



Research Article

Mythical rings? Waun Mawn and Stonehenge Stage 1

Timothy Darvill*

* Department of Archaeology and Anthropology, Faculty of Science and Technology, Bournemouth University, UK
(✉ tdarvill@bournemouth.ac.uk)



In a recent *Antiquity* article, Parker Pearson and colleagues (2021) presented results from excavations at Waun Mawn in south-west Wales, interpreting the site as a dismantled stone circle and source for some of the Bluestone pillars used in the Aubrey Holes at Stonehenge. Here, the author examines the evidence, showing that alternative interpretations are possible. Waun Mawn is argued to represent a series of smaller stone settings, typical of ceremonial sites in south-west Wales. Meanwhile the Aubrey Holes are shown to reflect a well-established regional sequence in which post circles are followed by pit circles. A Welsh ‘source-circle’ for Stonehenge cannot be excluded but, the author argues, the claim is unsupported by the current evidence.

Keywords: Wessex, Pembrokeshire, Stonehenge, Waun Mawn, pit/post circles, standing stones

Introduction

In the February 2021 issue of *Antiquity*, Mike Parker Pearson and colleagues reported on their investigations at Waun Mawn in the Preseli Hills of south-west Wales, arguing that they had found the remains of a dismantled stone circle that may have been the source of at least some of the Bluestones used in the construction of a stone circle at Stonehenge Stage 1 (Parker Pearson *et al.* 2021). The hypothesis was given added appeal by linking it to a legend, recorded by Geoffrey of Monmouth in the twelfth century AD, which tells how Merlin brought the stones to build Stonehenge from an existing monument because of their perceived healing properties (see Thorpe 1966: 196–97). Does the evidence presented support the claims made in the article? Is Waun Mawn really a dismantled stone circle? And were stones from the Preseli Hills used in the Stage 1 structures at Stonehenge? The purpose of the present article is to review critically the published evidence in the light of earlier

Received: 19 July 2021; Revised: 24 November 2021; Accepted: 7 December 2021

© The Author(s), 2022. Published by Cambridge University Press on behalf of Antiquity Publications Ltd. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

work and to consider alternative interpretations of it. Starting at Waun Mawn in west Wales, we will follow the trail of the Bluestones eastwards to Stonehenge on Salisbury Plain.

Waun Mawn, Pembrokeshire

The idea that a dismantled stone circle at Waun Mawn was the source of some of the stones used at Stonehenge hinges on the evidence for the existence of the former. On the basis of the evidence presented in the published account (Parker Pearson *et al.* 2021), however, this seems unlikely. The published site plan (Parker Pearson *et al.* 2021: fig. 4a) shows a series of eight excavation trenches that were set out on the circumference of an assumed circle; this plan tricks the eye into seeing something that is not there. The imagined circle has a diameter of 110m, a distance seemingly gauged by projecting the curve of an arc formed by four fallen stones and two possible stone-sockets found during excavations in 2017. Further trenches straddling the assumed circumference were added in 2018, but by the end of that season only five of the eight trenches had produced evidence of stones or stone-sockets, while the two largest trenches each revealed only one possible stone-socket. Importantly, apart from the stones and sockets located in the north-eastern quadrant of the ‘circle’, only a single possible stone-socket (91; the numbers cited here refer to features labelled on fig. 4a in Parker Pearson *et al.* 2021 and are also included on Figure 1) was located elsewhere on the circumference of the presumed monument.

The Waun Mawn ‘circle’, as presented in the 2021 publication, is unlike any of the 100 or so other recognised examples of the Great Circle Tradition of the late fourth and early third millennia BC that are scattered across Britain (Burl 2000: 43–63; Richards 2013; Darvill 2022a). These sites typically have a continuous circuit of regularly spaced pillars (variously close-set or wide-spaced), the selected stones are fairly consistent in shape and form within each example, and one or more ‘entrances’ are usually marked by large, flanking stones that are often doubled-up on the outside to form a portal. In contrast, at the proposed Waun Mawn circle, long stretches of the circumference are completely lacking in stones or empty sockets, the few stones and putative sockets that are recorded are irregularly spaced and of different shapes and sizes, and there is no entrance setting.

Astronomical alignments at Great Circle Tradition sites are uncommon but include the winter solstice sunset at Long Meg and Her Daughters, Cumbria (Frodsham 2021: 171), and both the midsummer sunrise and midwinter sunset at Stonehenge, Wiltshire (Ruggles 1997). In all cases, these alignments are clearly marked in the architecture of the monument. This is not, however, the case at Waun Mawn, where a 13m-wide gap between a fallen stone (9) and a stone-socket (21) in the north-east sector provides a broad window onto the horizon with the midsummer sunrise not centrally framed, as might be expected, but eccentrically framed “2° to the right of the westernmost of the two monoliths” (Parker Pearson *et al.* 2021: 95).

Dating is also an issue. Thirty-one radiocarbon dates were obtained on charcoal from features interpreted as stone-sockets, as well as three on charcoal from a mound beside stone-socket 9 and nine on charcoal from other features not considered to be stone-sockets (Parker Pearson *et al.* 2021: tab. S1). In addition, mention is made of 18 optically stimulated luminescence (OSL) dates on sediments spanning the period 7000 BC through to AD 1900,

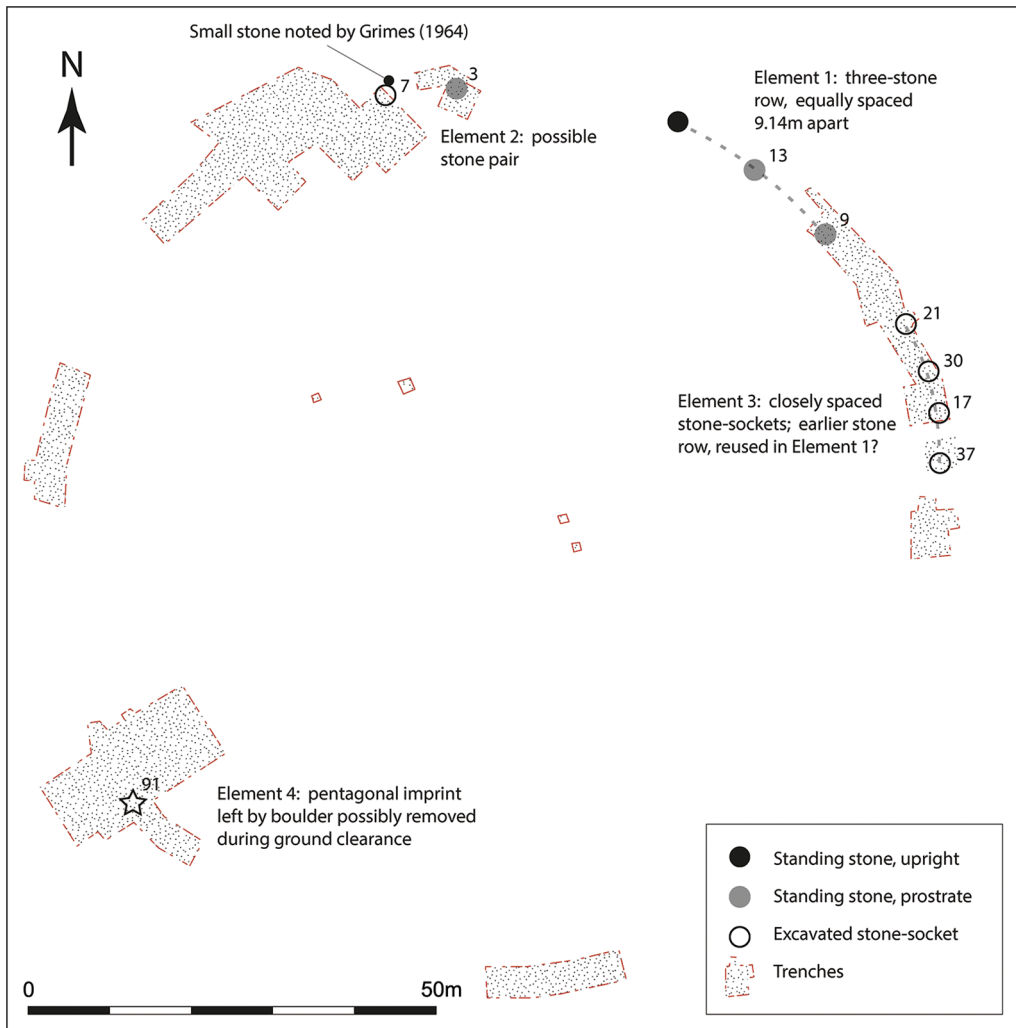


Figure 1. Plan showing the recorded stones and stone-sockets at Waun Mawn, Pembrokeshire (figure by G. Belmont after Grimes 1964: fig. 36 and Parker Pearson *et al.* 2021: fig. 4a).

although no details are provided. Only three of the published radiocarbon dates relate to the period between 3200 and 2500 BC, which would accord with the period of Great Circle building (Darvill 2022a: 68–80) and with Stage 1 at Stonehenge (Darvill *et al.* 2012: 1028–29). Given the shallow stratigraphy and the peaty nature of the soils, high levels of residuality, redeposition and intrusiveness due to bioturbation are to be expected, but the methodology described by Parker Pearson *et al.* (2021: 88–93) for the selection of dates to fit their interpretation raises a number of questions. In particular, the use of weighted means from OSL dates derived from the fill of more than one feature is problematic, especially when those fills include “a mixing of archaeological material and substrate in the basal layers, and the infiltration of more recent materials throughout” (Parker Pearson *et al.* 2021: 91).

Without full publication of the OSL dates, it is impossible to judge their value as a means of discriminating between seemingly disparate radiocarbon determinations; neither is it reasonable to accept the OSL dates as chronological ‘facts’ underpinning the interpretative reasoning outlined (Parker Pearson *et al.* 2021: 95–100). What can be accepted is that Waun Mawn saw considerable activity over a long period of time; it was a persistent place within a wider landscape rich in prehistoric remains (Figgis 2001: 94–95; Darvill & Wainwright 2016; John 2020). But, if it was not a stone circle, what was it?

The site (NRG: SN 084341) occupies a dominant position overlooking the sources of the west-flowing River Gwaun and the north-east-flowing Afon Bryn-berian, with wide views south-eastwards to the hills of the main Preseli ridge. The place name Waun Mawn means ‘peat moor’ and peat-cutting has been recorded locally (Royal Commission on the Ancient and Historical Monuments in Wales and Monmouthshire 1925: 259). Brian John notes that, between AD 1550 and 1750, the area was part of a deer park, with widespread evidence for stone clearance in the form of shallow extraction pits, and the presence of boulders in nearby walls and boundaries (John 2020: 7–11). Against this background, a re-appraisal of the published evidence from the Waun Mawn excavation suggests the presence of four structural elements (Figure 1). The dating proposed here follows the general stratigraphic principle that the most recent material within a given context provides a *terminus post quem* for activities connected with its formation, unless a special case can be made for that material being intrusive. Table 1 provides a summary of the features assigned to the four structural elements and the dates relating to them. The published account presents little information about the

Table 1. Summary of published radiocarbon dates relating to identified feature groups.

Feature	Published radiocarbon dates
Three-stone row	
Stone-socket 9 (removal)	157 BC–AD17; 7307–7047 BC
Stone 9 (mound)	46 BC–AD 76; 806–770 BC; 1220–1053 BC
Stone pair	
Stone-socket 3 (erection)	2133–1941 BC; 4831–4697 BC
Stone-socket 3 (fall)	1050–900 BC; 1217–1017 BC
Stone-socket 7 (erection)	6226–6080 BC; 6469–6409 BC
Stone-socket 7 (removal)	6413–6244 BC; 6460–6382 BC; 6682–6505 BC
?Four-stone/four-post row	
Stone-socket 17 (erection)	4158–3818 BC
Stone-socket 17 (removal)	3641–3527 BC; 6471–6401 BC
Stone-socket 21 (erection)	3498–3346 BC; 5838–5721 BC
Stone-socket 21 (removal)	6222–6073 BC; 6812–6462 BC
Stone-socket 30 (removal)	4357–4255 BC; 4445–4269 BC
Stone-socket 37 (erection)	356–152 BC; 7581–7377 BC; 7592–7526 BC
Stone-socket 37 (removal)	3340–3034 BC; 3650–3528 BC
?Standing stone/grounder	
Stone-socket 91 (erection)	4339–4176 BC; 4546–4371 BC; 4647–4367 BC
Stone-socket 91 (removal)	1614–1507 BC; 4342–4246 BC; 4444–4271 BC

recorded features considered not to have been stone-sockets, so these cannot be further discussed here.

The first and most convincing element is a three-stone row. The standing stone at the north-western end is marked on the first edition, six-inch Ordnance Survey map published in 1888, and was recorded as being 1.65m high by surveyors from the Royal Commission on Ancient and Historical Monuments in Wales and Monmouthshire in June 1914 (Site 768 in Royal Commission on Ancient and Historical Monuments in Wales and Monmouthshire 1925: 258–59). The surveyors also noted a prostrate stone, measuring 1.98m in length, approximately 9.14m to the east, and a ‘broken’ stone measuring 1.09m that lay fallen a further 9.14m to the east. The recent excavations found that this last stone seemed to fit stone-socket 9, although no packing stones were present (Parker Pearson *et al.* 2021: figs 2, 4a & 9). The latest date on material associated by the excavators with the removal of stone 9 was 157 BC–AD 17, similar to the latest date of 46 BC–AD 76 on material from a low mound that had accumulated around the empty stone-socket. Residual material of earlier date was present in both, but the combined evidence suggests that stone 9 stood into later prehistoric times. Consistency in the size and spacing of these three stones strongly supports the idea that it represents a partially collapsed, 20m-long, three-stone row. Indeed, Barnatt (1989: 502) suggested such an interpretation for the Waun Mawn stones in an earlier review of stone circles in Britain. Stone rows are widely scattered across south-west Wales (Burl 1993: fig. 38) and, locally, seem to lie on the north side of the Preseli ridge, with stone circles confined to the southern flanks (Darvill & Wainwright 2016: 142–53). The fact that the stones at Waun Mawn lie on a slight arc should elicit no surprise, as this is a common feature of such monuments that is well represented, for example, at Harold’s Stones near Trellech, Monmouthshire (Crawford 1925: 209–10).

A second element, approximately 20m west of the stone row, is marked by two further stones that were noted by the Commission’s surveyors in 1914: a fallen monolith, measuring 1.98m in length, and a nearby small stone, only the tip of which was visible (Royal Commission on Ancient and Historical Monuments in Wales and Monmouthshire 1925: 258–59). The assumed association between these two stones and the three described above is what triggered speculation that all five lay on the circumference of a ruined circle estimated to be about 45m across (Royal Commission on Ancient and Historical Monuments in Wales and Monmouthshire 1925: 259)—far smaller than the 110m diameter circle proposed by Parker Pearson *et al.* (2021: 87). In his overview of Welsh stone circles, Grimes (1964: 150 & fig. 36) provides the earliest available plan but lists the site as ‘doubtful’, and Bushell (1911) made no mention of it in his extensive consideration of extant and destroyed stone circles in Preseli.

The 2017–2018 excavations have added detail to this second element, which stands apart from the three-stone row proposed above, albeit with little information about what lies between the two settings. Excavation of the socket for the fallen monolith (3) revealed packing stones, while the later of two radiocarbon determinations (2133–1941 BC) dates its erection, if the earlier dated material is considered residual. Two overlapping dates suggest that it fell *c.* 1000 BC. The nearby ‘small stone’ mentioned in the 1914 survey and plotted on Grimes’s survey does not seem to have been recorded during the most recent excavations and is not marked on the published plan; however, an empty stone-socket (7) was revealed to the west of stone-socket 3 in approximately the same position (Figure 1). Stone-socket 7

seemingly has packing stones in place (Parker Pearson *et al.* 2021: fig. 5), but the five available radiocarbon dates on charcoal from the fills fall in the later seventh millennium BC. Could this be a stone that was erected and removed during the Mesolithic? Was the stone once standing in socket 7 removed and later set up in socket 3? Or, most likely, could 3 and 7 be a stone pair set up *c.* 2000 BC in an area heavily used in much earlier times?

A third element of the site lies south of this proposed stone row, where the recent excavations revealed a line of four features interpreted as empty stone-sockets (nos 17, 21, 30 and 37 in Figure 1). These seem to be spatially separate from the other elements, are evenly spaced, and lie on a slight arc that is noticeably different in curvature and alignment to that of the three-stone row discussed above. Few details of these four features are included in the published account, although nine of the 14 associated radiocarbon dates pre-date 4000 BC, four cluster in the mid-fourth millennium BC and one is from the late first millennium BC (Parker Pearson *et al.* 2021). Without further details, these features are difficult to interpret, but, allowing for the presence of residual earlier material, the evidence is consistent with a four-stone or post row being erected here in the fourth millennium BC and dismantled not long after. It is also relevant to ask whether the stones from these now empty sockets were reused during the construction of the extant three-stone row discussed above.

Finally, a fourth element is represented by a feature (91) in the south-west sector of the putative circle—the only such feature in the area. It is the largest of the investigated stone-sockets but is quite different in its character and appearance (Parker Pearson *et al.* 2021: fig. 6). The published image of the feature following excavation shows what looks like the result of field clearance, in which an earth-fast boulder has been hauled out of the ground, creating the scar-like ‘ramp’ as it rose to the surface. Such features have no doubt been excavated at many sites in western Britain, although they are rarely discussed in published reports because they are considered to be non-archaeological. An example is Parc Maen, Llangolman, Pembrokeshire, only 7.5 km south of Waun Mawn, where excavations following field clearance over and adjacent to a known prehistoric cairn revealed a series of possible standing stones and post-sockets, as well as extraction hollows resulting from stone removal (Marshall & Murphy 1992). Figure 2 shows a view across the northern part of the excavation at Parc Maen, with two standing stones in the background, several grounders projecting from the natural till, and a truncated extraction pit with fragments of stone remaining *in situ*, slightly right of centre. Five radiocarbon dates on charcoal from the fill of stone-socket 91 at Waun Mawn relate to the late fifth millennium BC; the date of 1614–1507 BC may plausibly be identified with its removal. The pentagonal imprint of the stone formerly in this feature has been compared with the cross-section of Stone 62 at Stonehenge (Parker Pearson *et al.* 2021: 95), but the date for the removal from Waun Mawn makes its liberation far too late for it to have been used at Stonehenge. It may also be noted that stones with a pentagonal cross-section are fairly common amongst the glacial erratics of Pembrokeshire, such as, for example, Stone 2 at Parc Maen, whose cross-section is 0.55 × 0.65 m (Marshall & Murphy 1992: 36 & 76).

The excavated evidence, taken together with that of other monuments documented in the vicinity, suggests that Waun Mawn was a small but long-lived ceremonial site. It probably developed a special meaning long before 5000 BC, and one or more standing stones might have been set up at that time. By the later fourth and early third millennium BC, the complex comprised one or perhaps two short stone rows (Figure 3) and a stone pair.



Figure 2. Parc Maen, Llangolman, Pembrokeshire. View northwards across the 1981–1982 excavation trench, with standing stones 2 and 3 in the background, several grounders projecting from the natural till, and a truncated extraction pit/hollow slightly right of centre (photograph by T. Darvill. Copyright reserved).

These lay at the focus of a wider ceremonial landscape that included a stone pair at Tafarn y Bwlch, 180m to the south-west (Figure 4), a standing stone, 200m to the west (Figure 5), and ring-cairns and hut-circles a similar distance to the north. During the late second and first millennium BC, elements of these focal structures fell or were robbed, leaving the remains much as we see them today.

Similar small-scale ceremonial sites have been recorded in the area. At Plas Gogerddan, Ceredigion, 70km to the north, a possible three-stone row (Burl 1993: 256) was associated with a series of pits, a line of three massive postholes (a post row?), and three ring-ditches loosely dated to between the fourth and second millennia BC (Murphy 1992). Parc Maen, Llangollen, 7.5km to the south of Waun Mawn, includes a stone cairn, stone pairs and standing stones (Marshall & Murphy 1992). Rather more extensive is the complex at Glandy Cross, Carmarthenshire, 10km south-east of Waun Mawn, where standing stones, timber post settings, a possible stone row, a small, Class I henge with an internal stone circle, enclosures, burial monuments and pit circles have been recorded (Kirk & Williams 2000). Thus the ensemble of monuments at Waun Mawn fits comfortably into a wider landscape of small-scale ceremonial centres, each with various elements but in no case including a large stone circle.

Stonehenge: the Aubrey Holes

The lack of evidence for a stone circle at Waun Mawn is mirrored in the available evidence for Stage 1 at Stonehenge, 225km to the south-east. Here, Parker Pearson has argued, the ring of



Figure 3. Waun Mawn three-stone row, Pembrokeshire (photograph by T. Darvill. Copyright reserved).



Figure 4. Tafarn y Bwlch stone pair, Pembrokeshire (photograph by T. Darvill. Copyright reserved).



Figure 5. Waun Mawn standing stone, Pembrokeshire (photograph by T. Darvill. Copyright reserved).

56 pits known as the Aubrey Holes were dug around 3080–2950 BC as sockets for Bluestones, which would have formed a circle about 87m in overall diameter (Parker Pearson *et al.* 2021: 86). There is no question that Bluestones from a range of sources within and around the Preseli Hills were used in the construction of a series of circles and ovals at Stonehenge, but there is no evidence in the form of actual pieces of Bluestone that any arrived at the site before Stage 2, which is dated to the period between 2760–2510 BC and 2470–2300 BC (Darvill *et al.* 2012: 1030). The suggestion that Bluestones from west Wales once stood in the Aubrey Holes around the inner edge of the inner bank is therefore an intriguing one but is not supported by the currently available evidence.

The story of the Aubrey Holes, their investigation and the challenges of their interpretation has been outlined in detail by Walker (in Cleal *et al.* 1995: 94–107, 152–54) and summarised by Parker Pearson *et al.* (2020: 163–91) in their recent monograph reporting the *Stonehenge Riverside Project*. In brief, the Aubrey Holes comprise roughly circular pits that average 1m in diameter and 0.9m in depth but which, individually, vary considerably in size and profile. Thirty-four of the Aubrey Holes (60 per cent) were excavated during the twentieth century: 32 of them (AH1–30, 55 and 56) between 1920 and 1924 by Robert Newall and William Hawley, and two (AH31 and 32) in 1950 by Richard Atkinson, Stuart Piggott and Robert Newall. One Aubrey Hole (AH 46) was probably excavated in the nineteenth century by Richard Colt Hoare.

In the early 1920s, Hawley interpreted the Aubrey Holes as sockets for stones that were later removed (Hawley 1921: 30), but, after visiting the excavations directed by Maud and Ben Cunnington at Woodhenge in 1926–1928, he revised his opinion and instead believed that they were initially dug as sockets for timber posts (Hawley 1928: 158 & 174)—a view fully endorsed by Maud Cunnington (1929: 28–30). Debate continued, and, following the excavations in 1950, the Holes were reinterpreted once again, this time as pits—components of a class of monument that became known as ‘pit circles’ (Atkinson *et al.* 1952: 19). Walker’s comprehensive and highly detailed re-analysis of the records from all of this work also drew on insights from comparisons with features and sequences at other sites more recently excavated than Stonehenge (Cleal *et al.* 1995). Based on this, Walker coherently demonstrates, with appropriate cautions, that although Atkinson and Piggott were on the right lines with their pit circle interpretation, the archaeological evidence was more complicated, and that all the excavated Aubrey Holes showed two phases of use with, in at least some cases, an upper sag fill and later disturbances.

In each excavated Aubrey Hole, the primary cut was filled with chalk rubble around a vertically sided concavity that Walker interprets as a post-setting (in Cleal *et al.* 1995: 152). The only finds unquestionably recovered from the primary fills are broken antler picks. No radiocarbon dates are currently available from these deposits, and no Bluestone is recorded from these contexts.

According to Walker’s analysis, sometime after the decay or removal of the posts the original holes were recut as pits or scoops. Generally shallower than the postholes, these were sometimes larger and of a slightly different shape to the primary features. The majority—24 out of 34 (70 per cent)—contained at least one deposit of cremated human bone, and in 10 cases there were additional deposits in cup-shaped depressions in the side or recut into the edge of the pit (Walker, in Cleal *et al.* 1995: 152). The fills of these secondary

features include a selection of bone skewer pins, bone and antler objects, flint and stone items and pottery fragments, but no certain pieces of Bluestone.

Cremated human bone from the secondary fill of AH32 dates to 3080–2890 BC (OxA-18036: 4332±35 BP). This is comfortably within the modelled date range for the deposition of cremations in the Aubrey Holes and other contexts at Stonehenge, which allows various scenarios with a chronological spread covering anything between 170 and 715 years in the period between 3180–2965 BC and 2565–2380 BC (Parker Pearson *et al.* 2020: 543). Taking the minimum estimated duration, the cremation burial tradition was confined to Stage 1 in the currently understood sequence at the site, while at the maximum range, it would have spanned both Stages 1 and 2 (Darvill *et al.* 2012: 1028–34). Walker also recognised later intrusions and sag-fills in most of the excavated Aubrey Holes: 16 contained sherds of Romano-British pottery; 29 contained pieces of sarsen stone; and 31 contained fragments of Bluestone (Walker, in Cleal *et al.* 1995: tab. 10; Ixer & Bevins 2021).

None of the Aubrey Holes excavated during the twentieth century contained Bluestone in either their primary or secondary fills; all the known pieces originate from later intrusions or from the overburden. The re-excavation of AH7, conducted by the *Stonehenge Riverside Project* in 2008 in order to recover an assemblage of cremated bone redeposited there in 1935, provided an opportunity to review aspects of the earlier observations. Contrary to the interpretations offered by Parker Pearson *et al.* (2020: 181), the results, in fact, support Walker's two-phase interpretation of the Aubrey Holes and the absence of Bluestone in Stage 1. Removal of the 1930s backfill and the redeposited cremations in AH7 revealed a fairly regular, circular cut (Parker Pearson *et al.* 2020: 177–92 & fig. 4.16). The edges represented the maximum extent of earlier archaeological excavations—originally in 1920 and again in 1935—rather than the original cut. Little or nothing remained of the primary pit, although it is suggested that “the previous excavators failed to fully bottom AH7; within its base, there remained a thin patch of crushed chalk (022) extending 0.35m north-south × 0.4m east-west and up to 40mm thick” (Parker Pearson 2020: 182–85). No visible pieces of Bluestone are reported from these deposits, while a detailed technical analysis by French not only failed to find microscopic fragments of Bluestone but, in considering the possibility that a stone had formerly stood in the hole, concluded that “any association with compaction caused by use in the life of the Aubrey Hole cannot be substantiated by the micromorphological analysis” (French, in Parker Pearson *et al.* 2020: 190). This is especially important because elsewhere at Stonehenge where Bluestones were set up and then removed there is clear evidence of broken pieces in the fill of the empty socket and chips embedded in the floor, as, for example, with some of the Q and R Holes (Cleal *et al.* 1995: 171).

Three small features revealed around the edge of AH7 probably relate to the secondary phases of use, although exact stratigraphic relationships with the primary fills could not be established (Parker Pearson *et al.* 2020: fig. 4.16). One of these features, a small cup-shaped depression, contained cremated human bone from a mature adult female dated (the weighted mean of two radiocarbon measurements) to 3090–2900 BC (Parker Pearson *et al.* 2020: 185–87, 522–25 & 531). No fragments of Bluestone were reported from the fills of these features.

Recent research suggests that other aspects of what is conventionally considered Stage 1 were more complex than previously recognised. Surveys of the earthworks carried out in

2009–2013 suggest that structures may have existed on the site before the construction of the earthwork enclosure—the feature known as the Northern Barrow, for example—and it may now be appropriate to think of these as representing a hitherto unrecognised ‘Stage 0’ (Field *et al.* 2014: 15–20).

Stage 1, conventionally spanning the centuries between *c.* 3100–2920 BC and 2965–2755 BC (Darvill *et al.* 2012: 1028) might also need dividing into two or more successive phases. Pitts (2022: 124–25) has plausibly suggested that the earliest structure was a ring of two dozen or more large, oval pits dug around 3200 BC. The original Aubrey Holes might also be part of this structure: a pit circle enclosing a timber circle. The first remodelling occurred around 2950 BC, when the pit circle was replaced by a more continuous ditch defining an area approximately 102m in diameter and flanked on the inside by a substantial bank. Two original entrances are known through these earthworks: a wide, 11 m gap opening to the north-east and a smaller 5 m gap opening to the south-east. At the same time, the 56 evenly spaced Aubrey Holes were reconfigured as a pit circle measuring approximately 87m in overall diameter, concentric with the earthwork enclosure and roughly 4.9m from the median line of the bank. There are no gaps in the circle of Aubrey Holes at either of the two known entrances through the earthwork enclosure. This arrangement was a fairly long-lived phase, given the range of dates from associated cremation burials discussed above. Some of the internal post-holes and pits must also belong to this or earlier phases, but the dating of these features is poor. An outer bank may tentatively be associated with recutting of the ditch (Field *et al.* 2014: 20).

The sequence represented by the Aubrey Holes, in which a post circle is followed by a pit circle, is matched at other contemporaneous sites in Wessex and beyond; examples near Stonehenge include the Durrington Walls Southern Circle and Woodhenge (see Darvill 2006: 161–64). Further afield, a similar pattern is documented for the circles inside the cursus at Dorchester on Thames, Oxfordshire (Bradley & Chambers 1988: 283). The presence of numerous cremation deposits in the secondary fills of the Aubrey Holes also finds parallels at other sites across Britain in the early third millennium BC (Darvill 2010: 147–52), although Parker Pearson and colleagues are correct to highlight the extraordinary scale of the Stonehenge cemetery in terms of the number of individuals buried there (Parker Pearson *et al.* 2020: 180).

Nothing in the archaeological evidence associated with the Stage 1 features at Stonehenge suggests that the early pit circle, the earthwork enclosure, or any of the recorded internal features were aligned with the summer solstice sunrise or the winter solstice sunset. Indeed, its design might be more closely linked to the surrounding landscape than the overarching skyline (Darvill 1997: 176–81). The axis created to reference the solstitial events was not embedded into the architecture of the site until the construction of the unique stone settings in the centre of the enclosure during Stage 2, which, I have argued elsewhere, materialise a perpetual calendar based on a tropical solar year that starts at the winter solstice (Darvill 2022b). As Cleal and colleagues convincingly show, the change of axis between Stages 1 and 2 amounts to a shift eastward of approximately 5 degrees (Cleal *et al.* 1995: fig. 79). The effect of this change is clearly seen in the way that the Avenue, which perpetuates the solstitial axis of the Stage 2 central stone settings to the north-east, is eccentric to the original entrance through the Stage 1 earthwork enclosure (see Field *et al.* 2014: 23). Uncoupling the

Stage 1 monument from the solstitial axis also calls into question the suggestion that Stonehenge was built where it is because people recognised the solstitial orientation of supposed natural features in the landscape (Parker Pearson 2012: 231–60). Unpicking those arguments, however, lies beyond the scope and purpose of this article.

Conclusions

Waun Mawn and Stonehenge Stage 1 clearly illustrate some of the difficulties of interpreting complicated archaeological deposits, the dangers of over-simplification and the need for caution throughout. Suggestions that stone circles featured at both sites and that one supplied the other with stones do not stand up to close scrutiny, although both are important sites in their own right. Rather than a stone circle, the evidence so far presented at Waun Mawn is susceptible to a number of alternative interpretations, including that presented here—that is, one or more stone rows, stone pairs, and standing stones, much like other small-scale ceremonial sites in west Wales. Stage 1 at Stonehenge follows the local traditions found in central southern Britain, with a large earthwork enclosure, a timber post circle followed by a pit circle, and cremation burials. Both sites were located in places with earlier histories of activity stretching back several millennia. Unlike Waun Mawn, however, Stonehenge became the place where an extraordinary and unique stone monument was built in the mid-third millennium BC—an ancient wonder that combined local sarsen stones with Bluestones imported from west Wales.

Whether any of the dolerite pillars used at Stonehenge Stage 2 and later ever passed through Waun Mawn during their travels is a matter about which we can only speculate. Dolerite intrusions of the Fishguard Volcanic Group are known in the vicinity of Waun Mawn (John 2020: fig. 2), although neither these, nor the presumably local, unspotted dolerite standing stones surviving on the hill, appear to have been sampled for direct comparison with the Stonehenge monoliths (Bevins *et al.* 2021). This would be a worthwhile exercise, although present evidence suggests that the unspotted dolerites in question (classified as Group 2 dolerites) represent a small part of the overall assemblage of Bluestones at Stonehenge and most likely derive from sources on the main Preseli ridge (Bevins *et al.* 2021: 12). If we accept both Geoffrey of Monmouth's idea that a stone circle of some kind was the source for at least some of the stones at Stonehenge (Thorpe 1966: 196), and the geological evidence that the Bluestones at Stonehenge derive from outcrops in and around the Preseli Hills (Bevins *et al.* 2021), then a 'source-circle' somewhere in the Preseli region remains a possibility, but without more conclusive evidence, it seems unlikely that it stood at Waun Mawn.

Acknowledgements

The two anonymous referees are warmly thanked for their constructive comments and suggestions.

Funding statement

This research received no specific grant from any funding agency or from commercial and not-for-profit sectors.

References

- ATKINSON, R.J.C., S. PIGGOTT & J.F.S. STONE. 1952. The excavation of two additional holes at Stonehenge, 1950, and new evidence for the date of the monument. *Antiquaries Journal* 32: 14–20. <https://doi.org/10.1017/S0003581500058364>
- BARNATT, J. 1989. *Stone circles of Britain* (British Archaeological Reports British Series 215). Oxford: British Archaeological Reports.
- BEVINS, R., N.J.G. PEARCE & R.A. IXER. 2021. Revisiting the provenance of the Stonehenge Bluestones: refining the provenance of the Group 2 non-spotted dolerites using rare earth element geochemistry. *Journal of Archaeological Science: Reports* 38: 1–13. <https://doi.org/10.1016/j.jasrep.2021.103083>
- BRADLEY, R. & R. CHAMBERS. 1988. A new study of the cursus complex at Dorchester on Thames. *Oxford Journal of Archaeology* 7: 271–89. <https://doi.org/10.1111/j.1468-0092.1988.tb00181.x>
- BURL, A. 1993. *From Carnac to Callanish: the prehistoric stone rows and avenues of Britain, Ireland and Brittany*. New Haven (CT): Yale University Press.
- 2000. *The stone circles of Britain, Ireland and Brittany*. New Haven (CT): Yale University Press.
- BUSHELL, W.D. 1911. Amongst the Preselly circles. *Archaeologia Cambrensis* 66: 287–333.
- CLEAL, R.M.J., R.K.E. WALKER & R. MONTAGUE. 1995. *Stonehenge in its landscape: twentieth-century excavations*. London: English Heritage.
- CRAWFORD, O.G.S. 1925. *The long barrows of the Cotswolds*. Gloucester: Bellows.
- CUNNINGTON, M. 1929. *Woodhenge*. Devises: privately published.
- DARVILL, T. 1997. Ever increasing circles; the sacred geographies of Stonehenge and its landscape, in B. Cunliffe & C. Renfrew (ed.) *Science and Stonehenge*: 167–202. Oxford: Oxford University Press.
- 2006. *Stonehenge: the biography of a landscape*. Stroud: History Press.
- 2010. *Prehistoric Britain*. Abingdon: Routledge.
- 2022a. Magical rings: British stone and timber circles as ceremonial places, in P.S. Barnwell & T. Darvill (ed.) *Places of worship in Britain and Ireland: prehistoric and Roman* (Rowley House Studies in the Historic Environment 14): 64–92. Donington: Shaun Tyas.
- 2022b. Keeping time at Stonehenge. *Antiquity* 96: 319–35. <https://doi.org/10.15184/aqy.2022.5>
- DARVILL, T. & G. WAINWRIGHT. 2016. Neolithic and Bronze Age Pembrokeshire, in H. James, M. John, K. Murphy & G. Wainwright (ed.) *Pembrokeshire County history I: prehistoric, Roman and early medieval Pembrokeshire*: 55–222. Haverfordwest: Pembrokeshire County History Trust.
- DARVILL, T., M. PARKER PEARSON, P. JORDON & G. WAINWRIGHT. 2012. Stonehenge remodelled. *Antiquity* 86: 1021–40. <https://doi.org/10.1017/S0003598X00048225>
- FIELD, D. et al. 2014. Analytical surveys of Stonehenge and its immediate environs, 2009–2013. Part 1: the landscape and earthworks. *Proceedings of the Prehistoric Society* 80: 1–32. <https://doi.org/10.1017/ppr.2014.6>
- FIGGIS, N.P. 2001. *Prehistoric Preseli: a field guide*. Machynlleth: Atelier.
- FRODSHAM, P. 2021. “A most noble work”: at the heart of Neolithic Britain, in G. Hey & P. Frodsham (ed.) *New light on the Neolithic of northern England*: 147–76. Oxford: Oxbow. <https://doi.org/10.2307/j.ctv13nb8nr.16>
- GRIMES, W.F. 1964. The stone circles and related monuments in Wales, in I. Foster & L. Alcock (ed.) *Culture and environment*: 93–152. London: Routledge.
- HAWLEY, W. 1921. Stonehenge: interim report on the exploration. *Antiquaries Journal* 1: 19–41. <https://doi.org/10.1017/S0003581500052975>
- 1928. Report on the excavations at Stonehenge during 1925 and 1926. *Antiquaries Journal* 8: 149–76. <https://doi.org/10.1017/S0003581500012063>
- IXER, R.A. & R.E. BEVINS. 2021. And shall the first be last: the Aubrey Holes and their stones. *Wiltshire Archaeological and Natural History Magazine* 114: 1–17.
- JOHN, B. 2020. *Waun Mawn and the search for “proto-Stonehenge”* (Greencroft Working Papers 4). Available at: https://www.researchgate.net/publication/345177590_Waun_Mawn_and_the_search_for_Protostonehenge (accessed 30 October 2021).

- KIRK, T. & G. WILLIAMS. 2000. Glandy Cross: a later prehistoric monumental complex in Carmarthenshire, Wales. *Proceedings of the Prehistoric Society* 66: 257–95.
<https://doi.org/10.1017/S0079497X00001821>
- MARSHALL, E.C. & K. MURPHY. 1992. The excavation of two Bronze Age cairns with associated standing stones in Dyfed: Parc Maen and Aber Camddwr II. *Archaeologia Cambrensis* 140: 28–76.
- MURPHY, K. 1992. Plas Gogerddan, Dyfed: a multi-period burial and ritual site. *Archaeological Journal* 149: 1–38.
<https://doi.org/10.1080/00665983.1992.11078005>
- PARKER PEARSON, M. 2012. *Stonehenge: exploring the greatest Stone Age mystery*. London: Simon & Schuster.
- PARKER PEARSON, M. *et al.* 2020. *Stonehenge for the ancestors. Part 1: landscape and monuments*. Leiden: Sidestone.
<https://doi.org/10.1080/00665983.2021.1894754>
- 2021. The original Stonehenge? A dismantled stone circle in the Preseli Hills of west Wales. *Antiquity* 95: 85–103.
<https://doi.org/10.15184/aqy.2020.239>
- PITTS, M. 2022. *How to build Stonehenge*. London: Thames & Hudson.
- Royal Commission on the Ancient and Historical Monuments in Wales and Monmouthshire. 1925. *An inventory of the ancient monuments in Wales and Monmouthshire VII: County of Pembroke*. London: HMSO.
- RICHARDS, C. (ed.). 2013. *Building the great stone circles of the north*. Oxford: Oxbow.
<https://doi.org/10.2307/j.ctv13gyfvx>
- RUGGLES, C. 1997. Astronomy and Stonehenge, in B. Cunliffe & C. Renfrew (ed.) *Science and Stonehenge*: 203–29. Oxford: Oxford University Press.
- THORPE, L. (trans.) 1966. *The history of the kings of Britain*. Harmondsworth: Penguin.