

Thornborough Henge as the Moon's Maximum Standstill

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Details

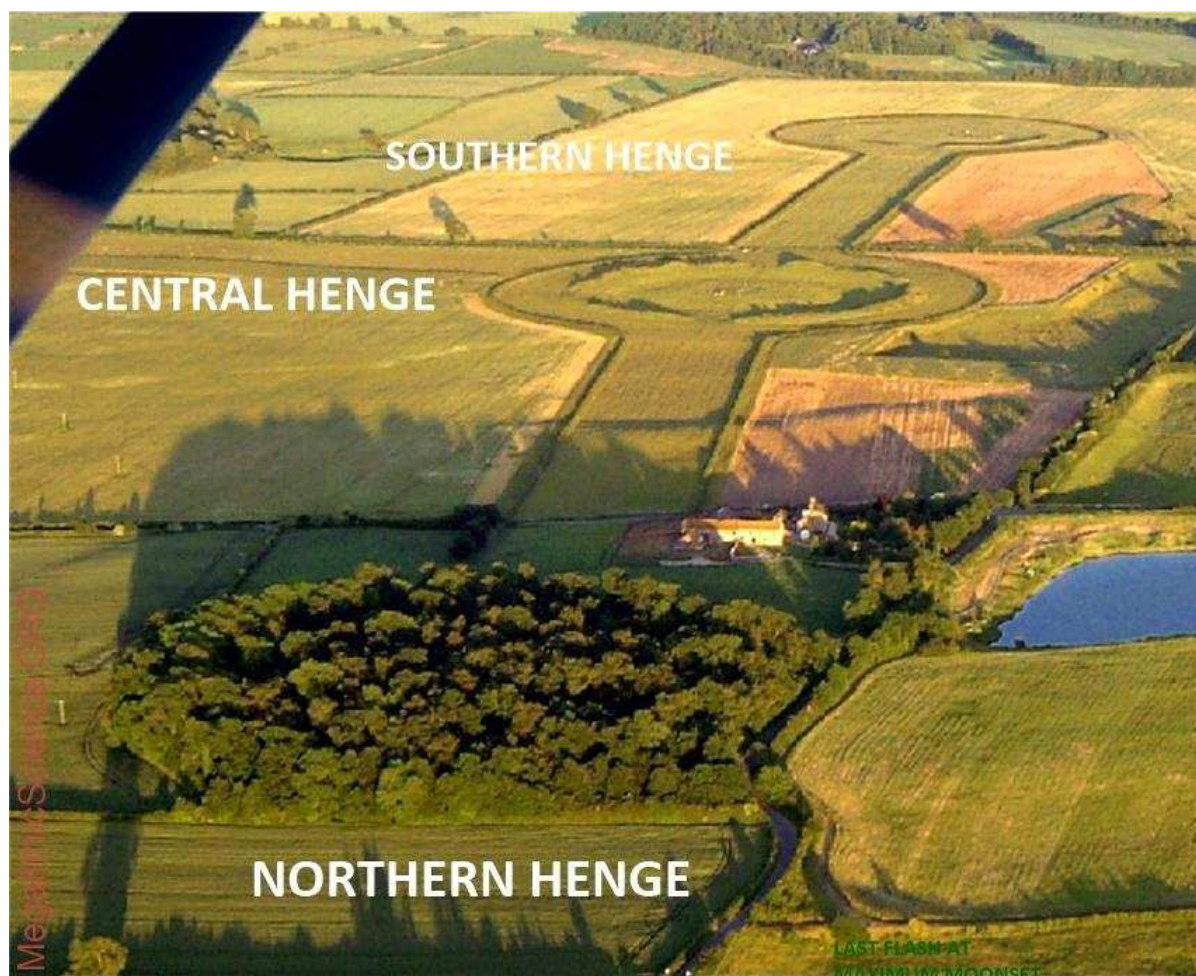
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Abstract

This paper, published on the web, gives time-factoring as an interpretation of the form of Thornborough Henge in North Yorkshire (near Ripon). The three henges appear to align to the three notable manifestations to the north west of the northerly moon setting at maximum standstill and then finds the distances between henges as representing 3400 day-feet, enabling a "there and back again" counting of the 6800 days (18.618 solar years/19.618 eclipse years) between lunar maximum standstills.

I went to Thornborough some years back and was pleased to be shown English Heritage Research Report 174: *Cult, Religion, and Pilgrimage: Archaeological investigations at the Neolithic and Bronze Age Monument Complex of Thornborough, North Yorkshire*, ed: Jan Harding, (Council for British Archaeology: York) 2013, ISBN 978-1-902771-97-7.

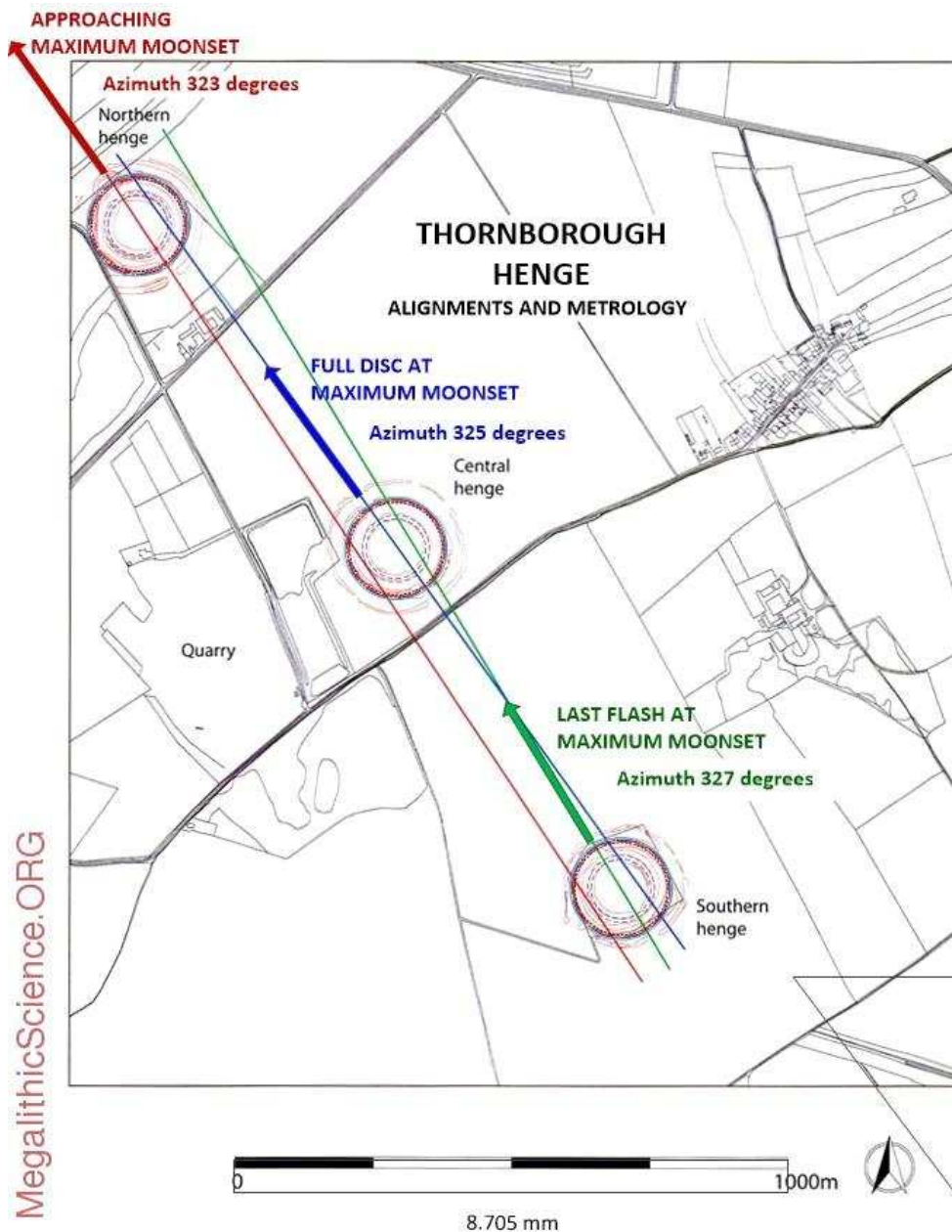


The three henges are of similar size and design, a design most clear in what remains of the central henge.

As usual with three slightly off-line objects, the parallel to Orion's belt has been made, and this has become an acceptable interpretation (in this case) by

archaeological authors. One can see from the title of report 174, *Cult, Religion, and Pilgrimage*, religio-anthropological parallels are preferred by archaeology as a social explanation for the unique geography of riverine Yorkshire, east of the Pennines. However, astronomical alignments and the metrology within sites are dutifully ignored as a source of meaning relevant though to the widespread practice of horizon astronomy and counting using lengths of identical length (such as inches or digits).

The report provides three interesting alignment angles, each carefully derived from other studies, from the bipolar entrances of each of the three henges; which alignments are here found astronomically significant and relevant to the design and dimensions of Thornborough Henges, when seen as an astronomical timepiece.



The northern henge alignment would show the extreme northerly moonset as approaching the extreme standstill, which the central henge is aligned to, but then as a full disc on the NNW horizon seen through its central aisle. The southern henge alignment would show the same extreme only as a "last flash", as that moon sets. [From Cult, Religion, and Pilgrimage]

Figure 1 illustrates what these alignments could mean from the standpoint of

horizon astronomy, namely that

1. the northern henge is aligned to an approaching maximum standstill moonset to the north
2. The central henge is aligned to the standstill moonset as full disc
3. The southern henge is aligned to the standstill moonset as a last flash.

My Thanks to Robin Heath for his QuickAz data, for which see assumptions below

The Use of Countable Lengths of Time

The alignment of the Henge to the lunar maximum standstill points to the purpose of the monument as being related to megalithic astronomy that may then have had an emerging religious significance (which can usually only be guessed at.) I gave examples in *Sacred Number and the Lords of Time* of two circular monuments where the diameter is rationally based upon the number of days between lunar maxima, 6800 days, by having a diameter of 3400 inches (Aubrey circle) or 3400 megalithic inches (Le Menec western cromlech). Any measured line can be traversed twice to form a continuous count, then exemplifying the form of duality visible in the nodal cycle of 18.618 years, each end in this case being the maximum or the minimum lunar standstills, 3400 days apart. Thornborough expresses just such a duality between the northern and southern henges, with the central Henge equidistant from both.

It should also be realised, with any lunar maximum monument, that Alexander Thom's long alignments to the lunar maximum would have been essential for measuring the 6800 day length of the nodal cycle of the moon's extremes. After this *measurement phase*, a long count could be reproduced by seeing that 6800 was simply 17 times four multiplied by 10 times two (a rectangular number of 68 times 100), and this number could become extremely useful as a countable length during the 18.6 year nodal cycle. By being accurately aligned to the lunar maximum moonset, a linear counting of 3400 (to the minimum) and back would allow the progress of the nodes to be tracked through the stars of the sun's path, these probably organised in some way similar to today, in our Zodiac.

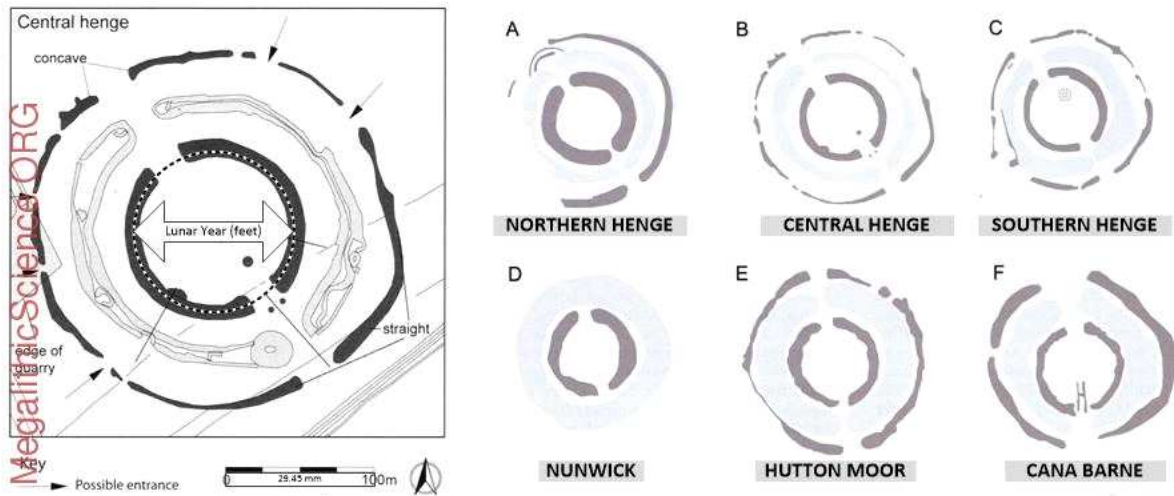


figure 5.3 from *Sacred Number and the Lords of Time*, showing how the number of days in half a lunar nodal cycle could be handled, before modern numeracy, by using a combination of counted equal measures (metrology) and geometry, to form a Rectangular Number like 3400.

It therefore becomes of interest to study the metrology between and within these henges, in which a simple 4th millennium metrology of inch, foot and

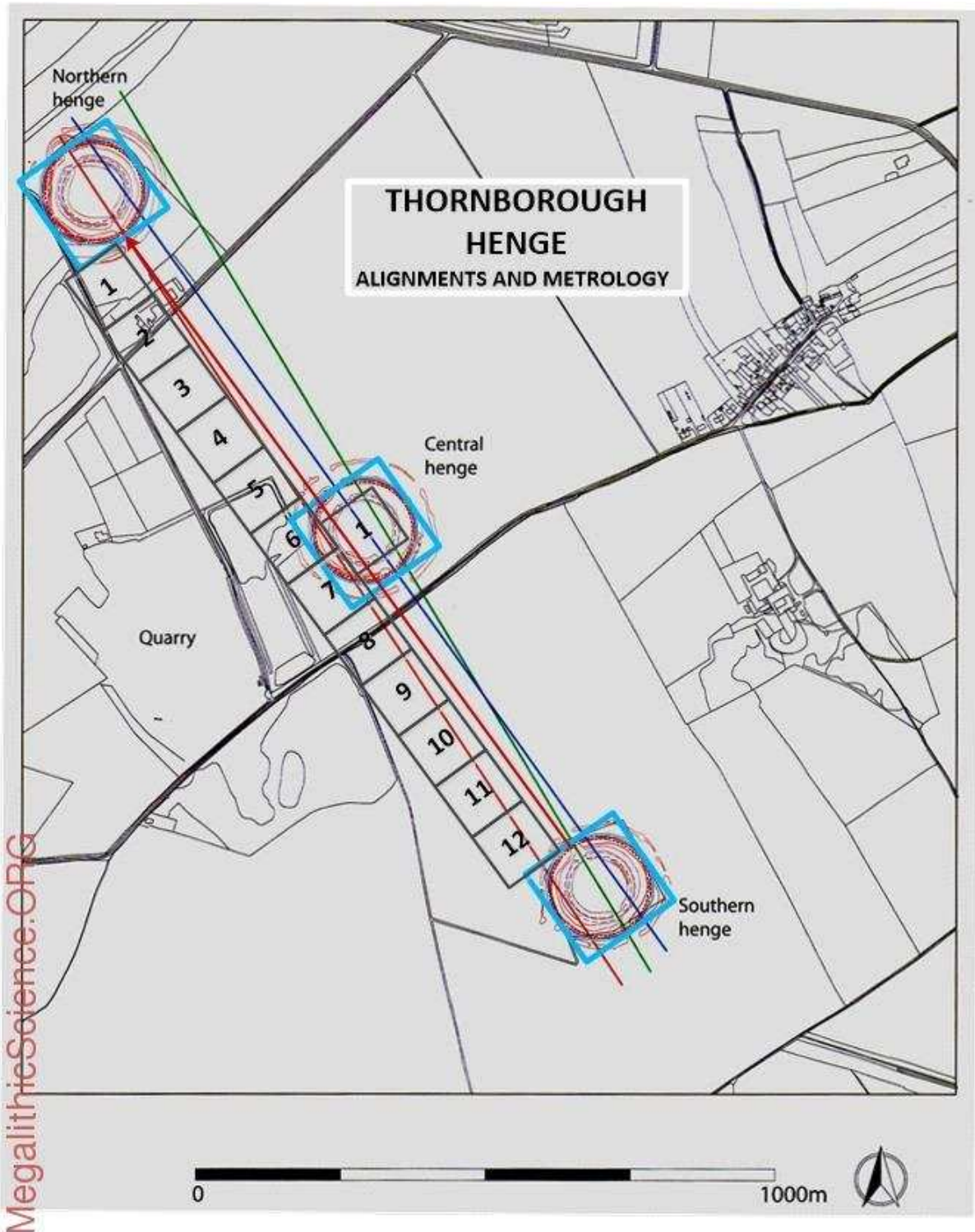
megalithic yard can then be used to detect for astronomically relevant lengths within the monument.

The three henges are of similar design, each being of an avenue running through concentric circular banks. The inner ring appears to have a mean diameter equal to the lunar year in day-feet, which can also be 12 lunar years in day-inches. This measurement was made off the Report by placing a circle in the visually "best" position and then converting its scanned diameter, according to the scale provided, into metres and then feet. The diameter read in this way was 108 metres, which length equals, in feet, the number of days in the lunar year: 354.367. But read in day-inches, this length as a count would be twelve times this and hence 144 lunar months long.



This region of Yorkshire has a concentration of henges of very similar design and the inner ring in each case is about the same size in each case, a diameter equal 144 lunar months in day-inches or 12 lunar months in day-feet (108 metres) [from Cult, Religion, and Pilgrimage]

Twelve lunar years is 144 lunar months, and it was then discovered that the distance between the entrances to northern and southern henges was 12 lunar years in length when measured in day-feet. This 12 lunar years (in day-feet) is then twelve times the diameter of the inner split ring of the central Henge (in day-inches), implying that 144 lunar months was, for some reason, an important period for the builders in their astronomical understanding, available inside the central Henge as a countable length, but then in inches rather than in the cursus where it had been realised twelve times large, in feet.



The central henge square, labelled 1, equals the lunar year in day-feet but crucially 144 lunar months in day-inches. This inner ring dimension appears to fit the cursus between north and south 12 times, so that it could be considered a counting length for 144 lunar months but now in day-feet rather than in inches as in the central cursus; a scaling of twelve available through the 12 inches in a foot [from Cult, Religion, and Pilgrimage]

One is drawn back to identifying some means of counting the 6800 day period between the lunar maximum, to which the monument is aligned. A solution hinges on the ratio to be seen between 144 lunar months, equalling the 4252 day-foot length of the cursus, and the 6800 day period, which ratio is exactly $8/5$ or 1.6 . This ratio is the same as that between the lengths of the Venus synod and the solar year (365 whole days).

Therefore, if one counted the cursus length in units just $5/8$ th of a foot, the

cursus would be 6800 such units long but, better still, if the day unit chosen was 10/8 of a foot, that is 5/4 feet, then there would be 3400 days to be counted one way and 3400 days to be counted in coming back to the end one started at.

One then feels drawn to have the northern Henge represent the lunar maximum, to which the whole triple Henge is aligned, thus having the southern Henge represent the lunar minimum. This would make the central Henge, being equidistant, representative of the point at which the lunar extremes from east-west on the horizon equal those of the sun at its winter and summer solstice. At this midpoint in the nodal cycle, the sunset and northerly moonset would (at different moments) shine diagonally across the aisle of the central henge at an angle of 45 degrees to north and west. Hence perhaps the henge alignment to the full disk and width of its entrance follow a pattern familiar to the corridor of Gavrinis, where the moon enters straight down the corridor whilst the sun's extreme (then rising in the winter solstice), can only cut diagonally to end stone C3 (see figure 5.6 of *Sacred Number and the Lords of Time*), a passage and chamber only 14 metres long.

Alignment Data

- full disc azimuth = 324.5849
- last flash azimuth = 326.413

Epoch	3800BC
lunar declination	29.228
Latitude	54.20972
Horizon	0 deg to NNW
Earth Curvature	0.72
Parallax	0.95
Refraction	0.55

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