

The Stonehenge Bluestones: Discussion

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Comments by Dr Williams-Thorpe following the papers by Drs Green and Scourse

THESE TWO PAPERS CONTAIN many interesting points—although no new evidence on the nature of the bluestones themselves was presented, rather, a different interpretation of the evidence.

I continue to find important inconsistencies in the human transport theory, and note the following in particular:

1 There is a great variety of 'bluestone'. At least 13 'foreign' rock types are present at Stonehenge; the dolerites, rhyolites and sandstones alone originate at at least 12 different sources, some dispersed within south-west Wales and others not yet identified. There is also evidence for a limestone monolith once having existed at Stonehenge (noted in our paper). Even assuming that a glacial deposit in South Wales was exploited for at least some of the stones, this great variety does not speak of careful human selection. The existence of stones which do not match South Wales outcrops introduces another element at variance with selection in Preseli.

2 A bluestone, by implication a boulder-sized piece not a small fragment, was certainly recorded at Bowls Barrow by William Cunnington. (The boulder now known as the Bowls Barrow boulder does indeed have an incomplete recorded history and we cannot be sure it is William Cunnington's bluestone. The name 'The Stonehenge Stone' could stem from its obvious similarity to the Stonehenge bluestones.)

3 The monoliths include soft, easily-eroded stone types, astonishing choices for human transport. The probability that some monoliths were dressed on site at Stonehenge is also surprising if the stones were humanly carried.

4 Bluestones found in a variety of archaeological contexts (including pre-dating their first erection at Stonehenge) are frequently recorded in barrow soil or fill, not in the grave: this positioning does not imply that they were valued or even noted.

On the specifically glaciological points, I am not a glaciologist so I am unable to judge whether that talk represents the definitive view or whether other views at variance with it might be allowed. However I would like to put three points to Dr Scourse:

1 The importance of recent and earlier human activity in the dilution of erratic dispersal (note, our reading of de Luc is supported in *Geology Today* May–June 1994, 95–96).

2 The potential of glaciers to remove rock selectively, accounting for the predominance of harder facies in the mixed bluestone monolith assemblage.

3 In the Thorpe *et al.* (1991) paper we cited the Wisconsin glacier till as a parallel for free boulders deposited on a large scale.

Proposals for glaciation of Salisbury Plain are bedevilled by a dearth of direct evidence because of the age and nature of the event. However the alternative of human bluestone transport raises significant inconsistencies in the available evidence.

Response of Drs Green and Scourse to comments by Dr Williams-Thorpe

Before responding to the detailed comments made by Dr Williams-Thorpe, we would like to acknowledge the excellent and exhaustive mineralogical and geochemical investigation of the Stonehenge bluestones published by her with her late husband and their co-workers (Thorpe *et al.* 1991). Our criticism of their findings relates not to the work on bluestone petrology and provenance but to the proposed glacial transport mechanism, which draws on the work of Kellaway. We examine the points raised by Dr Williams-Thorpe in the order in which she presents them.

In highlighting the variety of bluestone lithologies, Dr Williams-Thorpe argues that this 'does not speak of careful human selection' and therefore, by implication, indicates glacial transport. We can look at this conclusion from two points of view.

Firstly, the fact that some bluestones have not yet been matched in Preseli does not mean that they do not come from south-west Wales; it means the case is unproven. Even if bluestone sources outside south-west Wales are eventually identified, this does not falsify the human transport hypothesis. Clasts in glacial deposits in Pembrokeshire represent a range of lithologies and as in all glacial deposits they are dominantly local, but a significant minority of far-travelled material is present. Drift sources in this area contain rocks from Scotland, Ireland, North Wales and from the floor of the Irish Sea. Unmatched bluestones may well come from this wider Irish Sea province.

Secondly, the significance of several of the points raised by Dr Williams-Thorpe, and this point in particular, rests on her perception of what motivated the builders of Stonehenge, or prehistoric people in general. It is unwise to suggest that the presence of several types of bluestone at Stonehenge, whether from south-west Wales or elsewhere, 'does not speak of careful human selection' when we know nothing about why the

materials were chosen. The choice of stone may have been purely pragmatic or it may have had profound symbolic significance.

The same tendency to divine the thoughts of people long passed away is apparent in Dr Williams-Thorpe's comment on the name 'The Stonehenge Stone', given by the occupants of Heytesbury House in the nineteenth century to the so-called Bowls Barrow blue-stone boulder. It can be argued with equal plausibility that it was called the Stonehenge Stone because these people thought it looked like the stones at Stonehenge, as Dr Williams-Thorpe asserts, or because they knew it came from Stonehenge. There is nothing in William Cunnington's very brief note on the discovery of bluestone in Bowls Barrow to indicate the size of the example that he found there. Exactly what his note means is a matter of opinion.

Dr Williams-Thorpe notes that the 'monoliths include soft, easily-eroded stone types'. She describes these as 'astonishing choices for human transport'. Surely an incautious verdict when we have no idea *why* particular rock types were chosen. And if it was astonishing to choose them in south-west Wales, would it not have been equally astonishing to choose them from a glacial assemblage on Salisbury Plain, had such an assemblage ever existed?

The dressing of the bluestones at Stonehenge rather than in their place of origin has to be seen in the context of their repeated rearrangement within the monument. Their original use in the structure is now thought to pre-date the erection of the sarsen circle and horseshoe in which dressed stone is extensively used. Nothing we know now conflicts with the conclusions reached by Thomas in 1923: 'It is my settled opinion that the facts and motives can only be explained by postulating the removal of a venerated stone circle from the eastern end of the Prescelly Mountains to Salisbury Plain.' He continues, '... it has been suggested that the transport of rough stones to Stonehenge, only to be dressed and reduced in bulk on their arrival, argued lack of intelligence on the part of the builders. But, surely, it does not follow that the two operations were carried out by the same people, or even the same generation . . . The drastic dressing these stones received at Stonehenge points, in my opinion, to their having been already erected on the site and that they were transformed by the builders of Stonehenge from their rough and inelegant state into monoliths more in harmony with the finished and elaborate structure at a somewhat later period.'

The discovery of bluestone fragments in barrow soil is a fascinating dimension of this story, but again we do not know that their apparently casual incorporation reflects the value attached to them. That these rock types had a special significance in the periods both before and after their use as building materials at Stonehenge is indicated in many ways—by the practices employed in quarrying them, by patterns of dispersal and by manufacture into ceremonial objects. It is not implausible to argue that even mere fragments of these rock types had talismanic significance. Once again we cannot enter the minds and souls of prehistoric people to know how they perceived their world.

We are sorry to see that Dr Williams-Thorpe is still claiming the support of De Luc (1811) for the assertion that blocks of far-travelled stone were present on Salisbury Plain

in the eighteenth century. The De Luc text will *not* bear this interpretation, placed upon it by Bartenstein and Fletcher (1987) and subsequently adopted by Thorpe *et al.* (1991) and reiterated by Jenkins and Jenkins (1993) and Jenkins, Jenkins and Williams-Thorpe (1994). Quite apart from the issue of textual interpretation, the historical record and the field evidence provide absolutely no support at all for this misguided notion.

The reference to the 'potential of glaciers to remove rock selectively, accounting for the predominance of harder facies in the mixed bluestone monolith assemblage' adds little to the argument either way. Whether the rocks were selected by glaciers in south-west Wales and brought to Salisbury Plain by glacial ice, or selected from a glacial deposit in south-west Wales by the builders of Stonehenge and brought by them to Salisbury Plain, would make little difference to the ratio of durable to non-durable rock types. The presence of any non-durable rock types at Stonehenge argues, if anything, against the hypothesis of glacial transport, because such rocks would have had to survive for hundreds of thousands of years exposed to weathering on the surface of Salisbury Plain, only to be weathered away in the relatively short period since their incorporation into Stonehenge.

The Wisconsinan example cannot be used as an analogy for large-scale free boulder emplacement. It is a glaciological interpretation made in the 1950s and therefore pre-dates the fundamental advances in glaciology that have been made since that time. In the light of recent glaciological work, based on principles of glacier physics and on observations of the behaviour of modern glaciers, this particular interpretation of possible glacier behaviour can no longer be regarded as a tenable explanation either for the Missouri case or for the occurrence of Welsh rock types at Stonehenge.

Finally, Dr Williams-Thorpe touches on the crucial evidence in this long-standing controversy—'the dearth of direct evidence' for glaciation on Salisbury Plain. Why has no single fragment of bluestone, large or small, ever been described from a natural context on Salisbury Plain, or, even more telling, in the river gravels that are the sweepings of this area, accumulated over the past two million years? The answer is simple. No natural agency has ever brought these rocks into Wessex. The glaciers of the Quaternary Ice Age, at their widest extent in Britain, never reached Salisbury Plain.