

Professor Challenger and his Lost Neolithic World

The compelling story of Alexander Thom
and British archaeoastronomy

Euan W. MacKie

Access Archaeology





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(Figure 4.4, p. 73 - an example of a potential indicated alignment)

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Foreword

Writing Professor Challenger combined two great passions of my father's life: immersing himself in the reconstruction of the Neolithic mind and constructively challenging consensus in his professional domain. Given these preferences, the attraction to both Professor Thom's work and Conan Doyle's eponymous character make perfect sense. The book is semi-autobiographical in style charting Dad's investigation of Thom's theories across a number of key Neolithic sites from Kintraw to Stonehenge and finally Orkney. It also maps his own perspective of the changing reception to Thom's ideas by the archaeological profession from initial curiosity and acceptance to increasing scepticism. This healthy and necessary diversion of views energised Dad well into his retirement to continue researching in the area, conducting painstaking field investigations from which to inductively infer the astronomical abilities of the Neolithic 'priesthood'. The first six chapters are historical summaries of the various strands of evidence from key Neolithic sites across the UK and Ireland with the compelling evidence of the Ness of Brodgar added as an appendix. The final chapter was Dad's endeavour at adding some contemporary references and brought a more optimistic tone to the acceptance of Thom's ideas. Unfortunately ill-health prevented him from editing this final chapter so we have done this for him to enable publication.

Dr Doug MacKie

1.7.20

Preface

In 1912 Sir Arthur Conan Doyle published his novel *The Lost World* which was a story about the discovery in the Amazon jungle of South America of an isolated lost world, on top of a high plateau with cliff edges, in which dinosaurs and pterodactyls still lived. The explorer was the British Professor George E Challenger but, when returning through the jungle from the first expedition, he lost in the river the vital piece of evidence which proved what he had found. Back in Britain he announced what he had discovered but all his scientific colleagues thought his story was utterly fantastic and that he was lying and they denounced him. The only solution was to return to the Lost World with some friends and colleagues who were prepared to be taken to see the dinosaurs. This was a success and restored his reputation.

There is a similar story in British archaeology in the latter part of the 20th century. The equivalent there to Professor Challenger is Professor Alexander Thom who published a book in 1967 called *Megalithic Sites in Britain* which was the result of many years of fieldwork on Neolithic standing stones and stone circles. He deduced from this mass of evidence that the builders of these sites had highly sophisticated knowledge of astronomy and geometry, and also used a standardised measuring system. At first many archaeologists – including me – were very interested in his ideas and several took part in second expeditions to the Neolithic lost world and searched for more information to test Thom's ideas. The Royal Society held a conference to discuss the new ideas and published papers by the participants, including the author's (MacKie 1974).

As years went by however some British archaeologists became increasingly sceptical about Thom's ideas, probably because their major implication was that a skilled professional priesthood existed in Neolithic times. Also such people would have to learn basic astronomy and geometry in order to understand Thom's evidence, which might have seemed rather a burden. However Clive Ruggles, who is qualified in this area, gave them a reason not to believe Thom by claiming to have disproved most of his deductions about individual sites. Chapter 4 contains an analysis of Ruggles 'disproof' which was of apparently such a convincing nature that it persuaded many of the archaeological profession which specialized in this period of prehistory. Ruggles became president of the Prehistoric Society and organized a conference on Thom's work to which the author was not invited.

Alas, Professor Thom is no longer with us so I – being retired and over 80 – have adopted the role of Professor Challenger in this controversy. The scientific method of testing his hypotheses was adopted – starting in 1971 – by carefully examining five sites and checking whether they had the qualities that Thom had deduced. They all had, but the hostility of many colleagues to these conclusions became more intense. The tragedy is that the supporting evidence is completely ignored by some even though debate – and not the 'theory first' approach – is the key to high quality research. Some of the younger generation now study standing stone alignments through computers, and a few through fieldwork, but few seem to accept that a sophisticated priesthood could have existed in Neolithic times (see Chapter 7 for details). The evidence from Orkney (Chapter 3) has now begun to change this for many archaeologists.

However the similarity of this story with Conan Doyle's *The Lost World* has suddenly become greater because a mass of independent archaeological evidence from Orkney has emerged over the last few years which favours a Neolithic society with a priesthood (Chapter 3). There are also increasingly clear signs that this remarkable northern Neolithic culture had a big effect on – or was affected by – the evolution of Stonehenge (Chap. 5); this remarkable standard archaeological evidence should eventually make the work of Professor Alexander Thom more acceptable. Also in recent years more and more archaeologists have investigated British archaeoastronomy but there seems to be not too much assertion of a Neolithic priesthood (see Chapter 7 for details).

At its core this controversy is about the way that evidence is perceived and the willingness to abandon the preconceptions of 'theory first' approaches in the light of new evidence. Professor Atkinson (1975) was one of the first to change his mind; he found the new evidence highly plausible and explained it thus. 'I myself have gone through the latter process' [a deductive rejection of Thom's work] 'but I have come to the conclusion that to reject Thom's thesis because it does not conform to the model of prehistory on which I was brought up involves also the acceptance of improbabilities of an even higher order. I am prepared, in other words, to believe that my model of European prehistory is wrong, rather than the results presented by Thom are due to nothing but chance.'

My own interest in Thom's research developed in 1970 when I met Professor Thom down in Argyllshire where he was being filmed by a TV group about his ideas about standing stones and stone circles. He explained how the long midwinter sunset alignment of the Kintraw standing stone was invisible beside the stone itself and had to be watched from some way up the steep hill behind the stone. I excavated the place he identified and found an artificial level rubble platform. This seemed to me to prove that he was right and encouraged further successful excavation tests of his hypotheses. This did not prove Thom's discovery to his hostile opponents. However my hope is that the more recent research described herein will be more successful in persuading the reader of the merits of Thom's hypotheses.

E. W. Mackie

Chapter 1

The origins of the controversy

It is necessary at the beginning of this work to explain how what has been a particular controversy in British archaeology began. In two books (1967 and 1971), and in a number of papers going back many years¹ the late Professor Alexander Thom offered prehistorians a detailed new interpretation of the origin and function of Neolithic standing stones and stone circles, and some new insights into the astronomical, mathematical and geometrical skills possessed by their builders. Although suggestions were not lacking (before this potential major revolution) that the Neolithic and Early Bronze Age inhabitants of Britain, or a few of them, practised quite sophisticated astronomy, it was Thom who did systematic fieldwork in many places. However these earlier views were based on a large number of assumptions derived from individual sites like Stonehenge in southern England and Callanish in the Outer Hebrides.² Thom was the first to have systematically surveyed large numbers of standing stone sites, to have looked for possible astronomical alignments in them and to have founded his theories on a mass of data drawn from many sites instead of a few.

1.1 Thom's hypotheses

Thom's hypotheses fell into three groups. The first is that the erectors of stone circles practised sophisticated geometry in laying out their circles and arcs – having knowledge for example of Pythagorean triangles – and used a precise and invariable unit of length in doing it. This is the 'megalithic yard', equal to 0.829m (2.72 feet) and strikingly similar to the modern Iberian *vara* of between 0.843 and 0.838m (2.766 and 2.7495 feet).³

The second theory concerns the cup-and-ring rock carvings of south-west Scotland (and can presumably be extended to those of other regions). Thom suggested that these were drawn out with the same elaborate geometry as in the stone circles and rings and were based on a unit of length independently deduced from the carvings. This turned out to be 1/40th of the megalithic yard, that is 20.5mm (0.808 inches).⁴

The third major theory suggested that many standing stones and stone circles were intended as the backsights of long and accurate alignments to notches and peaks on the horizon which were intended to mark accurately the rising and setting points of various celestial bodies at significant times.⁵ The solar sites among these are particularly important and were presumably designed to make possible the keeping of an accurate calendar by pinpointing the days when the Sun was at its extreme (midwinter and midsummer solstices) and central (equinoctial) positions on the horizon. Another major part of this astronomical theory is that many other alignments were constructed to record the more complicated motions of the Moon, and that this was done in order to predict eclipses.⁶

In the many decades which have passed since Thom's work was published and made an impact on archaeology, I have tried to test his ideas by investigating some long alignments, several not investigated by him. Chapters 2, 3 and 5 deal with the astronomical theory and Chapter 6 describes a remarkable find in Ireland which strongly supports the need of long alignments to construct a calendar. Kintraw is one

¹ See the almost complete list in the Bibliography on pages 145-6,

² Lockyer 1906.

³ Thom 1967.

⁴ Thom 1968.

⁵ Thom 1967.

⁶ Thom 1971.

site in Argyllshire where it was necessary to make a prediction about the viewing point before it was plausible. This is described in detail in Chapter 2

1.2 Methods of approach

When assessing the value of a new and controversial theory – the acceptance of which would require some drastic changes in long established ideas – it is important to be quite clear about the nature of the evidence on which the new hypothesis is based. In the case of Thom's theories it was quickly evident in the late 1960s that it was not proving easy for the archaeological profession to accept his ideas, which would credit elements in the prehistoric British population of the late Neolithic and early Bronze Age periods with skills in practical surveying, advanced geometry and observational astronomy which are far better than any hinted at by the more traditional archaeological evidence.⁷

At that early time so unexpected were Thom's interpretations when set against previous archaeological ideas that it was only fair to ask that the evidence on which they were based be subjected to careful scrutiny and the theories themselves tested where possible. However it would obviously have been wrong to reject those theories because they did not match with the contemporary accepted picture of prehistoric Britain. Our failure to find evidence of sophisticated intellectual activity among the chambered tombs, stone circles and standing stones of about 4000 years ago cannot mean that such evidence does not exist. It need only mean that most of the archaeological profession was not equipped to discover it; in just the same way ordinary people – including astronomers – are not qualified to excavate an ancient site and analyse its stratigraphy.

It is also true however that such new archaeoastronomical theories should have been independently but empirically tested as much as possible. Hypotheses based on statistical studies depend on the quality of the evidence analysed statistically and this set was to be checked independently in the 1980s by Clive Ruggles, who was not an archaeologist but who had similar knowledge to that of Alexander Thom. Chapter 4 discusses this and asks if Ruggles was completely independent in his attitude to Thom's ideas.

What is the crucial evidence? Basically it then consisted of the identification in the field⁸ of a large number of long alignments from pointing standing stones to prominent features on the horizon and of the discovery that these sight-lines cluster round significant prehistoric astronomical declinations (meaning positions in the sky) such as those of the Sun at the two solstices (midsummer and midwinter) and at the two equinoxes. The Sun could be rising or setting at these dates so there are eight potentially significant solar points on the horizon. The Moon has four extreme positions so another eight lunar positions could be marked.⁹ If one assumes that the alignments are genuine the histogram of their declinations is by itself a highly significant body of evidence since these Sun and Moon alignments only cluster in this way when converted into declinations in the sky. A histogram of their azimuths would show a more random distribution, since the celestial bodies rise and set at an angle to the horizontal horizon. When the horizon is suitably uneven the azimuth of them varies.

Possible tests for the Thom theories

There is a variety of tests which can be applied to both the evidence Thom assembled in the 1950s and 1960s and to the various theories which he devised to explain it all. I think they can best be identified as answers to the following questions. (1) Have the alignments been identified objectively? In other words

⁷ Hawkes 1967.

⁸ In modern times several archaeologists use computers to analyse alignments; this needs to be justified by explaining what the computer programme does.

⁹ Thom 1967, fig. 8.1.

is there a clear indication, at the backsight, by a standing stone or something else, of the exact rising and setting points on the horizon? (2) Are they the most likely ones, or the only ones, to be seen from the site concerned? (3) Does any available archaeological dating of the backsights fit the dates of the indicated solar or lunar declinations? (4) Are there any features which the astronomical interpretation requires to be present which can be checked by fieldwork and excavation? (5) Does the archaeoastronomical theory involve any equipment and techniques which the Neolithic (New Stone Age) technology was unlikely to have been able to produce? (6) Is there a problem with storing the resulting knowledge about solar and lunar movements in societies which do not use a writing system? (7) Finally, is there any independent evidence for the existence in Neolithic Britain of the kind of society which has a class of specialists – like priesthoods – which can remember and pass on knowledge orally, exceptionally well? An answer to the last question is in Chapter 3, about Orkney.

Starting in the 1960s I attempted to test Thom's ideas by surveying and/or excavating various sites, including one remarkable one called the Kintraw standing stone. Here a prediction had to be made by Thom about the position of an observation platform because the distant horizon could not be seen from the field in which the standing stone was set up. This is a classic example of the scientific method and I carried it out, with success. Chapter 2 contains accounts of these experiments, the results of which favoured Thom's ideas. The other result is that these explorations are unpopular with large numbers of concerned archaeologists. A classic example was provided by an ex-colleague (I am retired now) in the Hunterian Museum. Some time in the 1980s I was to speak about my work to the Glasgow Archaeological Society and I discussed this with him beforehand. He ended the discussion after a few minutes by expressing his near universal scepticism. Many others have similar views which are without doubt sincere; yet it is very difficult to engage in rational debate with them. One is reminded of people with strong political views! However as explained in the Preface this situation may now change.

One particular reason for opposing Thom's ideas was held by the followers of Immanuel Velikovsky's theory of a major catastrophe to the Earth in the second millennium BC, which altered the rising and setting phenomena of the Sun and Moon (MacKie 1975). In the same magazine (*Pensee*) there are several other arguments on the subject, two by Velikovsky himself. Some of his followers came to Kintraw when the excavation was taking place and clearly hoped that the prediction of a high observation platform, well above the standing stone, was nonsense!

1.3 Archaeological reaction to Thom's major publications in the 1960s and 1970s

Although it was Gerald Hawkins' 1965 book that first alerted British archaeology to the remarkable potential that detecting ancient astronomical practices has for altering our view of the prehistoric world, the genesis of the modern flowering of archaeoastronomy and ethnoastronomy clearly lies in the work of Alexander Thom in Britain between the 1930s and the 1970s. It was Thom who taught us how to look for, and rigorously assess, the field evidence for sophisticated sky watching, calendar making, surveying, and geometry in prehistoric times. Without this basic insight, and the stimulus to the sound research that resulted, it is doubtful whether this Royal Society conference of 1974¹⁰ and its six predecessors would ever have been held.

Some British archaeologists and prehistorians, however, still found it hard to deal with Thom's work, which was by then rarely considered in publications, and his conclusions were generally thought too weighty for the evidence he assembled. Mike Pitts' book¹¹ is a good example of this attitude, not because he is exceptionally skeptical, but because he is fairly typical, at least of those who write books about the Neolithic period. He is also typical in exhibiting a fairly basic misunderstanding of the subject, and one

¹⁰ MacKie 1974.

¹¹ Pitts 2000:222–229.

that goes far to explain the skepticism mentioned. His chapter devoted to ancient astronomy mounts an assault on a concept that probably no one who specializes in archaeoastronomy believes any more which is that some kind of ‘science’ was being practised in prehistoric Britain and that accurate long celestial alignments are the crucial evidence that is used to prove this. This belief must have been given a major boost by Alexander Thom’s idea that the intricacies of the moon’s orbit were being unravelled with the help of such alignments (Thom 1971); it is easy, when reading that book, to conclude that Thom was arguing for some kind of objective research into the moon’s movements in prehistoric times. The whole long and often tedious history of attempts to disprove *all* of Thom’s ideas almost certainly derives from this view of prehistoric mental activity that was genuinely held – often subconsciously – in the 1960s and 1970s.

The origin of the idea of ‘prehistoric science’ almost certainly lies in Gerald Hawkins’ *Stonehenge Decoded*¹² which, perhaps unwittingly, fostered the idea that this famous site was used as a ‘Stone Age computer’ to keep the calendar in order and to predict eclipses. I also have to take some of the blame; the title of my book *Science and Society in Prehistoric Britain*¹³ obviously perpetuated the myth and was ill-chosen. By contrast, Colin Renfrew’s *Before Civilisation* (1973) had a chapter in which he summarized Alexander Thom’s basic discoveries but set them firmly within the real world of simple societies – as traces of the religious activities of a professional priesthood of the kind that could be expected to emerge in the chieftain type of social organization. If everyone – including myself – had paid more attention to Renfrew’s scenario, the mutual incomprehension that existed between orthodox British archaeology and archaeoastronomy about forty years ago might not have evolved and the situation now might have been better.

However, the false equation referred to is still widely believed, and British archaeological critics clearly believed that any acceptance of accurate alignments (capable of being used as observing ‘instruments’ instead of just as rough orientations),¹⁴ as well as the ‘megalithic yard’ and its associated geometry, would open the door to ‘prehistoric science’ and to an infinity of further misunderstandings. Even the concept of a professional priesthood, with a specialized knowledge of the movements of celestial bodies, seems to be viewed in the same light, and the purely archaeological evidence for such a priesthood in southern Britain in Neolithic times is usually dismissed impatiently (see the subsequent quotation about my 1977 book). Thus, the underlying reason for the doubts about Thom’s accurate long alignment hypothesis seems to have been forgotten, and Clive Ruggles, Gordon Barclay, and Mike Pitts, for example, continue to criticize this and related concepts even though it ought to be generally accepted by now that any astronomical skills present in prehistoric Britain – even up to the level of eclipse prediction, which is debatable to say the least – must be seen as part of a wider religious activity and not as ‘scientific’ research.

Thus, Pitts’ chapter accepted without comment all the hostile assessments of Alexander Thom’s work – and of my related archaeological work that supports Thom. Indeed, Pitts explicitly wrote, ‘My assessment relies heavily on the fruits of Clive Ruggles’ work, which displays unparalleled attention to detail in both its archaeology and astronomy.’ His resulting skepticism is therefore understandable since Ruggles’ assessments are widely accepted in the world of archaeoastronomy, and his major work on the subject¹⁵ has been much praised. His assessment of Thom’s work is described in Chapter 4: I wrote a review of Ruggles’ book (in 1984) which discussed a basic difficulty in it but it was in an American journal¹⁶ and probably did not reach British archaeology. This is in Chapter 4. However Clive Ruggles was

¹² Hawkins 1965.

¹³ MacKie 1977a.

¹⁴ MacKie 1997a:340-41.

¹⁵ Ruggles 1984.

¹⁶ MacKie 1984.

quite generous to Alexander Thom. His 1988b book included a mass of papers – included one of mine – which mostly supported Thom’s work.

One or two further examples of frequent misunderstandings are found in the chapter cited. First, Pitts refers to the tendency of people who are favourable to archaeoastronomical ideas to quote the intellectually sophisticated Maya as a parallel for what is claimed to have taken place in Neolithic Britain – ‘Not least the oft-quoted but ill-informed and out-dated MacKie (1997)’. For a recent perceptive and damning critique of MacKie’s ideas, see Ruggles and Barclay¹⁷ yet I had already, several years earlier, abandoned as misguided the idea of ‘prehistoric science’ and admitted that the possible parallel drawn with the Maya in 1977 had gone too far.¹⁸

A study of later relations between British archaeology and Thom’s archaeoastronomy is in Chapters 4 and 7.

¹⁷ Pitts 2000, Endnote 497. Ruggles and Barclay 2000.

¹⁸ MacKie 1977a: 341, including footnotes 2 and 3