ANTIQUITY

VOLUME 76 no. 293 - September 2002 Euan MacKie - FOOTNOTES

1 In the sense that, according to Caesar (writing in the mid 1st century BC), the Druids considered it impious to commit their learning to writing even though the Greek script was known in southern Gaul by then.

2 Using the word in the sense of the search for knowledge for its own sake. Rejecting this idea surely need not imply any lessening of the degree of patience and skill that could have been employed in investigating, for example, geometry and the movement of the heavenly bodies but one has to accept that the social context in which such work took place was almost certainly religious.

3 Indeed Barrett's primary purpose is to show that massive monumental roundhouses — which would signify (like the huge earthworks) the emergence of an élite upper class of some kind in Late Neolithic times — are unlikely because in that case there ought to be similar evidence of the emergence of that élite earlier in the Neolithic period, which there is not. His is not so much a 'perceptive re-analysis of the southern circle . . .' (Ruggles & Barclay 2000: 64) as a *deductive re-interpretation* of the post-holes on the assumption that the demonstrable presence of an élite requires a long evolutionary development of the timber rings, thus excluding any suddenly appearing monumental roofed roundhouses. This is another excellent example of how a prominent school in interpretive British prehistory has an almost irresistible propensity to work from theory down to the excavated data, rather than the other way round.

4 For example the plan of the 'Northern Circle' at Durrington Walls — with its central square of massive timbers — is remarkably similar to that of the roundhouse at the Iron Age 'farm' of Little Woodbury, also in Wiltshire. Indeed one might ask whether this site, with its unusual profusion of grain pit silos, could not have been the headquarters, and the storage and re-distribution centre of an Iron Age chiefdom, perhaps with a priesthood attached.

5 He might also have mentioned that one of the regional peculiarities of the Recumbent stone circles could include a peculiar local form of Moon worship (Ruggles & Burl 1985).

6 'The hut-clusters with their alleys and drains can only have been built by the effective co-operation of organised societies. But there are no indications of chieftainships or class divisions, though variations in the size of dwellings may reflect gradations of wealth or status.' (Childe 1940: 88).

7 Indeed 'Good parallels are afforded by the stone representations of adze blades bound transversely to their shafts from Palmella, Cascais, Carenque and other sites in Portugal (with references to Childe's works). . . ' Some of the bone pins also find analogies in the Chalcolithic rock cut tombs of Portugal but such foreign analogies are of course never discussed seriously now.

8 He did not put it in exactly those terms.

9 The Moon changes its declination (that is, its monthly cycle from N to S and back against the background of the fixed stars) about thirteen times faster than the Sun; thus fairly close and inconspicuous horizon marks could in theory be employed to marks its important positions. Also there are more 'extreme' positions of the lunar cycle to mark, plus a tricky 9' 'wobble' (which can give the key to predicting eclipses); hence the number of potential lunar sight-lines in the NE, SE, SW and NW is much greater, and the likelihood of their occurring by chance rises also. Again the Moon is not very bright so that both its upper and lower edge can be used to graze horizon marks; this immediately doubles the number of possible foresights, especially in high altitudes like Scotland where celestial bodies can rise and set at

shallow angles to the horizon.

10 ' . . . a nice proof that the hieratic learning of the theocratic circles had not gone un-noticed in the peasant sphere, and that within this sphere an appreciation and value was placed upon this symbol of learning, even though the owner of the axe and his friends may not have had the slightest notion of what it meant.' (*Ibid.*)

11 The rubbings are in the care of the National Monuments Record in Edinburgh.

12 The standard deviations were computed by the author from the published dimensions.

13 A number of off-prints remain and will gladly be given to anyone interested.

14 These were constructed from digitised photographs. When bad weather or other problems prevented the indicated horizon being photographed it was calculated from Ordnance Survey maps. Such profiles are marked with crosses instead of a continuous line. (Ruggles 1984: 73).

15 'Unique' meaning that pairs of stones on opposite sides of a stone circle were ruled out; the circle has to have a single outlier to indicate a direction plausibly, though this situation is rare in western Scotland (Ruggles 1984a: 61). Indeed in this study a stone circle was used as a back-sight only from its centre.

16 The late A.S. Thom prepared a review of Ruggles' book for the Greenwich Observatory *Observer*. After I had sent him a copy of my review for *Archaeoastronomy* he wrote to me enclosing a copy of his and explained that he was accustomed to referring to 'statistical dust' in the same context — an interesting coincidence (letter 28/2/1985).

17 That is 30' of arc, almost the diameter of the Sun (32').

18 In other words the usual — probably subconscious — assumption made is that the position, for example, of each solstitial site had to be worked out from scratch on the ground, by establishing sunrise or sunset against a distant mountain on the shortest (or longest) day by trial and error. To do this at Kintraw it is necessary to be able to move some distance to the left on the hill platform, to watch the Sun in the notch for perhaps a week before and after midwinter. This cannot be done because the notch is quickly hidden in that direction. However if the day of midwinter was already known, and only an accurate local checking site was required, this problem would disappear.

19 The author visited the hill platform site again on 23/09/01 (the first time for at least ten years) and found it to be completely overgrown with gorse and inaccessible without extensive clearance; trees on the steep slope below hide the SW horizon. It is curious how the trees and bushes have shot up since the hill site was examined in 1970–71. The field with the standing stone is of course clear. Likewise the probable midwinter sunset line at Ballochroy is still blocked by a Forestry Commission plantation about 500m to the SW (Ruggles 1984a: 201).

20 The author has a colour transparency, taken at the time, showing this.

21 Peter Gladwin, in his privately printed Report on the site (1985), proposed more but the author was always sceptical about them and has never mentioned them in his own publications on the site. Regrettably at least one appears to be sanctioned by the notice board at the site. Ruggles may be assuming that the author had a hand in compiling this uncritical supplementary material but he did not (Ruggles 1999: 32-3).

22 It does not matter in this context whether the Earth is viewed as going round the Sun or as — in the older Ptolemaic scheme — the Sun is seen as going round us.

23 The Medieval Arab poet and mathematician Umar ibn Ibrahim al-Khayyami (commonly known in the west as Omar Khayam) worked for many years at the observatory at Isfahan; he seems to have discovered or

learned about the 33 year solar cycle and proposed a calendar reform utilising it (Duncan 1999: 189– 90 & Table 1).

24 The large dot from which nineteen long, slightly wedge-shaped lines radiate seems unlikely to be anything else except the Sun shining downwards. Just beyond those rays one can define sixteen compartments each of which contains a large pecked quadrilateral together with between one and three short thick lines, or none. If the sixteen quadrilaterals may be said to represent the sixteen basic ' solar months' of 21 days (totalling 336 days) then there appear to be 29 extra smaller day lines making the total 365. If subsequent careful study verifies the pattern then we may well have a representation of Thom' s solar calendar in rock-art, dating probably to before 3000 BC.

25 'The heap of heavy stones of the generous Finn' (MacCool).

26 Equal to 45· 96 MY.

27 'The (something) house on the stony summit of the hill' .

28 This is a preliminary computation done from the maps and a photograph; no theodolite or GPS was available at the site.

29 Together with Beltane at the beginning of May and Lunasda at the beginning of August.

30 The late Archie Thom told the author that he and his father had visited Maeshowe in Orkney in the early 1980s with the intention of checking for any distant foresights but could see nothing in the south-east except the local horizon; yet the hills of Hoy (later shown to mark solar calendar dates with indicated alignments) are only ten miles away.

31 The author found this to be the case during his two weeks of excavation at Kintraw, Argyllshire, in the summers of 1970 and 1971; *Beinn Shiantaidh on Jura* — the claimed midwinter sunset marker 29 miles away — was rarely seen through the haze during those times even though the weather was usually dry and often sunny.

32 The author has devised such a test for some of the standing stones around the lower part of Loch Linnhe in the Great Glen of Scotland but has not yet been able to complete the fieldwork.

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