



Stonehenge is the most famous prehistoric stone circle in the world. It stands on Salisbury Plain in Wiltshire, surrounded by monuments and sites used by prehistoric people over many thousands of years from around 8000 BC to the coming of the Romans. Stonehenge itself was built around 5000 years ago and then modified in another four constructional stages over the next 1500 years. Its first stage, built shortly after 3000 BC, consisted of a circle of 56 pits (the Aubrey Holes) enclosed within an encircling ditch and bank. The horseshoe of five stone trilithons (two uprights supporting a lintel) and outer circle of stones with lintels were added in the second stage around 2500 BC. These stones are of silcrete, a type of hard sandstone known as sarsen which is local to southern England but especially common in the Avebury area of north Wiltshire. Stonehenge's other standing stones are known as bluestones, much shorter and thinner than the sarsens, weighing 1–4 tonnes and mostly under 4 m long. Bluestone is the collective name for all the non-sarsen monoliths at Stonehenge which are of many different types of rock: dolerite, spotted dolerite, rhyolite, sandstone and volcanic tuffs. All of these are likely to originate in the Preseli region of Pembrokeshire, 140 miles away. The 5 m-long Altar Stone is a bluestone of Devonian sandstone which could come from another part of south Wales (though it is not from the Cosheston Beds around Milford Haven as once thought).

The earliest reference to Stonehenge is from about 1130 by Henry of Huntingdon who described it as built of 'stones of wonderful size... erected after the manner of doorways'. In 1620 the Duke of Buckingham had a huge hole dug in the middle of Stonehenge, finding charcoal and cattle skulls but little else. During the seventeenth and eighteenth centuries the monument was surveyed by antiquaries such as John Aubrey and William Stukeley. The first modern excavation was carried out by William Gowland in 1901 in advance of straightening the surviving upright of the great trilithon. William Hawley excavated about half of the Stonehenge enclosure in 1919–1926. Most of the later excavations in the twentieth century were

carried out by Richard Atkinson and his colleagues. Two small excavations were carried out in Stonehenge in 2008, one of them as part of the Stonehenge Riverside Project which examined the surrounding landscape as well. Stonehenge has been interpreted, among many other things, as a cenotaph built of healing stones (Geoffrey of Monmouth c.1136), a temple for ancient druids (Aubrey 1666 and Stukeley 1740), an observatory or calendar (Gerald Hawkins 1965), and a monument to unify the ancestral dead (Parker Pearson and Ramilisonina 1998).

Stonehenge's encircling ditch and bank were constructed in 3000–2920 BC, and a cremation burial within Aubrey Hole 32 is dated to 3080–2890 BC. Re-examination of Aubrey Hole 7 in 2008 indicated that these pits probably held small standing stones, most likely bluestones. Stone sockets within the centre of Stonehenge's enclosure and in a line of three outside Stonehenge's north-east-facing entrance are likely to have held sarsens in this earliest stage. The sarsen Heelstone may also have been in place at this time. Other early features include holes for timber posts, many of them arranged into rectangular formations inside the enclosure. A small D-plan building was built next to the small south entrance of the circle.

Around 60 cremation burials have been excavated within Stonehenge, demonstrating that it was a burial ground for 600 years from its beginning. Most were adult women and men with no more than five children and infants – a selection bias which suggests that Stonehenge was an important place to be buried, largely reserved for adults. Strontium isotope analysis of their cremated bones has shown that nearly half of them lived beyond Salisbury Plain, with some of them likely to have grown up in areas such as west Wales. Similarly, one of the cattle skulls placed in the bottom of Stonehenge's ditch has isotope values consistent with coming from the area of the bluestones.

Thanks to geological analysis of outcrops in Preseli, quarries for Stonehenge's bluestones have been excavated at Craig Rhos-y-felin and

Carn Goedog, dating to 3620–3120 BC and 3350–3020 BC. Geochemical analysis reveals the Carn Goedog quarry to have been the dominant source of Stonehenge's spotted dolerite pillars, the quarry going out of use in 3020–2880 BC. Stone wedges were among the Neolithic tools used to open up the joints around these natural pillars and lever them off the rock face.

The large sarsen stones were brought to Stonehenge in its second stage in 2620–2480 BC. Together with some of the bluestones, they were shaped with hammer stones (a process called 'stone-dressing'). A stone-dressing area has been found just 70 m north of Stonehenge, though dressing of some uprights may have been finished off once they were already standing. The bluestones were rearranged during this stage into an arc or circle known as the Q & R Holes.

Stonehenge's famous solstitial alignment was given prominence in this stage by constructing the great trilithon in the south-west so that the sun shone through it into the centre of the circle at midwinter solstice sunset. In the opposite direction, the Heelstone is positioned just east of where the sun rose at the midsummer solstice. Laser-scanning of the stones reveals that stone-dressing was most thorough on those sections of the outer sarsen circle when viewed from the centre of Stonehenge and when viewing the monument looking towards midwinter sunset. This suggests that the midwinter solstice sunset was the most important of Stonehenge's alignments which probably also included lunar ones such as major moonrise and moonset (the outer limits of the moon's rising and setting within its 18.6-year cycle).

Yet Stonehenge's solstitial alignment may have been much older than its second stage. Excavations in 2008 revealed that Stonehenge was positioned at the south-west end of a natural feature of large and deep periglacial fissures that had formed within two parallel ridges of raised chalk. Since this feature was aligned on the axis of the midwinter sunset and midsummer sunrise, its discovery raises the possibility that the builders of Stonehenge were aware of this coincidence of earth and heavens, identifying it as a special sacred place to build their monument.

In Stonehenge's third stage (2480–2280 BC), an Avenue was constructed from Stonehenge's north-east entrance along this natural feature and beyond it, curving eastwards and, after 1¾ miles, meeting the River Avon at West

Amesbury. At the river's edge it stopped against a small henge built around a dismantled stone circle, the sockets of which reveal that some 25 or so bluestones had once stood here (known as Bluestonehenge), potentially later re-erected as a small circle within the centre of Stonehenge.

In this third stage, a large pit was dug to the bottom of the great trilithon possibly to deliberately undermine it – the great trilithon's lintel and one of its uprights later collapsed. The native pottery, known as Grooved Ware, was replaced by a European-derived style known as Beaker ceramics. Analysis of skeletons for isotopes and ancient DNA within Beaker burials reveals that these were highly mobile migrants with ancestries mostly outside Britain. One of these – the Amesbury Archer – was buried just 3 miles from Stonehenge and appears to have grown up in Europe, possibly as far east as the foothills of the Alps.

Stonehenge's stages 4 (2280–2020 BC) and 5 (2020–1520 BC) were relatively low-key interventions. In stage 4, the bluestones were reorganised into an outer bluestone circle and an inner bluestone oval (subsequently modified into a horseshoe). In stage 5, two concentric circuits of pits were dug outside the sarsen circle. Known as the Y and Z Holes, they are mysterious features which some consider to have resulted from an abandoned project to put up more standing stones around Stonehenge. Around 1750–1500 BC, images of 115 bronze axe-heads and three daggers were carved into five of the sarsen uprights, possibly to mark the passing of those now being buried in the hundreds of round barrows (circular burial mounds, see Bronze Age Factsheet 1) constructed in Stonehenge's vicinity. Slightly later, a large precinct was constructed around Stonehenge to isolate it from the newly laid-out fields engulfing these abandoned burial places.

In its heyday, Stonehenge was clearly a monument with long-distance connections. The link with the Preseli region seems to have included animals and people as well as stones. Isotopic analysis on cattle and pig teeth from the large settlement of Durrington Walls, likely to be the builders' camp in stage 2, indicates that they came from many different regions of Britain, some as far away as Scotland. Stonehenge appears to have had a Britain-wide hinterland, the most important monument with the longest 'reach' in prehistoric Britain, uniting communities in distant parts of this island. Yet new research is revealing the possibility that Stonehenge was built at a time of economic

recession, population decline, forest regeneration, and cultural isolation from Europe. Just whether and why this was the case, and why Preseli was so important for Stonehenge's origins are key research questions that archaeologists will be addressing in the coming years.

Further Reading

The literature on Stonehenge is vast, with hundreds of scientific papers and many books, most of which are now horribly out of date. Here are just a few of the scientific papers that are not yet out-dated, along with those books of most interest to the non-specialist.

Abbott, M. and Anderson-Whymark, H. with Aspden, D., Badcock, A., Davies, T., Felter, M., Ixer, R., Parker Pearson, M. and Richards, C. 2012. *Stonehenge laser scan: archaeological analysis report*. London: English Heritage Research Report 32/2012

Allen, M.J., Cleal, R.M.J., French, C.A.I., Marshall, P., Pollard, J., Richards, C., Ruggles, C., Rylatt, J., Thomas, J., Welham, K. and Parker Pearson, M. 2016. Stonehenge's avenue and Bluestonehenge. *Antiquity* 90, 991–1008

Aronson, M. with Parker Pearson, M. 2010. *If Stones Could Speak: unlocking the secrets of*

Stonehenge. Washington DC: National Geographic

Bevins, R.E., Ixer, R.A. and Pearce, N.G. 2013. Carn Goedog is the likely major source of Stonehenge doleritic bluestones: evidence based on compatible element geochemistry and principal components analysis. *Journal of Archaeological Science* 42, 179–93

Cleal, R.M.J., Walker, K.E. and Montague, R. 1995. *Stonehenge in its Landscape: Twentieth-Century Excavations*. London: English Heritage

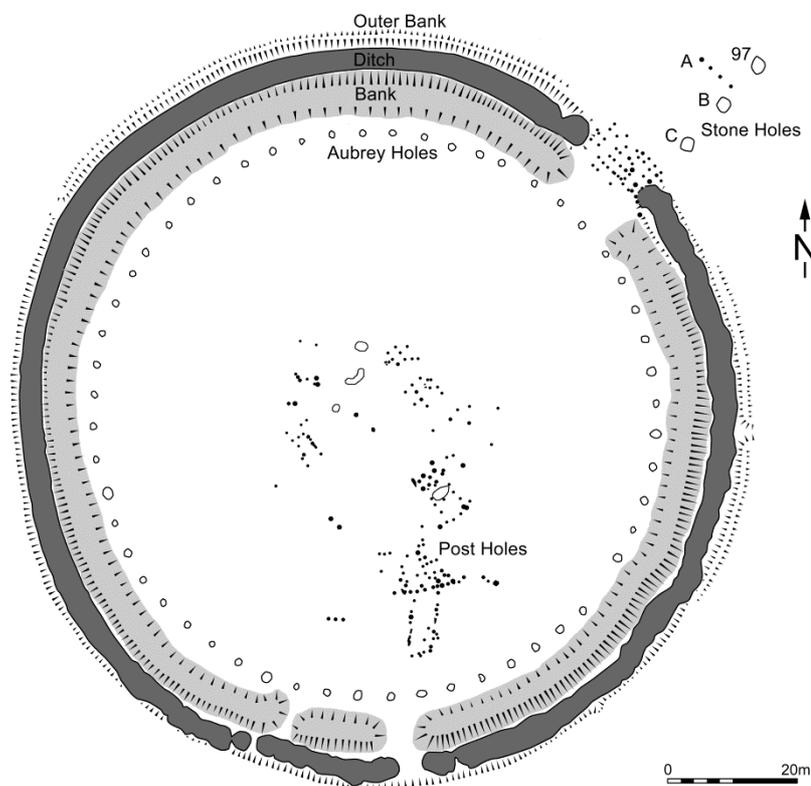
Darvill, T., Marshall, P., Parker Pearson, M. and Wainwright, G.J. 2012. Stonehenge remodelled. *Antiquity* 86, 1021–40

Parker Pearson, M. 2012. *Stonehenge: exploring the greatest Stone Age mystery*. London: Simon & Schuster

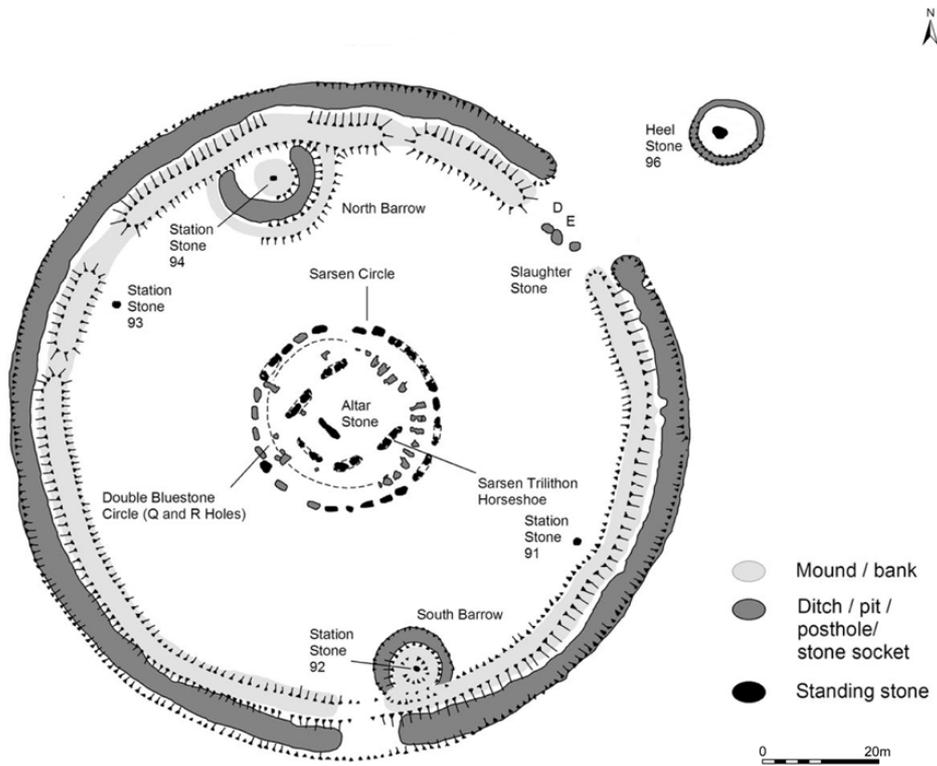
Parker Pearson, M. with Pollard, J., Richards, C., Thomas, J. and Welham, K. 2015. *Stonehenge: making sense of a prehistoric mystery*. York: CBA

Parker Pearson, M., Bevins, R., Ixer, R., Pollard, J., Richards, C., Welham, K., Chan, B., Edinborough, K., Hamilton, D., Macphail, R., Schlee, D., Simmons, E. and Smith, M. 2015. Craig Rhos-y-felin: a Welsh bluestone megalith quarry for Stonehenge. *Antiquity* 89, 1331–52

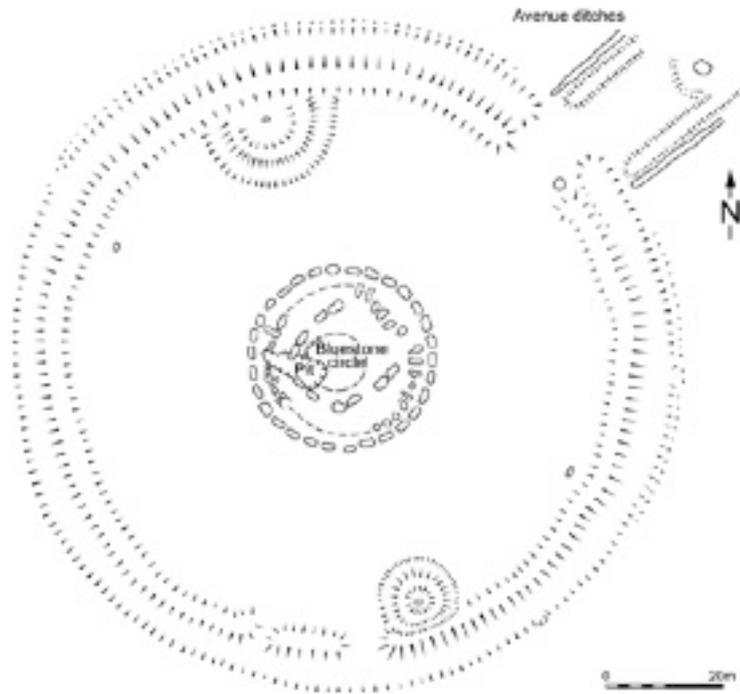
Willis, C., Marshall, P., McKinley, J.I., Pitts, M., Pollard, J., Richards, C., Richards, J., Thomas, J., Waldron, T., Welham, K. and Parker Pearson, M. 2016. The dead of Stonehenge. *Antiquity* 90, 337–56



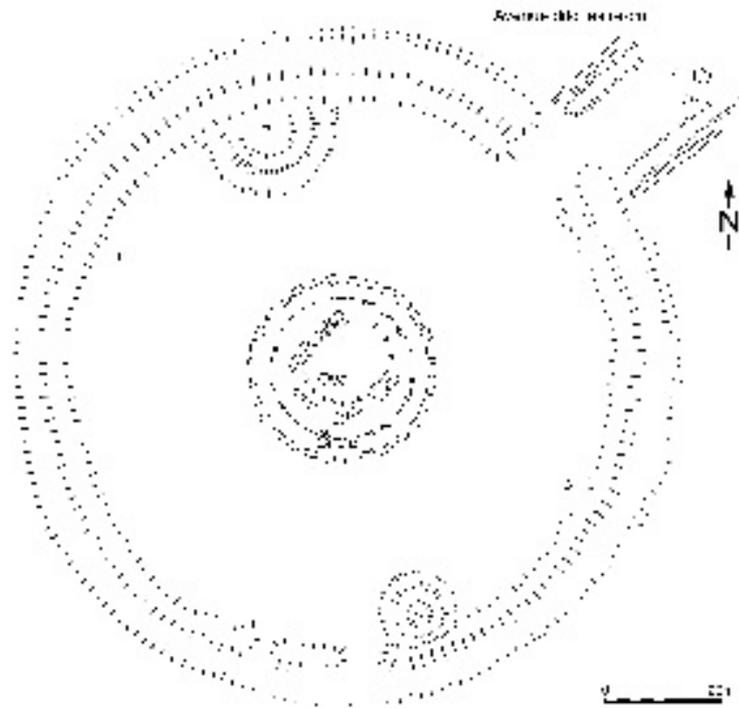
Stonehenge stage I (3000–2620 BC)



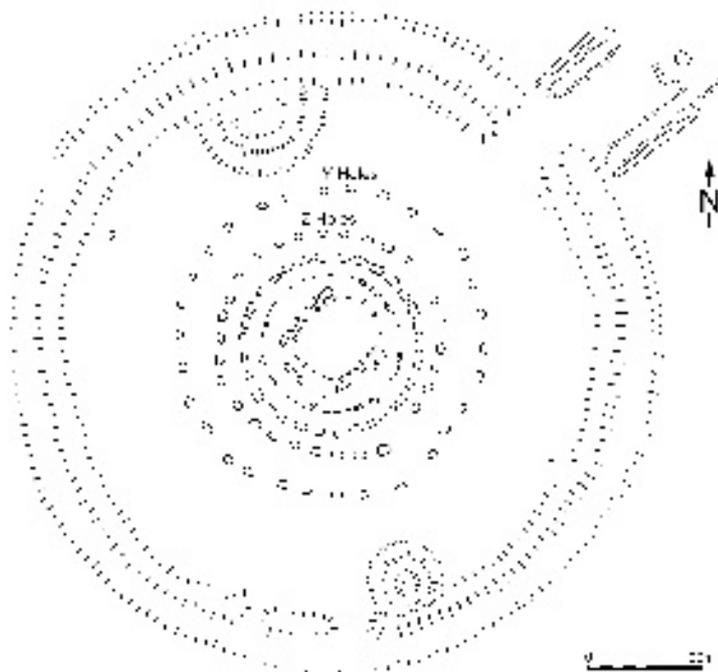
Stonehenge stage 2 (2620–2480 BC)



Stonehenge stage 3 (2480–2280 BC)



Stonehenge stage 4 (2280–2020 BC)



Stonehenge stage 5 (2020–1520 BC)

Illustrations from Cleal, R.M.J., Walker, K.E. and Montague, R. 1995

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