunrise

is clear that the Heel stone is not an accurate alignment. But that suits the archaeologists. They are quite happy with that, because these people were 'howling barbarians' and it is hardly surprising they made such a mistake. However, the lintels on top of the outer circle are accurate to eight centimetres across a diameter of 30 metres! That is far more accurate than the measurements a builder would use today.

So we can safely say that the summer solstice sunrise theory just does not work to explain Stonehenge.

In the 1960s, as part of the revolt against the old authoritarian ways of thinking, there was a breakthrough in the archaeology of ancient monuments - led by an American astrophysicist called Gerald Hawkins, who argued that Stonehenge was an eclipse prediction machine.

Hawkins' argument was that part of Stonehenge which had been relatively ignored was the outer circle of 56 Aubrey holes (named after John Aubrey, the 17th century antiquarian). These are convenient to explain the cycles of the moon in so far as they synchronise with the cycles of the sun, because 56 is the smallest whole number that allows us to understand how the sun and moon synchronise in their movements around the earth and then explain the patterns of eclipses. Hawkins, and then later Robin Heath, argued that by placing stones in these holes, and by moving these stones in different holes and in different directions, you could predict when lunar and solar eclipses would occur.

This was very exciting for many people, and at first quite interesting to those of us who knew the role of the moon in the sex strike. A lunar eclipse would catastrophically break the cyclicity of a full moon ritual. However, if you think hard about it, the idea that Stonehenge is a lunar or solar eclipse prediction device just will not wash.

The 56 Aubrey holes marked the first phase of Stonehenge, built around 3000 BC, 500 years before the sarsen stones were used, at which time there were no longer 56 posts or holes.

In fact we can go further. If now there is a Neolithic agricultural society - and the collapse of a hunting society so that lunar rhythms could no longer apply - we would then predict that the sun would be displacing the role of the moon. Agriculture is much more dependent on solar rhythms than lunar rhythms. So we can now predict that there would be some interaction between the emergence of a solar cosmology or religion with an earlier respect for the moon.

Not just that. We would also predict that if men, or elite men, are now taking over from the rule of women in matrilineal clans, then we would predict that men would be displacing women in their previous leadership role - and to displace women they would also have to confiscate the rituals previously led by women. And the best way to confiscate them is to appropriate them and adapt them to your own use. To continue them, but now under elite male rule.

So we now have two very different sets of predictions, according to whether or not the Neolithic was a revolution or a counterrevolution.

I started asking these questions in the mid-1980s. One of my professors was Chris Tilley at University College London, a leading anthropological archaeologist in the monument-building tradition of north-west Europe. Up until this time I had no interest in monuments such as Stonehenge. I thought they were all hippy diversions. But when Chris Tilley gave his lectures he would talk about the role of the sun, and I, wanting to defend Engels, would ask about the role of the moon. Was it not possible to see some aspects of lunar cosmology within these monuments? He instantly got very angry.

In my experience, if someone gets instantly very angry, it is often because you have hit a nerve. Chris Tilley patronised me, saying I did not understand. The moon is very complex. Too complex for the people building these monuments. The implication was that, the further you go back into prehistory, the more simple, the more savage, the less educated, the less in-

tellectual, the less intelligent people are. This assumption of unilinear growth of intelligence dominates the archaeological debate.

Stonehenge

This incident made me realise I was on to something, so I started to do some research. Of course, the signature monument for British archaeology, English heritage and the whole heritage industry is Stonehenge. If we can work out what Stonehenge means, it will have great importance for the way in which prehistory is identified by different schools of thought. Does Stonehenge represent the start of civilisation, when we began emerging from savagery? Or is it part of the Neolithic counterrevolution?

These are two entirely different approaches to prehistory. Through the details of these monuments, we should be able to evaluate these two main theories. After all, Stonehenge is one of the most studied pieces of archaeology in the world and we now have masses of information about it. I began to take it all in.

Because they are diggers, archaeologists look at Stonehenge through plan diagrams. A plan diagram of Stonehenge draws the eye to the series of two concentric circles in the centre. The outer circle is a sarsen ring, while the inner circle is made up of Prescelli bluestones. There is also a horseshoe of five trilithons, an inner horseshoe of 19 bluestones and just off the centre is what is called the altar stone.

Such diagrams will usually show the cardinal points, although they have no connection with the details of the monument and are not synchronised with any of the stones. But archaeologists will always include them. Often they will also show a central axis, even though no stone or pillar has ever stood at the centre of Stonehenge. Nevertheless the

centre will be marked on plan diagrams. In addition plan diagrams do not highlight the lintels which stand on the stones of the outer circle. Plan diagrams diminish the properties of Stonehenge or impute to it properties which the architecture does not support. They are not a good way to start thinking about Stonehenge.

There are many pictures taken of Stonehenge from somewhere near the centre of Stonehenge. Every year 20,000-30,000 people go there for summer solstice sunrise, and if they are lucky they might even be able to get to the middle. They see summer solstice sunrise rising over the Heel stone. Or so they might believe.

Remember, though, there was no stone ever placed at the centre. If you put your finger at arms length in front of you and look through one eye and mark some stationary point, then switch to the other eye, the alignment will move substantially - the parallax effect. You can construct an image which 'proves' that the summer solstice sun rises over the heel stone to the north-east of the circle. But you can make Stonehenge align on anything you like by using those sorts of techniques. By looking through any of the other gaps, you can make it do astronomically whatever you want it to.

What you cannot prove, however, is that this is an intentional part of the design of Stonehenge - you are, after all, standing at any position you choose in order to create that particular photographic effect. And then you can sell lots of books about Stonehenge with lovely photographs to demonstrate that Stonehenge is designed to line up with the summer solstice sunrise. You can make the monument prove whatever you want if you have no precise way of establishing what alignment was intended.

In fact, if you use modern surveying techniques to find the actual centre of Stonehenge, and from there look towards the summer solstice sunrise, you will see that it does not rise over the Heel stone. It rises three solar diameters to the left of it. It