

# Ever Increasing Circles: The Sacred Geographies of Stonehenge and its Landscape

TIMOTHY DARVILL

## Introduction

THE GREAT STONE CIRCLE standing on the rolling chalk downland of Salisbury Plain that we know today as Stonehenge, has, in the twentieth century AD, become a potent icon for the ancient world, and the focus of power struggles and contested authority in our own. Its reputation and stature as an archaeological monument are enormous, and sometimes almost threaten to overshadow both its physical proportions and our accumulated collective understanding of its construction and use. While considerable attention has recently been directed to the relevance, meaning and use of the site in the twentieth century AD (Chippindale 1983; 1986a; Chippindale *et al.* 1990; Bender 1992), the matter of its purpose, significance, and operation during Neolithic and Bronze Age times remains obscure. The late Professor Richard Atkinson was characteristically straightforward when he said that for questions about Stonehenge which begin with the word 'why': 'there is one short, simple and perfectly correct answer: We do not know' (1979, 168).

Two of the most widely recognised and enduring interpretations of Stonehenge are, first, that it was a temple of some kind; and, second, that its orientation on the midsummer sunrise gave it some sort of astronomical role in the lives of its builders. Both interpretations, which are not mutually exclusive, have of course been taken to absurd lengths on occasion. During the eighteenth century, for example, William Stukeley became obsessive about the role of the Druids at Stonehenge (Stukeley 1740). And, in our own century, some of the careful astronomical observations by Sir Norman Lockyer (1909) have been expanded and contorted into almost comical claims about prehistoric calculators and Neolithic computers by Gerald Hawkins in his book *Stonehenge decoded* (Hawkins 1966). It has to be said, however, that both Stukeley and Hawkins appear almost credible when compared with some of the really fanciful interpretations of the site.

In this paper I would like to re-visit questions about the meaning and purpose of Stonehenge by using the perspectives of sociology and social archaeology to look again at the interpretation of the site as a temple and the idea that astronomical alignments were embodied in the design of the structures. A key concept in this, and one that I shall return to several times over, is that of cosmology—the science or theory of the universe held by a given society. I will refer to the archaeological manifestation of a cosmology as a ‘sacred geography’.

Defining the question though is far easier than knowing where to start in answering it. I could begin with the celestial bodies occupying the sky above Stonehenge, or the countryside in which the site is set, or the stones and objects recorded there, or even the holes, ditches and pits that were dug there. In due course I will come to discuss all of these, but the place I would really like to start is in the minds and collective consciousness of the individuals and communities who were responsible for the design, construction and use of that most strange thing we now call ‘Stonehenge’. By starting with people and societies—surely the only proper focus of archaeology—it is easy to develop a critical understanding of three inhibiting preconceptions which apply particularly to Stonehenge: sites, succession, and science.

First, the idea of the archaeological site has been around a long time but probably represents the single biggest impediment to interpretative thinking in the discipline. The problem is especially acute when the scenes and edges of arbitrarily located archaeological investigations become confused with patterns of activity in the past. People’s lives have never been confined to specific sites: they live, work, and move about within much bigger environments which are essentially continuous and infinitely expandable both horizontally and vertically. Moreover, as Colin Renfrew has argued, it is not only the physical environment that is of importance to archaeologists, the cognitive background of past communities is also critical (Renfrew 1982).

Second, succession presents two pit-falls for the unwary. First is the idea that a series of superimposed structures imply steps or stages of development towards the ultimate form represented, as if the builders were trying to achieve something that required several attempts. The way that Stonehenge is presented sometimes gives that impression. Second, is the idea that successive stages were built by people who thought the same way and conceived of the world around them in the same way. In long sequences such as we find at Stonehenge the number of intervening generations precludes the possibility that those concerned with the construction and use of the early stages had the same feelings and thoughts as those concerned with the final use of the site.

Third, science as we know it today, is, in archaeological terms, a recent phenomenon grounded mainly in Western Christian positivist philosophy. Descriptive geometry or astronomy provide useful ways of expressing or communicating relationships and observations. But the fact that today’s models map onto designs and arrangements set out by prehistoric communities does not mean they used the same models, still less that they had any theoretical understanding of the laws and principles that we believe underlie the

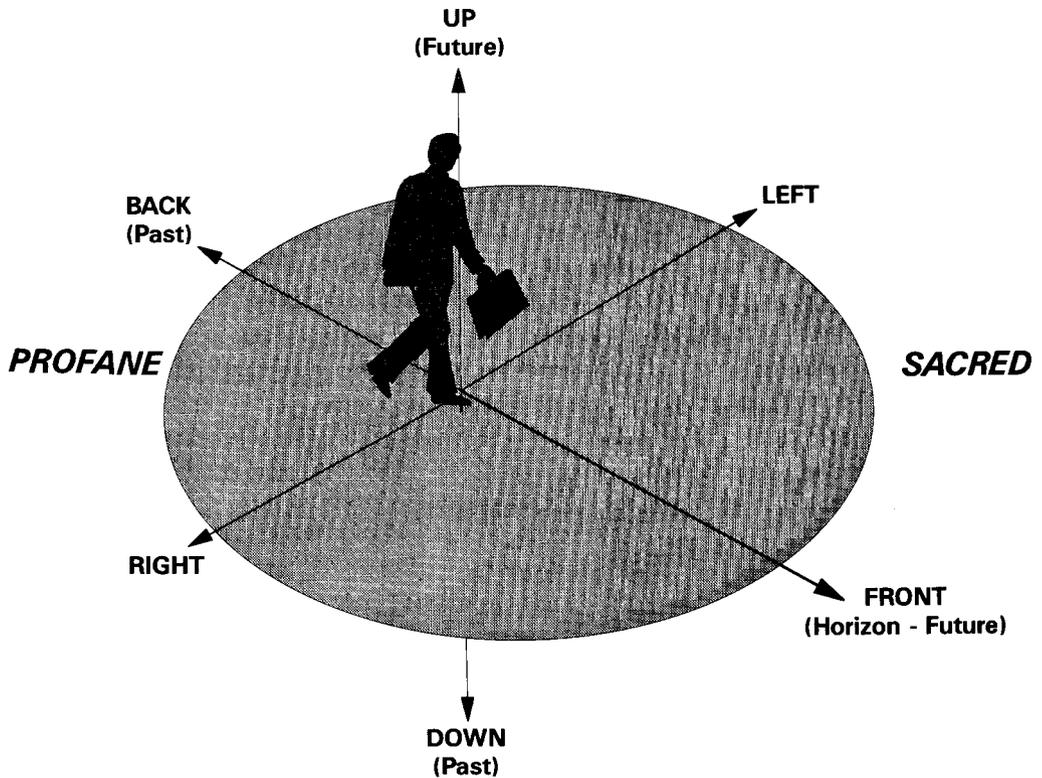
behaviour of the things we observe. In the first edition of his book on Stonehenge, Professor Richard Atkinson cautioned that, at Stonehenge, 'things were aligned *roughly and approximately*' (Atkinson 1956, 89; original emphasis), a statement he retains in all subsequent editions. The same point was reiterated time and again by speakers at the Royal Society and British Academy Seminar on *The place of astronomy in the ancient world* held in London in December 1972 (Hodson 1974), and was made yet again by a number of speakers at the symposium reported in this volume (and see Chippindale 1986b).

Freedom from these three constraints on thinking about the past has many implications. First and foremost, however, it allows a view of prehistoric people who are free to move about in their world unfettered by the boundaries of our imposed ideas of sites. They are intellectually empowered to build things up, change them or knock them down again for their own purposes. And they are at liberty to organise and express their thoughts about the world as they choose. However, before turning to see how these implications affect our interpretations of Stonehenge and its surroundings, I would like briefly to review four important concepts which underpin the way in which a sacred geography can be built up: space, place, landscape, and structuration.

### Space, place and structuration

The words 'space' and 'place' are in widespread common usage, often interchangeably. Yet in a more technical usage these two words express important concepts which have been explored in some detail by the American geographer Yi-Fu Tuan (1977). He sees space as an essentially abstract concept which we apply to everything which is outside one's self. In this sense, space is continuous, it has no edges, but it can be measured or scaled if so desired in almost any plane. Today, we are familiar with the measurement of space in feet or metres, miles or kilometres, in horizontal and vertical planes. But people divide space up in many different ways. There are no universals, although cross-cultural studies suggest that in many societies the human body in upright position is used as the basic map from which subdivisions of space are developed, for example: front and back, up and down, left and right (Fig. 1). The words may change between societies but the basic concepts remain as body-referenced sectors of space become associated with other ideas such as the future and the past, good and evil, light and darkness, the sacred and the profane. Lefebvre (1991) has reviewed the way that conceptual systems based on the human body affect the production of space, while Sennett (1994) considers the relationship between the ideas relating to the human body and the use of space and the constructions that are created in such space at different periods of history.

In modern times the magnetic compass and a coordinate system based on the notional subdivision of the globe by latitude and longitude, or some other local grid, allows individuals to orientate themselves and others so that there is standardisation in the way space is divided up. Coordinate systems have also been developed to map the heavens (Newton



**Figure 1.** Notional categorisation and mapping of space relative to the human body in upright position. (After Tuan 1977, fig. 2, with additions.)

1974). In the absence of the magnetic compass and other calibrated recording devices, other coordinate systems have to be developed and these may be derived from terrestrial or cosmic patterns.

Perhaps the most important characteristic of space is that it is always there; it always has been and always will be even though it is partitioned and subdivided in different ways. Thus even today we can enter and move through the same space that prehistoric people moved through.

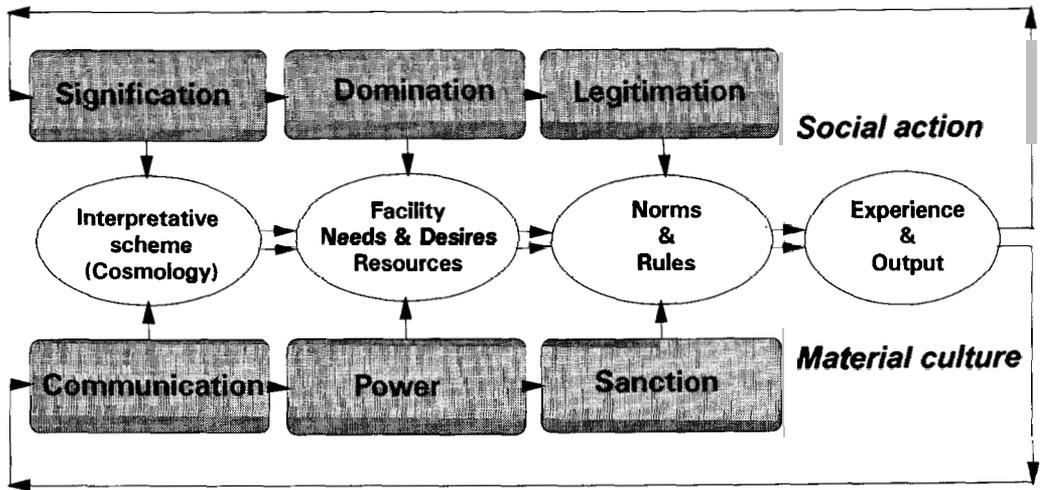
The abstract nature of 'space' can be contrasted with the very concrete nature of 'place'. A place is somewhere special, specific, time-dependent, and socially recognised. A sense of place involves an engagement with a certain tract of space which is not simply defined in a coordinate system but is given meaning and value which can be appreciated and understood by those who experience it. As Tuan suggests (1977, 33), every aspect of a place tells a story which may be real or mythical, but always serves to give meaning and relevance. Thus while we can move through the same spaces as Neolithic people, we can never recapture the sense of place that Neolithic people knew.

A close relative of the concept of 'place' is that of 'landscape'; indeed many would see a landscape as a grossly extended place or a network of connected places (Bender 1993). In this, a landscape is not a physical thing, simply a tract of space or an environment, but rather a construction in people's minds based on a set of values, meanings and understandings which are developed in response to what they see around them, what they feel, what they are told, what they remember or think they remember, and their socialisation (Cosgrove 1985; Cosgrove and Daniels 1988; Ingold 1993; Schama 1995). The idea of both place and landscape are closely linked to perception, experience, and engagement, and embrace widely applicable themes about the relationship between people, the realm of ideas and values, and the world that groups and individuals create for themselves to live in.

It is this relationship between what people do and the world they create for themselves that lies at the heart of the fourth matter to touch on here, the process of structuration. Initially developed by the Cambridge sociologist Anthony Giddens, structuration theory provides a means of analysing social action: what people actually do, why they do it, and what the consequences are. This is not the place for a full analysis of structuration theory, but, quite simply, structuration involves patterning or recurrence in the way people do things and relate to one another across space and through time (Giddens 1984). This, Giddens argues, comes about because of fixed rules, resources and structures in society which both constrain and enable people to carry on the business of everyday life, while at the same time reproducing itself (i.e. society) over and over again. A key element of this is a duality between 'structure' as the things which give form to social life and 'interaction' which relates to the relationships between individuals. Set between these two elements, and relating them together, is what Giddens refers to as 'modality', an important element of which is an 'interpretative scheme' or those aspects of an individual's stock of knowledge that is applied reflexively to make accounts of things, offer reasons, and explain actions (Giddens 1984, 29).

Giddens' general theory of structuration, originally developed to deal with contemporary social phenomena, can usefully be modified and extended for application in an archaeological context by identifying the consequences (experiences and tangible/physical outputs) of structure and interaction with social action and material culture respectively. By the same token, interpretative schemes can be closely identified with cosmologies or widely held belief systems. Figure 2 shows in schematic form how such an archaeologically orientated theory of structuration might work. People act against the background of an interpretative scheme of the world, facilitated by their needs, desires and resources, and implemented in the light of socially accepted norms and rules. The outcome is experience and products of various sorts, which in turn relate to the reproduction of the system which both constrains and enables action. In contrast to Giddens' original scheme, this model is cyclical. Its momentum is maintained by the push-pull effect of two sets of influences: on one side there are social structures which signify, dominate and legitimate action; on the other side, social interactions which allow communications,

## STRUCTURE



## INTERACTION

Figure 2. Diagram showing the influence of 'Structure' and 'Communication' on social action and the development of material culture. (Based on Giddens 1984, fig. 2, with substantial modification and additions.)

provide power, and impose sanctions.

The relevance of structuration theory developed in this way to archaeology is two-fold. First, it recognises that the outputs of social action include what archaeologists term material culture which, in this revised model, represent adjuncts to the psychological satisfaction or otherwise of the actor or actors. Second, is the way that the idea of structuration provides a direct connection between belief systems about the world, the way people think, and what they actually do. Thus the power of the model is the way it provides a general theory of society which is applicable at a number of different levels.

Structuration has particularly important implications for exploring the organisation and partitioning of space. As we have already seen, people are free to move about according to socially defined rules and norms. Every area of space can therefore be identified with a series of socially constituted values and meanings because the space itself is categorised or compartmentalised in the minds of its inhabitants or users. This is what gives rise to the definition of value and meaning in places and landscapes. Structuration theory suggests that such compartmentalisation will be based on general interpretative schemes. Conceptual divisions may be signified and made to dominate action through the construction of boundaries, markers, or the distribution of things and associations (and see Tuan 1977). Communication means that people can read these meanings like the words of a book or the signs beside the road, and develop an understanding of the power of the place or landscape they are in. Some categories superficially appear functional and

straightforward: field, pasture, house, or burial ground. But behind these simplistic descriptions there are usually more deeply embedded understandings which reveal themselves as emotions and feelings: burial grounds that mix images of darkness with the spirits of the ancestors; woods that disorientate and confuse; springs that give new life and link the land of the living to a supernatural world beyond; rivers that metaphorically represent the passage of time and the cycle of life itself.

The values or meanings attributed to different parts of the environment dictate the way that people relate to it, move about within it, and what actually happens there. These represent the legitimation or sanctioning of action through norms and rules.

Numerous anthropological studies illuminate the way in which space is conceptualised and subdivided in a range of societies so as to produce socially meaningful places and landscapes. They also highlight the way that physical objects (i.e. material culture) relate to concepts of space and place. Studies such as those of the Trobriand Islanders by Glass (1988), or the Pirá-Paraná Indians of Colombia by Hugh-Jones (1979), are particularly relevant, and, along with others, serve to amplify aspects of the cross-cultural links between space, place, landscape and structuration which are particularly relevant to archaeological analysis in general, and the problem of Stonehenge in particular. Two deserve mention here.

First, the categorisation of space is generally systematic and the rules which inform the understanding of each category (i.e. an interpretative scheme) are often founded in a received cosmology. Wheatley (1971) describes the cosmological basis for the planning of ancient Chinese cities, Coe (1993, 174–90) the layout of Maya ceremonial centres in central America, and, rather controversially, Bauval and Gilbert (1994) look at the arrangement and cosmological referencing of the pyramids at Giza in Egypt. On the basis of these and many other studies, the equation between interpretative schemes or cosmologies and structure in the archaeological evidence is no surprise, and should, as Ian Hodder has advocated (1987), be considered an integral and essential part of archaeological inquiry.<sup>1</sup>

Second, is a recognition that the categorisation of space is often 'nested' in the sense that arrangements apply at several different levels simultaneously as interpretative schemes impinge on almost every dimension of life. Thus, for example, patterning in the subdivision, arrangement, and meaning of space may, at the same time, be found in the decorative schemes applied to material culture, the arrangement of spaces and disposition of activities in the home, the layout of a settlement, and patterns of behaviour in the landscape as a whole. This means that if patterns can be detected strongly at one level they may also be applicable at others.

<sup>1</sup> Fashion is an important factor here. In recent decades it has not been fashionable to interpret archaeological remains by reference to cosmological systems, but Humphrey Case has kindly drawn my attention to Mortimer's assertion (1905, 298) that the Huggate Wold barrows in former East Yorkshire were laid out to represent the seven stars in Charles' Wain in the constellation of Ursa Major.

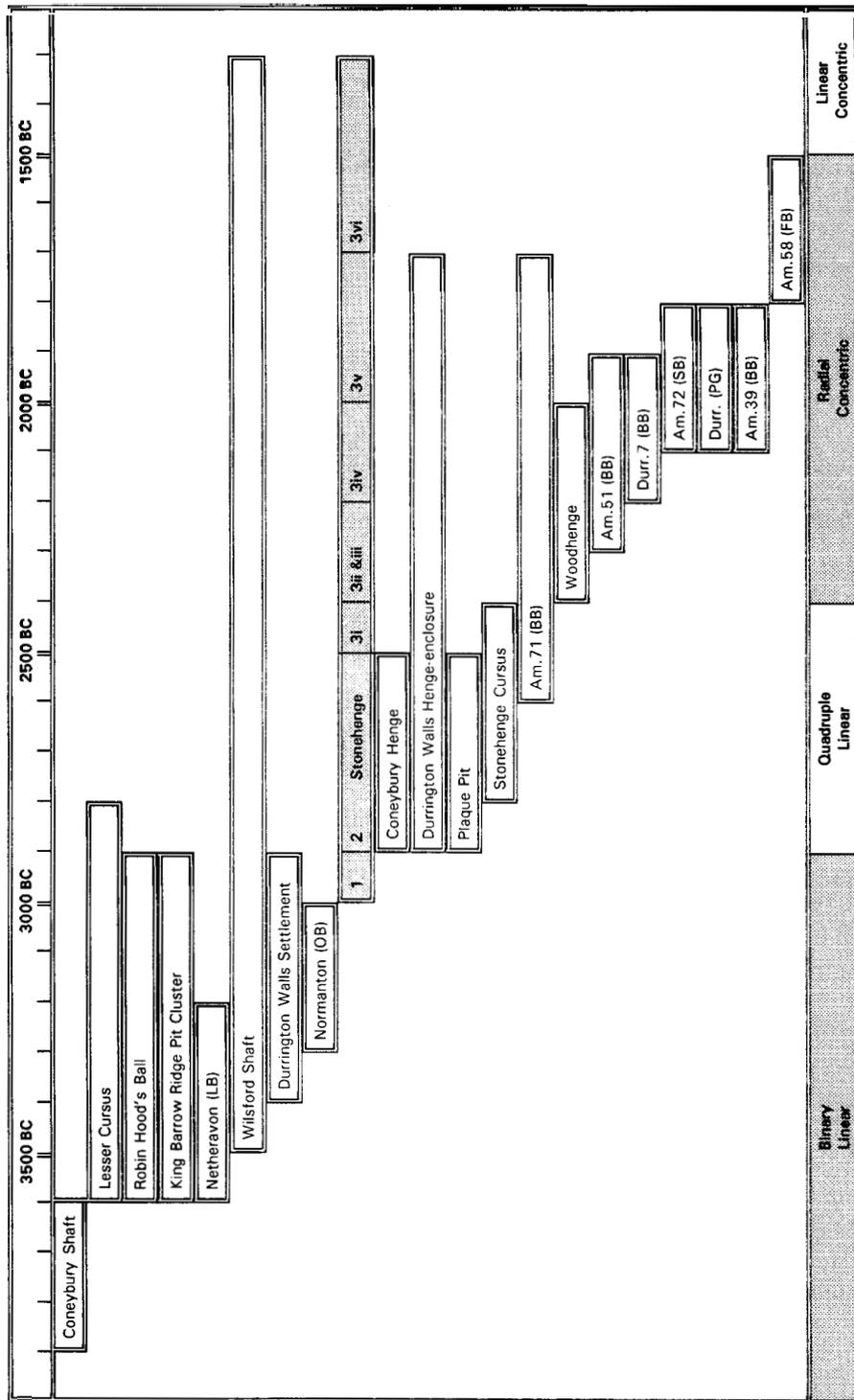
## Stonehenge and its landscape

Archaeological investigations and surveys of the space occupied by Stonehenge and the area around about are legion: indeed it is one of the most intensively studied areas of Britain if not northern Europe. Among recent surveys drawn upon here, special mention may be made of the work by the Royal Commission on the Historical Monuments of England during the 1970s (RCHM 1979), the Stonehenge Environs Survey carried out by Wessex Archaeology in the early 1980s (Richards 1990), and the various studies carried out in the early 1990s contained in the first Environmental Statement prepared for the Stonehenge Conservation and Management Program (Darvill 1991). Twentieth century excavations at Stonehenge itself have recently been published (Cleal *et al.* 1995) and the revised chronology and phasing presented in that report is used here with only minor modification. Figure 3 shows a chart which summarises the approximate chronological duration of the main dated monuments in the area.

The following analysis does not follow the conventional phasing of prehistory, or of any particular excavated site in the Stonehenge area. Rather, following a social perspective, interest focuses on the changing patterns of evidence, the archaeological structuration as just explained, and, by implication, the changing cosmologies which underpinned everything. The chronological framework is that of calibrated radiocarbon ages expressed as calendar years.

### *The early years*

Theoretically, the Stonehenge environment began to be parcelled up and structured from the time of the first settlement. When this was is not exactly known, although it is generally presumed to have been during the early post-glacial period, perhaps as early as the ninth or tenth millennium BC. The very low density of flintwork of that period recovered from the area suggests that settlement was not intensive hereabouts, but this does not mean that no-one cared about the area. Specific places were already being identified for attention by the seventh millennium BC when a series of at least four posts, perhaps decorated and painted like the totem poles of native North American societies, were set up in the area which is now used as the Stonehenge car-park (Vatcher and Vatcher 1973; Cleal *et al.* 1995, 43–7). These posts were not necessarily all contemporary, and could indeed represent the periodic confirmation of something special about the place. Three of the post-holes have a general alignment roughly east-west, but the fourth, some distance away, is not on the same line. Care must be exercised in using this evidence as it is far from clear that a complete picture has yet been recovered. What is interpreted as a tree-hole was found at the western end of the line of three post-holes (A-C), more or less in line with them. Little has been made of this, and it remains undated, but its position relative to the posts and its spatial association with them makes it tantalising to speculate that this was in fact the thing that gave significance to the place. There is nothing odd



OB = Oval Barrow; BB = Bowl Barrow; FB = Fancy Barrow; SB = Saucer Barrow; PG = Pit Grave; Am. = Amesbury Parish; Durr. = Durrington Parish

**Figure 3.** Chart showing the relative dating of key archaeological monuments mentioned in the text.

about considering an essentially natural thing as being the most important feature of a place. Such a case has been argued by Christopher Tilley in respect of the Mesolithic flint scatters on Bodmin Moor, Cornwall, which, he believes, indicate an interest in the natural rock outcrops or tors on the moor (Tilley 1994; lecture to IFA conference 13th April 1995).

The post-holes in the Stonehenge car-park are some 200 m away from where Stonehenge was later constructed, and while they may indicate a general signification of the area it would be hard to argue that they significate the space later used for Stonehenge itself. Sadly, little of the central area of Stonehenge has been sufficiently fully investigated to know what might have attracted people to imbue this space with meaning. Whether there was a special tree, unusual rock, or more posts on the site cannot be determined because of the poor dating and virtual absence of stratigraphic control over most of the internal features. There is no reason, however, why some of the post-holes conventionally assigned to Phase 2 of the monument could not have been considerably earlier. The possibility of what, in traditional terminology, would be called Mesolithic features representing the first signification of a place which continued in use through into the Neolithic should occasion little surprise in the context of the social model already outlined. Indeed Mesolithic features and finds at sites which are recognisably important through the construction of substantial monuments during Early and Middle Neolithic times are well-known and widespread, as illustrated by Hazleton North long barrow, Gloucestershire (Saville 1990, 240), Gwernvale long barrow, Powys (Britnell and Savory 1984, 136), and the Billown enclosures and Killeaba cemeteries in the Isle of Man (Darvill 1996b, 48).

#### *Fourth millennium BC*

During the fourth millennium BC (c.4000–3000 BC) the range of recorded activity around Stonehenge becomes greater and the organisation of space has sharper focus. Figure 4 shows the distribution of recorded sites which fall into three main groups.

First there are shafts or holes dug into the ground. The earliest of these, dating to 3980–3708 BC (OxA-1402) is the Coneybury anomaly on Coneybury Hill to the east of Stonehenge. Excavation proved this to be a flat-bottomed pit, 1.25 m deep and 1.9 m in diameter (Richards 1990, 40–61). The primary deposit contained abundant animal bones suggestive of a major episode of butchery in which at least ten cattle, several roe deer, one pig, and two red-deer were processed. The remains of beaver and a fish were also present. Fragments of over 40 pottery vessels, and flint tools used for cutting, emphasise the possible role of this site in feasting. Other pit groups have been excavated on King Barrow Ridge and Vespasian's Ridge (Richards 1990, 65), but potentially the most remarkable shaft of the period is the Wilsford Shaft to the south-west of Stonehenge, 30 m deep and up to 1.8 m in diameter (Ashbee *et al.* 1989). Although generally regarded as being of Bronze Age date, the ten radiocarbon dates accord exactly with their stratigraphic

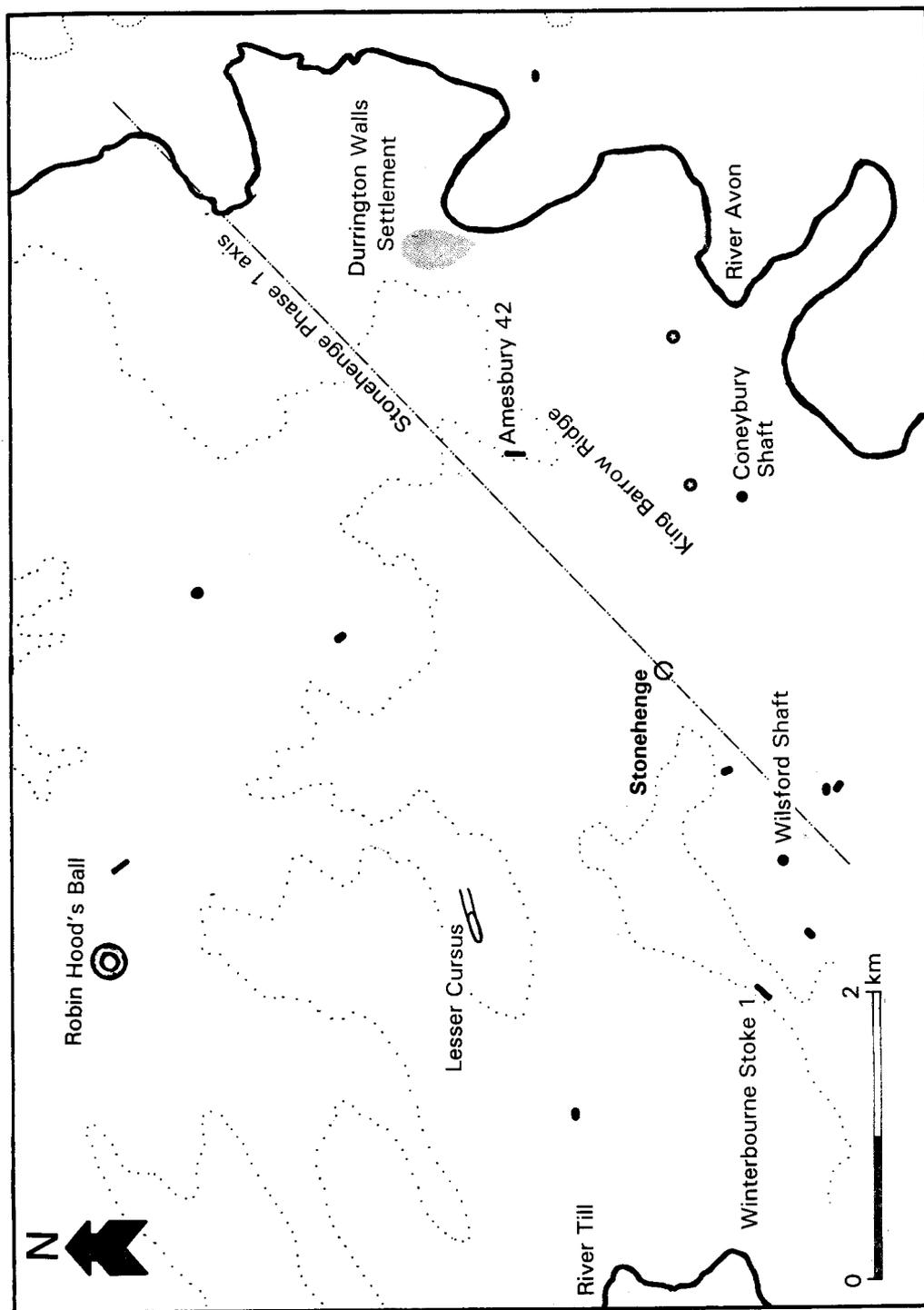


Figure 4. The Stonehenge landscape 4000–2900 BC. Long barrows and oval barrows are depicted as rectangular and ovoid dots; dots with central star-symbols indicate pit clusters.

sequence, beginning with a date of 3510–3345 BC (OxA-1089) on wood from the remains of a bucket in the bottom of the shaft.<sup>2</sup>

The second group of monuments are linear structures which include three long barrows (Amesbury 42, Figheldean 27, and Winterbourne Stoke 1), seven oval barrows, and the so-called Lesser Cursus which is a two-phase monument more reminiscent of a long mound or bank barrow than a cursus (cf. Bradley 1983).<sup>3</sup> The larger monuments in this group tend to lie on higher ground at intervals of 2.0–2.5 km, although the smaller examples are more unevenly distributed. All share the fact that they have a single dominant axis inherent to their form, but there is little commonality of alignment between them.

The third group of sites comprises enclosures and settlements. To the north-west of Stonehenge is Robin Hood's Ball, a typical Wessex-style causewayed enclosure with two rings of boundary ditches encircling a maximum of about 3 ha (Thomas 1964). No certain entrance is known, but a scatter of worked flints and pits dating to the period 3200–3000 BC has been found to the north (Richards 1991, 74). Of broadly similar date is the spread of occupation debris below the bank of the henge-enclosure at Durrington Walls, although the full context and extent of this material is not known (Wainwright and Longworth 1971, 192–3).

The earliest earthwork enclosure at Stonehenge (Phase 1) was constructed around the turn of the fourth millennium BC at a time when many of the sites already mentioned were ancient and beginning to fall out of use. Stonehenge 1, dating to the period c.2950–2900 BC, comprises a roughly circular enclosure about 100 m in diameter, bounded by a bank, external ditch, and small outer counterscarp bank. Inside the main bank, and broadly concentric with it, was a ring of 56 post-holes which are now believed to have held upright timber posts (Cleal *et al.* 1995, 102–7). In the portion of the earthwork boundary that has been excavated there was an 11–13 m wide gap in the enclosure earthwork to the north-east, a gap about 3–5 m wide opening to the south, and perhaps a third gap, later blocked, about 2–3 m wide, opening to the south-west. The ring of 56 internal posts does not recognise any of these three gaps, although the spacing of the posts would not have hindered movement through the gaps if that was their purpose.<sup>4</sup> There may also have been other post-holes in and around the monument, for example some of those within and beyond the north-east entrance.

In its construction and design, Stonehenge 1 seems to incorporate a number of features which accord with earlier traditions. The ditch, for example, was constructed as a series of segments divided from one another by causeways in the same fashion as the boundaries at Robin Hood's Ball. In the ditch were a series of deposits of animal bones, some of which were already several centuries old by the time they were deposited. As at cause-

<sup>2</sup> The Neolithic age of the site was cogently argued by Mark Knight at a meeting of the Neolithic Studies Group held in the British Museum on 13th November 1995.

<sup>3</sup> See Grinsell 1957 for list of these sites with notes.

<sup>4</sup> There is always a danger in uncritically interpreting gaps as entrances.

wayed enclosures, the ditch terminals were identified for special attention. Both terminals for the north-east gap had fires in, and abundant antlers. The south entrance had cattle jaw bones on either side, while the putative south-western entrance had a cattle skull in the terminal of ditch segment 23 on its west side. Whether there were any engravings on the ditch walls, as at the comparable enclosure discovered at Flagstones, Dorset (Woodward 1988), is not known. Equally, however, the design of Stonehenge 1 prefigures later structures in its circular form and the construction of a post-ring around the inside of the bank.

The largest of the gaps in the boundary earthwork opens to the north-east with its axis on an azimuth of  $c.46^{\circ}33'$  taken from the centre of the enclosure (Atkinson 1982, 111). In the early 1960s Mr C.A. Newham suggested that the early phase of Stonehenge had been related to the observation of lunar phenomena (1972, 20–2) and this has been followed and developed by Aubrey Burl (1987, 64–80) and others. The arguments, however, are weak (Atkinson 1982, 111). They are based on the ascription to Phase 1 of all the post-holes in and around the north-east entrance, the acceptance that the pattern of post-holes genuinely represents attempts to determine moonrise positions, and the recognition that out of the eight defining directions of the moon's movements over an 18.6 year cycle only one could easily be observed through the north-east entrance and even then not along what appears to be the axis of the monument at that time. Moreover, with the re-phasing of the Heel Stone and other outliers (Cleal *et al.* 1995) there are no certain markers which would allow lunar events to be observed (cf. Burl 1991 on lunar alignment of the Heel Stone).

Other explanations should be considered, among them the possibility that the earthwork enclosure was not related to the observations of the heavens at all, but was instead built in a form which symbolically represented the surrounding landscape in which its users lived. Figure 5 shows one possible interpretation, placing Stonehenge at the centre of a roughly circular space about 10 km across. The size of the space was determined by simply projecting the main axis of Stonehenge 1 north-east until it encountered a substantial natural boundary or feature, in this case the course of the river Avon. As can be seen, the river Avon enters and leaves this large space in exactly the same relative position as the north-east and south gaps occur in the earthwork at Stonehenge itself. Perhaps the juxtaposition of the river in actual space and the position of the entrances within the physically constructed space at the monument is coincidental, but it is notable that when standing within Stonehenge it feels as if one is at the centre of a circular landscape edged with hills as well as in a circular monument edged by a bank. Moreover, the area enclosed within the wider landscape neatly incorporates most of the fourth millennium BC monuments in the immediate neighbourhood of Stonehenge.

Some support for a terrestrial interpretation of the design of Stonehenge 1 comes from reviewing again the disposition of other monuments (Fig. 4). A dispersed pattern of activity is apparent, what little evidence for settlement there is being in the form of pottery finds which concentrate in the south and east along the valley of the river Avon (Cleal

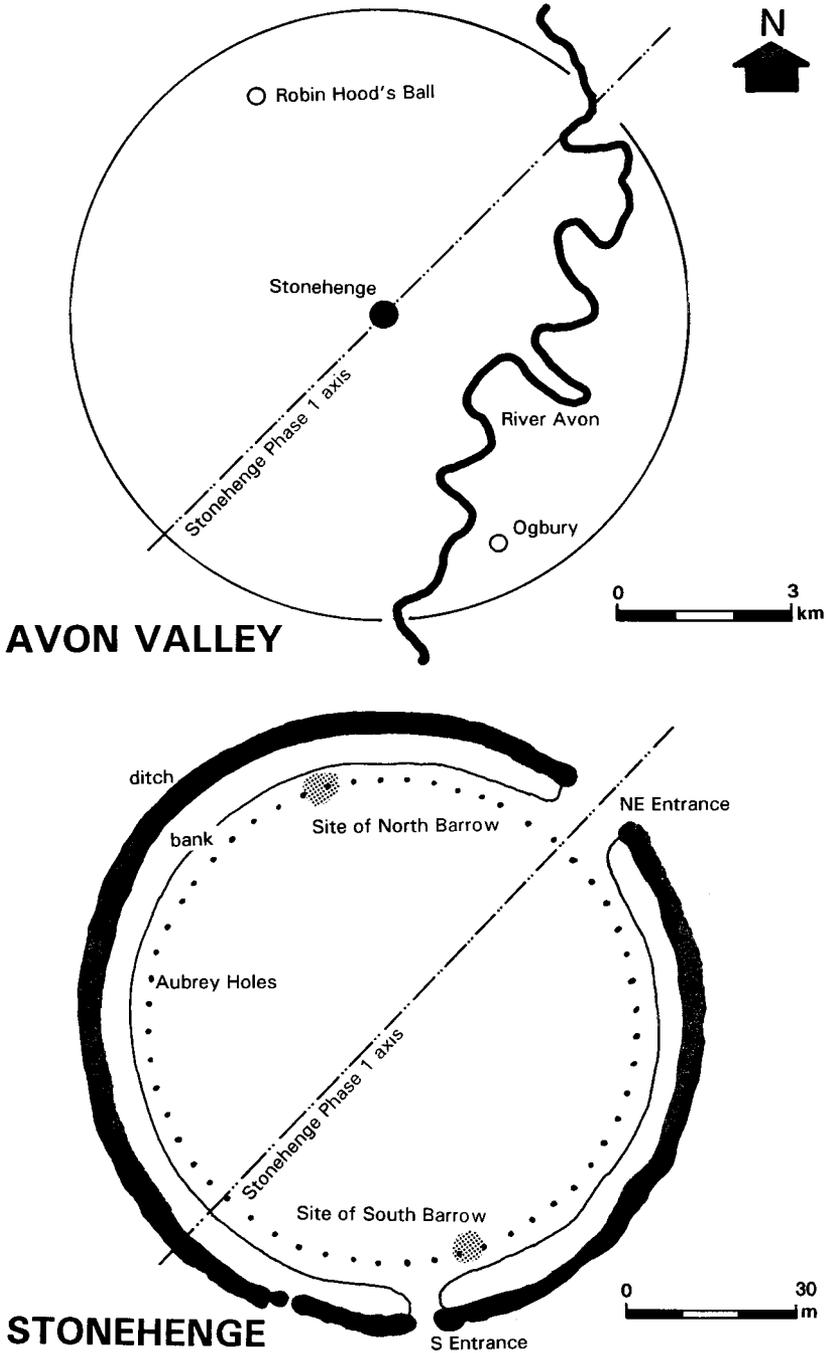


Figure 5. Stonehenge Phase 1 in relation to a plan of the local environment. (Stonehenge after Cleal *et al.* 1995, fig. 36.)

*et al.* 1995, fig. 252). Barrows, burial monuments, and the putatively ceremonial enclosure at Robin Hood's Ball lie towards the west and north. In this pattern Stonehenge stands more or less in the centre, constructed in an area which the poverty of fourth millennium BC cultural material suggests was not intensively used. But absence of cultural material does not mean it was an unimportant place as numerous anthropological studies testify (Carmichael *et al.* 1994). Memories of earliest significance, perhaps represented archaeologically by the tree and early post-holes noted above, may have structured behaviour in the sense that the hill-slope on which Stonehenge stands was the only appropriate place for the construction of the new enclosure. Until that time the 'centre' of these people's world had not been elaborated in an archaeological sense. Like other existing monuments, it had a single dominant axis.

It is tempting to speculate that, in symbolic terms, the axis of all these fourth millennium BC monuments was seen as a river, in this case the river Avon. It is easy to speculate on the sort of legends and creation myths that could underpin such an interpretation, not least stories of the colonisation of the area, or the place of the ancestral homeland.<sup>5</sup> If the river was important then its representation in the design of Stonehenge should be no surprise (cf. Fig. 2).

Other things might be important too. The ring of posts represented by the Aubrey Holes (Cleal *et al.* 1995, 102–7) is an unusual feature. Its explanation, like that of the construction of the monument as a whole, should perhaps be set in the general social context of the turn of the third millennium BC. Alasdair Whittle has argued that this was a period of considerable change, with the abandonment and destruction of earlier sites, the localised regeneration of woodland, population increases, and widespread stress on available resources (1978; 1981). The fourth millennium BC was also the period when the natural woodland cover of the Stonehenge area was being cleared away to leave a mosaic of open grassland and light woodland in the main settlement areas, wildwood all around. If Stonehenge is a symbolic or metaphorical representation of its landscape then, for the users of the site, perhaps the posts and bank represent the edge of the 'world' where the uncleared forest began and the hills rise up beyond.

The evidence from Stonehenge then does not have to be forced into a cosmological order based on lunar events; it can more easily be set against a terrestrial cosmology based on the landscape rather than the heavens and perhaps originally derived from the myths and legends of earlier hunter-gatherer communities who first occupied the area. A simple linear binary system would accommodate the patterning present, whether or not the symbolism of this axis is derived from the river. Such an axis, which perhaps Stonehenge sits astride in the real landscape, may have symbolically separated one sector from the other and perhaps created a series of simple binary oppositions as part of an interpretative scheme: the living separated from the dead, beginning from end, light from dark, summer from winter.

<sup>5</sup> See by way of illustration Hugh-Jones (1979) for riverside communities in Amazonia.

*Early third millennium BC*

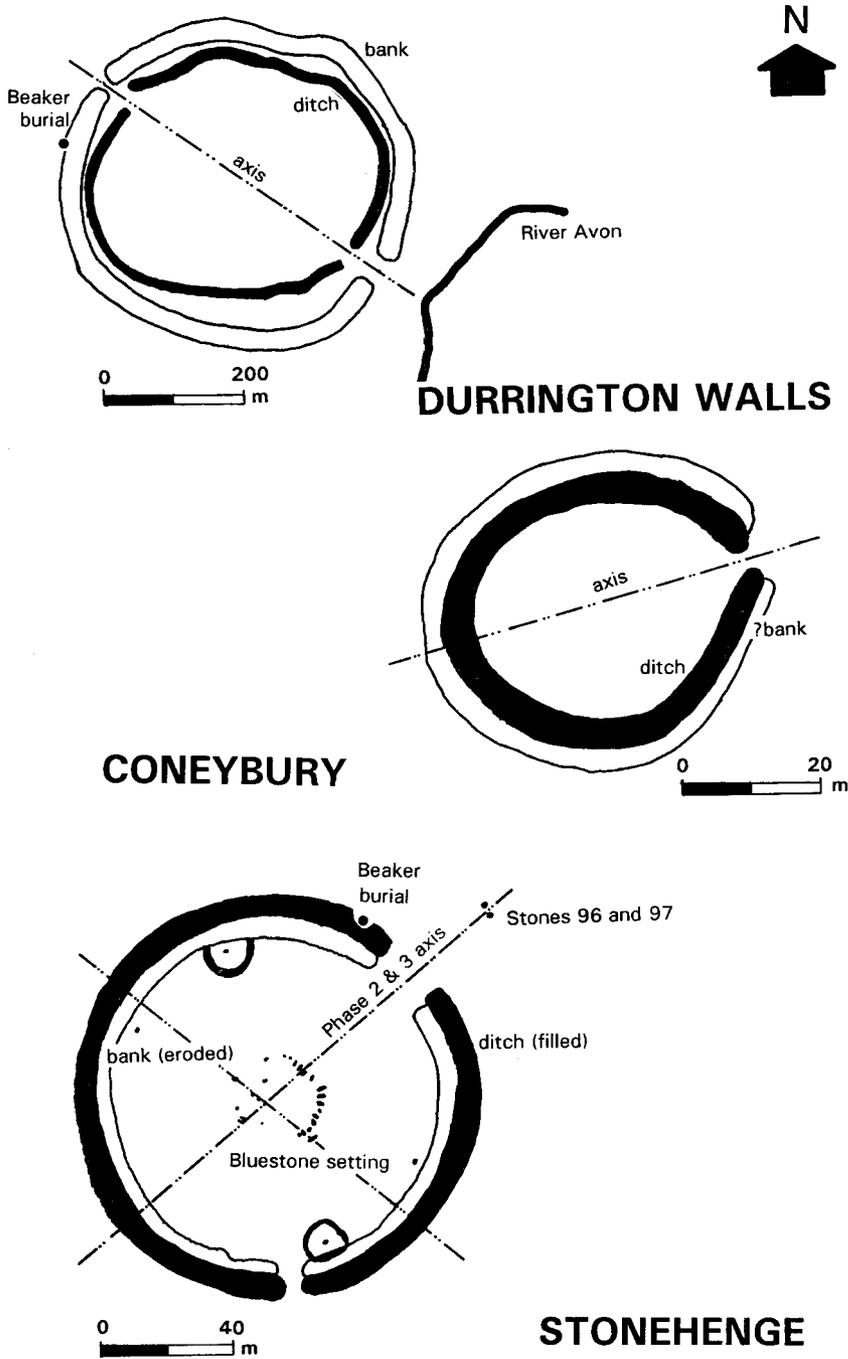
The early pattern of structuration at Stonehenge did not last long. Over a period from about 2900 BC through to 2400 BC (Phases 2 and 3i) the ditches were deliberately filled to the point where their course would have been lost from view in places. The bank also became reduced as it provided the main source of infill material. Included within this refilling are human burials and cremations. The posts which stood in the Aubrey Holes were probably removed, and timber structures and various alignments of posts constructed in the central area.

Activity around the north-east entrance was especially intensive. Professor Atkinson argued that after his Phase I, the north-east entrance was made wider by infilling the eastern ditch terminal and removing the former bank for a distance of *c.*8 m (1979, 73). This allowed the axis of the monument to shift 5° east onto the rising midsummer sun and the Avenue to be constructed with a neat junction onto the remains of the earlier enclosure boundary. Recent work suggests that the ditch filling was part of a more widespread phenomenon around the whole circuit, and that the Avenue was not added until later (Cleal *et al.* 1995, 139–40). Nevertheless, although the details of the sequence have changed, the realignment of the primary axis is clear enough.

Some of the post-settings in the interior and around the entrance are perhaps early manifestations of the revised solar alignment. Particularly relevant are features 3364 and 3362 flanking the centre of the site as these may define the place from which observations could be made. It is possible that the Heel Stone (Stone 96) and its neighbour Stone 97 were set up at this time and from the centre of the enclosure would have acted like a gun-sight to the midsummer rising sun (Pitts 1982; Burl 1991; 1992). The chronology and phasing of construction is vague, but other stones may also have been positioned outside the entrance area to fix the line of the solar axis. The four Station Stones (91–94) forming a rectangular setting inside the former enclosure can tentatively be assigned to Phase 2 or 3i; probably the earlier. Many supposed alignments have been based on these stones, the only very convincing ones being across each of the short axes of the rectangle onto the midsummer and midwinter solstices. All the others hinge on the use of other (sometimes hypothetical) markers, and/or the absence of any features in the centre of the monument which would have blocked views along the alignments. It is, however, noteworthy that two of the Station Stones are enclosed within ditches (sometimes called barrows): if Stonehenge 1 is correctly identified as a representation of its landscape, then the two enclosed stones correspond almost exactly to the relative position of Robin Hood's Ball and Ogbury in the real landscape.<sup>6</sup>

During Stonehenge 3i the solar axis is established for the first time as a stone structure in the centre of the site. This is the Bluestone Circle (Fig. 6). Again, recent work

<sup>6</sup> Ogbury Camp is a rather large hilltop enclosure of uncertain date, although in its visible form may reasonably be regarded as Iron Age. In the centre are slight traces of an earlier enclosure which might possibly be of Neolithic date. See Crawford and Keiller (1928, 150-2) for plan and photograph.



**Figure 6.** Stonehenge Phase 3i compared with Durrington Walls Henge-enclosure and Coneybury Henge. (After: Cleal *et al.* 1995, fig. 66; Wainwright and Longworth 1971, fig. 2; Richards 1990, fig. 97.)

has cast doubt on the geometrical regularity of the circle as originally proposed by Atkinson, Cleal and collaborators concluding that it may have been set out as a semi-circle or even a three-sided open rectangular arrangement with rounded ends (Cleal *et al.* 1995, 188). What is, however, clear is the elaboration of the putative entrance between R38 and R1 with a line of up to five stones flanking the entrance whereas the remainder of the circuit is marked by pairs of stones. This entrance follows the midsummer sunrise axis. Also important is the probable presence of a large stone, possibly the Altar Stone, in feature WA3639 directly opposite the entrance to the Phase 3i setting. The Altar Stone, which measures 4.9 m by 1 m by 0.5 m thick has never been fully investigated because it lies partly under the fallen remains of the Great Trilithon (Stones 55 and 156). Rather unusually, however, the Altar Stone is made of a micaceous sandstone believed to come from south-west Wales and is the only certain block of such stone known at Stonehenge (Cleal *et al.* 1995, 29).

The visual appearance of the Phase 3i setting remains speculative, although the presence of a number of cut and shaped bluestones around the site hints that it may have been more spectacular than its archaeological footprint might suggest. Lintelled structures around some of the perimeter is certainly possible, and the tongued and grooved stones may suggest an elaborate focal screen of some sort.

Stonehenge was not the only site receiving attention at this time. Much else was happening in the surrounding landscape and Stonehenge became the focus of a more tightly clustered ring of sites than in previous centuries (Fig. 7).

The Stonehenge Cursus was built about 1 km north of Stonehenge around 2700 BC.<sup>7</sup> One of the longer cursus in Britain with a length of about 3 km, the two ends are inter-visible on the ground, but because its central section crosses a shallow valley (Stonehenge Bottom) the ends are not always visible from within. At the east end is an earlier long barrow. The cursus is not straight, but subdivisible into three straight segments set slightly off-line to one another (Stone 1948; Christie 1963).<sup>8</sup> Projecting the line of the cursus eastwards there is a standing stone (the Cuckoo Stone), removed from its original position in relatively modern times. Beyond this again, on the same alignment, is Woodhenge, probably established around the middle of the third millennium BC.

North of Woodhenge is Durrington Walls, a massive henge-enclosure 490 m by 468 m with opposed entrances to the NW and SE. The south-eastern entrance opens to the river Avon. Radiocarbon dates suggest that the enclosure was first constructed 2800–2400 BC (Wainwright and Longworth 1971).

Of more or less the same date is Coneybury Henge to the south-east of Stonehenge. This small henge is only 40 m across along its greatest axis (Richards 1990, 109–58). Other monuments in the area include pits containing Grooved Ware, and burial monu-

<sup>7</sup> One radiocarbon date is available: 2878–2502 BC (2150±90 bc OxA-1403)

<sup>8</sup> The alignment of the cursus WSW to ENE means that on the equinox in March and September the sunrise and sunset can be viewed along its length, but since the idea of the equinox is generally regarded as a recent observational phenomenon it is here disregarded as being significant for prehistoric patterning.

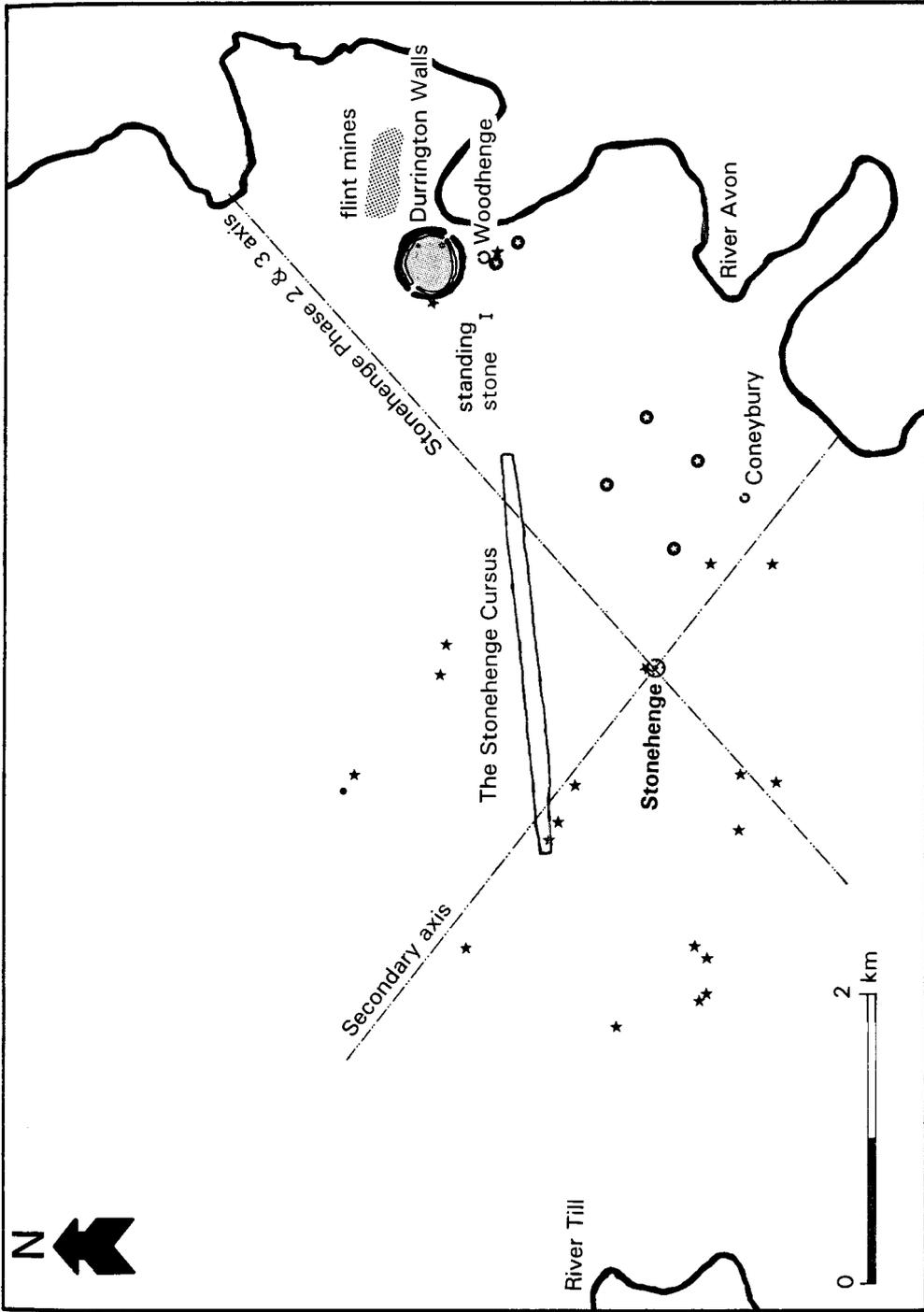


Figure 7. The Stonehenge landscape 2900–2400 BC. Beaker burials indicated by solid star-symbols; dots with central star-symbols indicate pit clusters. Contemporary bowl barrows are indicated with dots.

ments associated with Beaker pottery. Some flint mines are known to the north-west of Durrington Walls, and are also probably of this period (Booth and Stone 1952).

The midsummer sunrise axis is the most obvious axis visible at Stonehenge (Atkinson 1982), but it is not the only one. There are four key positions in the solar cycle: midsummer sunrise and sunset, and midwinter sunrise and sunset. The angle between midsummer sunrise and midwinter sunrise is about  $80^\circ$ , the same as between midwinter sunset and midsummer sunset. Risings are to the east, settings to the west. Thus the midsummer sunrise (here called the primary axis), can be projected backwards to the south-west where it aligns on the midwinter sunset. The secondary axis, roughly south-east to north-west, is more difficult to identify than the primary axis because of the rather partial plan of the Phase 3i settings. However, there are two unusual features belonging to this phase, WA3654 to the north-west and WA2321 to the south-east. Both are large stone-holes, although the stones that were set in them were removed in subsequent phases. WA2321 stands immediately outside the defined line of the bluestone setting; the same may also apply to W3654. The axis created by these two features bisects the primary solar axis at  $80^\circ$  near the notional centre of the bluestone setting (see Cleal *et al.* 1995, fig. 80). Moreover, the same north-west to south-east axis is well represented at Durrington Walls where it is marked by the alignment of the two main entrances into the enclosure.

This simple solar scheme, more or less in the form of a cross with a primary and secondary axis, can be projected onto the landscape (Fig. 7) outwards from Stonehenge to create two potentially significant axes defining four quarters. One interesting feature of this is the way that the projected alignments intersect the line of the cursus at just the places where its width changes slightly: it is narrower at the ends compared with the central part.

The linear quadruple partitioning of space also finds expression in the distribution of monuments and artefacts. The eastern sector contains sites which have been associated with feasting (Durrington Walls and Coneybury Henge). As Table 1 shows, the highest proportion of Beaker Age burials (58%) lie in the western sector. By contrast, over 85% of Grooved Ware findspots lie in the eastern sector (Table 2), while 62% of Beaker pottery findspots lie in the north and west sectors. Flint-mining and extensive flint-knapping are known only in the eastern and southern sectors.

Further support for the four-fold partitioning of space can be found in the decoration applied to artefacts of the period and later. Figure 8 shows a small selection. The engraved chalk plaque from a pit beside the A303 near King Barrow Ridge has a rather angular

**Table 1.** Distribution of Beaker burials in the area around Stonehenge by quarter

	North	East	South	West
Beaker burials	8%	16%	16%	58%
	(1)	(2)	(2)	(7)

**Table 2.** Distribution of pottery types in the area around Stonehenge by quarter

	North	East	South	West
Peterborough Style	18% (4)	22% (5)	35% (8)	25% (6)
Grooved Ware	0% (0)	85% (12)	15% (2)	0% (0)
Beaker Pottery	21% (7)	13% (4)	25% (8)	41% (13)

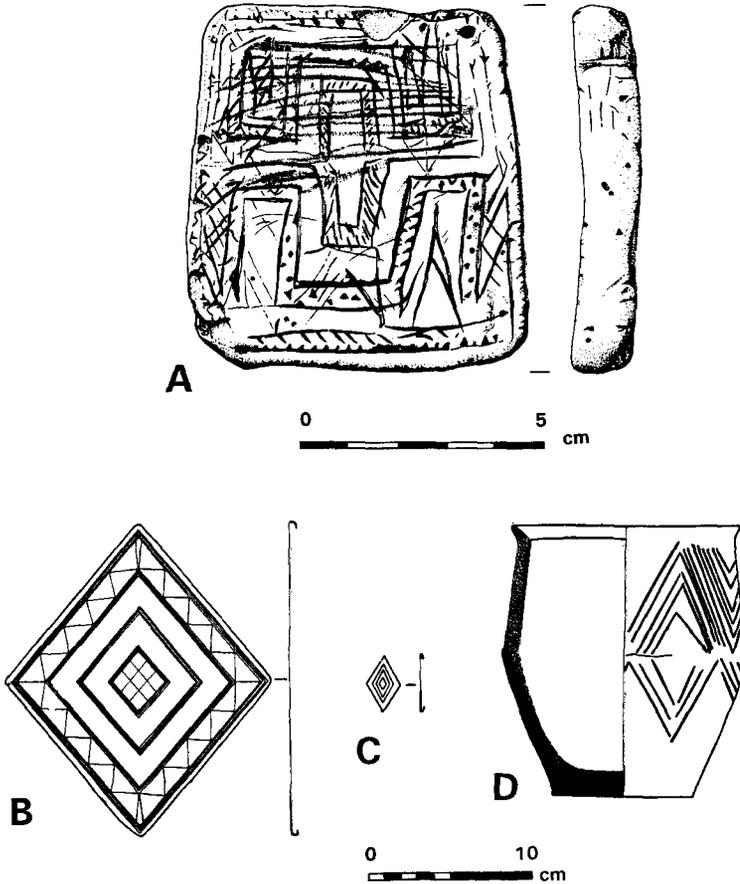
outline to its depiction of intersecting axes (Fig. 8A). Later pieces, including the beaker from Wilsford G62 barrow (Fig. 8D) and the goldwork from Bush Barrow (Fig. 8B and C), show a lozenge-shaped depiction of the same thing. The larger of the two Bush Barrow lozenges is especially interesting as Alexander Thom and others have claimed it was a template or map for the construction of Stonehenge (Thom *et al.* 1988); here it is argued the piece was designed in the light of broader inherited ideas about the organisation of space.<sup>9</sup>

Individual sites around Stonehenge also perpetuate one or other of the significant solar axes. Durrington Walls, for example has the south-east to north-west axis, while Coneybury has a midsummer sunrise axis adjusted to accommodate the different configuration of hills. Both Stonehenge and Durrington Walls are known to have Beaker Age burials on the outside of their boundaries (Evans 1984; Wainwright and Longworth 1971, fig. 2), interestingly both to the right of anyone approaching the entrance from the outside (cf. Fig. 6).

Overall, therefore, a common set of arrangements and alignments seem to have significance in the landscape as a whole, in the layout and design of sites of the period, and in the motifs used for the decoration of some objects.

An interest in solar events seems to be common to all these patterns, and represents the only uncontested astronomical alignments at Stonehenge itself. Interest in the sun became common over much of Europe during the mid third millennium BC. This might in part be attributed to the adoption of Beakers and the ideas associated with them. So-called gold 'sun-discs' are among the earliest objects bearing solar imagery to achieve a wide circulation (Case 1977). However, solar cosmology also occurs in non-Beaker contexts too. Colin Richards (1993) has examined its implications with reference to a range of dwellings, sacred structures, henges and tombs in Orkney. He found a high correspondence between architectural form and a putative central place of the sun in the lives of the communities who built the structures. In Ireland the developed passage graves of the Boyne Valley embody solar alignments: Newgrange, for example, was constructed

<sup>9</sup> Burgess (1980, 113) assigns the Bush Barrow grave goods to early metalworking Stage VI, equivalent to Reinecke A2 in Europe, and spanning the early second millennium BC.



**Figure 8.** Material culture with symbolic representations of linear quadruple structuring of space. A: Chalk plaque from King Barrow Ridge, Amesbury. B and C: Gold lozenges from the Bush Barrow (Wilsford cum Lake G5), Wilsford. D: Beaker from the primary burial in bowl barrow Wilsford cum Lake G62, Wilsford. (A after Harding 1988, fig. 2; B-D after Annable and Simpson 1964, items 135, 168, and 177.)

about 3291–2929 BC (GrN-5462) in such a way that the midwinter sunrise illuminated the central chamber (O’Kelly 1982, 122–5). Passage grave art, especially the circles and radial line motifs (Shee Twohig 1981, 107), may include solar imagery, a position not necessarily diminished by Dronfield’s (1996) interpretations which suggest a link with altered states of consciousness and the desire to provide a symbolic means of access between real and supernatural worlds.

As for earlier patterns it is impossible to get at the stories and myths that lie behind the solar cosmologies, even though the main element is visible. The farthest we can go is perhaps the development of patterns of association from the disposition of monuments in the landscape and objects in monuments. In this case, two sectors, the eastern and

**Table 3.** Provisional set of cosmological associations for early third millennium BC Wessex

	(NORTH) Earth Cold	
(WEST) Sunset Death Burial places Darkness Winter Fire Cooking	Sun Hearth Transformation	(EAST) Sunrise Life Settlements Light Summer Water Feasting
	(SOUTH) Sky Warm	

western, seem especially significant. The eastern sector was strongly associated with sunrise, new beginnings, life, light, fertility, feasting, water, and the earth. The western sector with sunset, endings, death, darkness, quietness, and the sky. Table 3 provides a provisional summary of these associations in schematic form. Movement between and within different areas may, at certain times at least, have been strictly controlled. If the above pattern of associations has any utility then perhaps the cursus served to structure movement between life and death in the landscape: a pathway for the soul?

#### *Later third and early second millennia BC*

The patterns established during the early third millennium BC continued for a thousand years or more as the basic elements of a quartering of space became more embedded in the things people did. To it was added another dimension, an interest in concentric patterns which in due course may have taken over from or complemented the four-fold partitioning of space.

At Stonehenge itself the general pattern is at its most clear. Phases 3ii-3vi represent the successive remodelling, perhaps every hundred years or so, of the same basic concepts. It was a process still going on in the years around 1600 BC if the dates from the antlers in Y-Hole 30 are any guide to works that were never finished.

The addition of further stones at the north-eastern entrance in Phase 3iii, and the Avenue in Phase 3iv, must have produced an entry rather similar to the stone-defined passage envisaged by Aubrey Burl (1994) on the basis of excavated stone-holes and anti-quarian depictions. If there were indeed stones set at intervals along the Avenue as far as Stonehenge Bottom, as slight anomalies revealed by geophysical surveys suggest (Cleal *et al.* 1995, 506), then there must have been a spectacular approach to the site.

No new alignments seem to have been added to Stonehenge which retained its solar

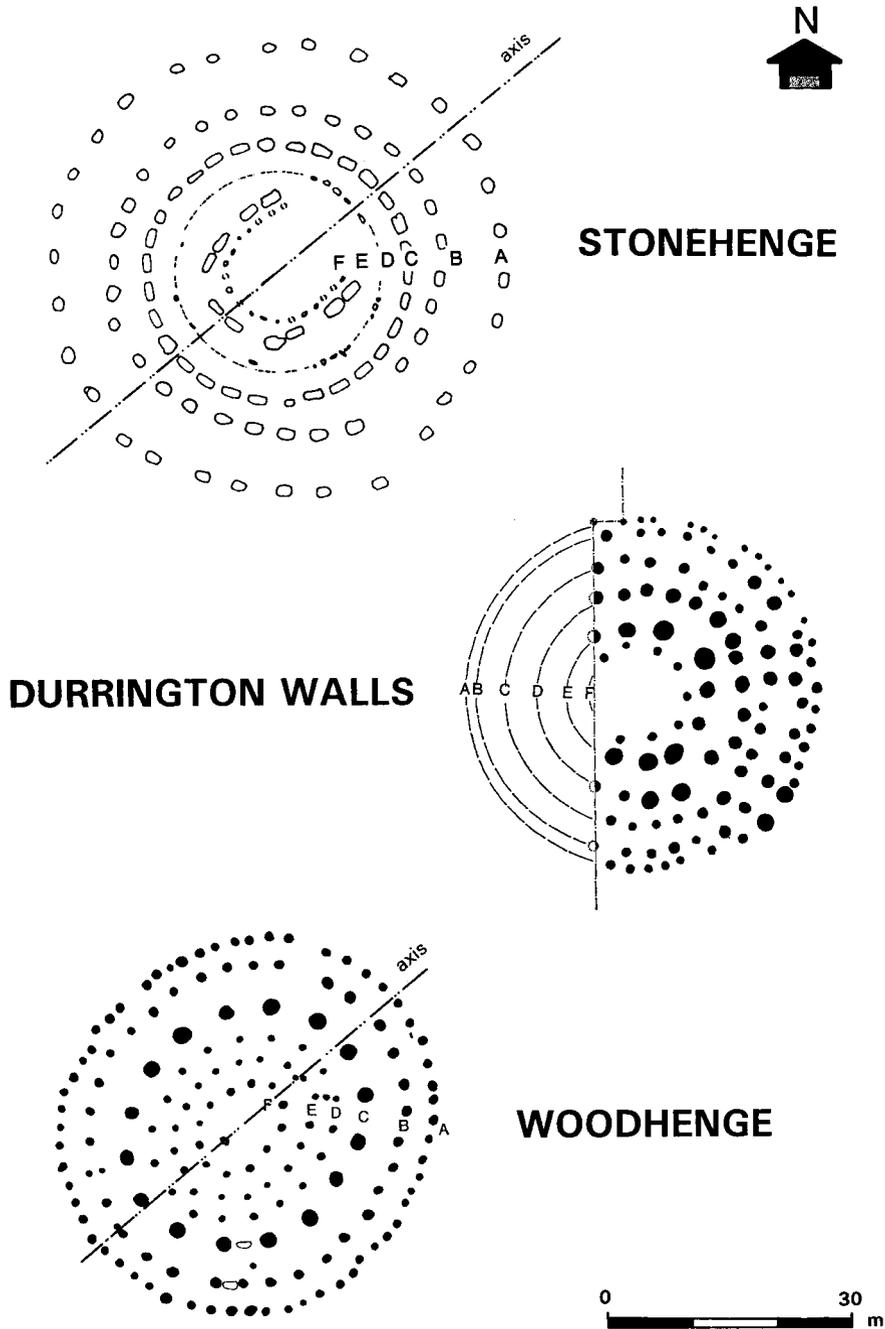
orientation, but at other sites in the area the idea of concentric arrangements becomes more prevalent. Inside Durrington Walls, the Southern Circle was, in its first phase, a modest circular building. This was replaced by a massive timber lodge with six concentric rings of posts and a maximum diameter of 39 m (Fig. 9).<sup>10</sup> Radiocarbon dates put the age of the timbers used for this structure at between 2500 and 2100 BC, two or three centuries later than the construction of the earthwork boundary and perhaps broadly contemporary with Stonehenge 3iv or 3v. Durrington Walls generally takes the secondary axis (see above for the main enclosure) and the South Circle is no exception; the main entrance is to the south-east (Wainwright and Longworth 1971, fig. 84). A study by Colin Richards and Julian Thomas (1984) of the disposition of finds within the excavated section of Durrington Walls revealed differences in the range of material found in the Southern Circle as compared with other contexts on the same site, and that within there were distinctions between the range and quantity of material found in the outer areas as against the inner rings.

The structure inside Woodhenge is not adequately dated, but presumably should be set after the construction of the earthwork enclosure around 2200–2000 BC. It too has six concentric rings of posts. Like Stonehenge it has an axis on the midsummer sunrise (Cunnington 1929, pl. 4). An analysis by Joshua Pollard (1992; 1995) of material found inside Woodhenge shows clear patterning in the deposition of pig bones around and outside of post-hole circuit C, mainly in the south-east and north-east quadrants, and the deposition of carved chalk around post-hole circuit C in the south-east quadrant. Two axes were found at Woodhenge, both on the east side of the axis (Pollard 1992, 223).

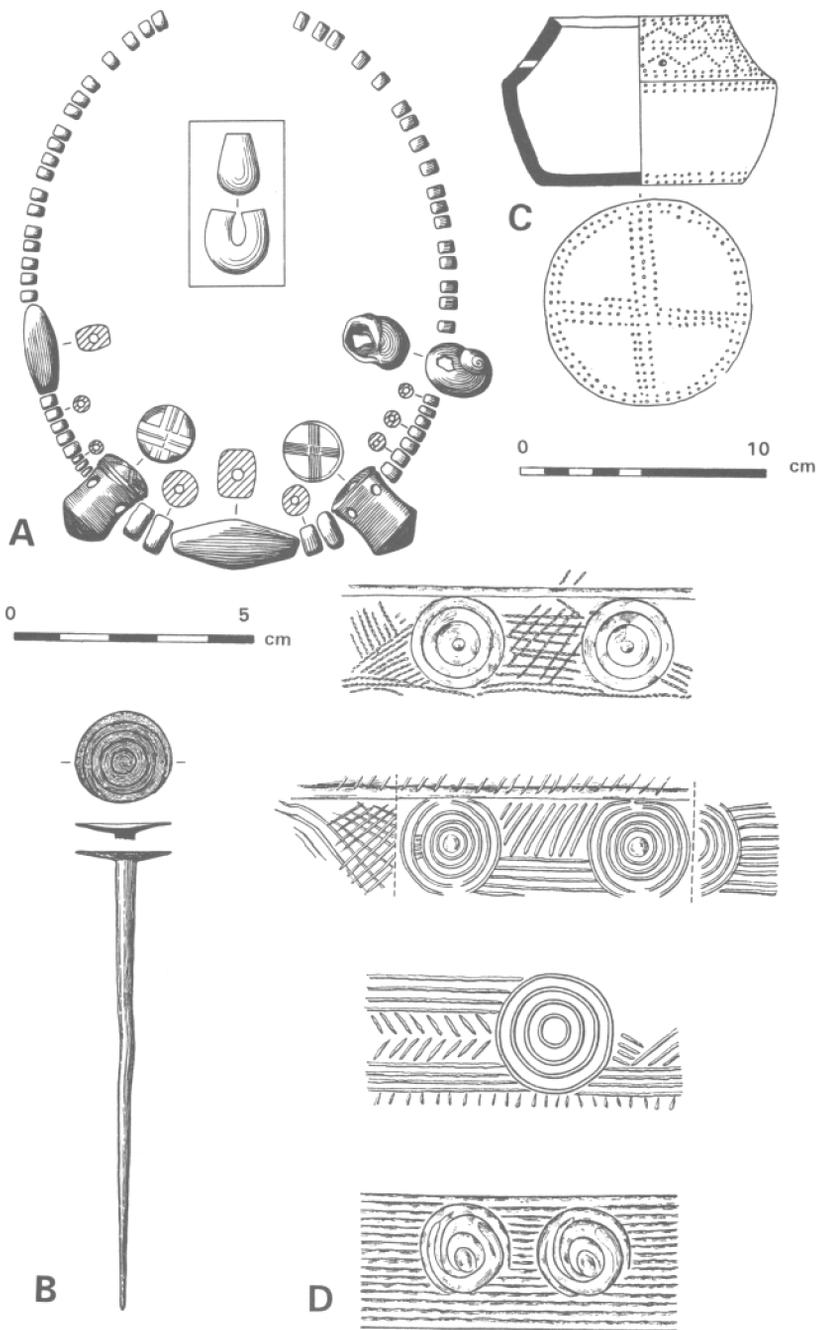
In its final form, Stonehenge 3vi also had six concentric rings, although the outer pair (X and Y holes) seemingly never contained stones. Also, the central settings have a horseshoe plan open to the north-east. The numerous axe carvings at Stonehenge are all to the east of the primary solar axis.

The cross and concentric ring patterns are frequently applied motifs on Later Neolithic and Early–Middle Bronze Age artefacts. Figure 10 shows a selection from different phases. Particularly fine are the cross motifs on two beads in a necklace from the G5j barrow: both show in detail the intersection of the sunrise/sunset axes (see Figs 7 and 11) which differs slightly from a simple cross where the axes intersect at right-angles. The same applies to the base of the incense cup from Wilsford G40. This also includes the concentric circles motif. Concentric circles are also present on Grooved Ware pottery of the Durrington Walls sub-style, although rather rarely. At Durrington Walls, six groups of sherds carrying the motif were found, all but one in direct association with Phase 2 of the Southern Circle or its external midden. Three of the groups were in post-holes at the entrance to the structure (Wainwright and Longworth 1971, 140–3). A few sherds were also found at Woodhenge (Cunnington 1929, pl. 26). The pin from the ditch

<sup>10</sup> Six of these large timber structures have been recorded in England to date, mainly through aerial photography (Darvill 1996a). More no doubt await discovery.



**Figure 9.** Stonehenge Phase 3vi (c.2030–1520 BC) compared with Woodhenge (after c.2283–2047 BC), and Phase 2 of the Southern Circle at Durrington Walls (after c.2580–2147 BC). (Stonehenge after Cleal *et al.* 1995, fig. 257; Durrington Walls after Wainwright and Longworth 1971, fig. 84; and Woodhenge after Wainwright and Longworth 1971, fig. 115.)



**Figure 10.** Material culture with symbolic representations of radial concentric structuring of space. A: Bead necklace from bowl barrow Shrewton G5j. B: Bronze pin from bell barrow Shrewton G5L. C: Incense cup from bowl barrow Wilsford cum Lake G40, Wilsford. D: Grooved Ware decorative motifs. (A and B after Green and Rollo-Smith 1984, figs 27 and 28; C after Annable and Simpson 1964, item 449; D after Wainwright and Longworth 1971, fig. 29.)

of barrow Shrewton G5L also has the concentric pattern on its head and represents, in chronological terms, the opposite end of the date-range to that just noted from the Grooved Ware. During the second millennium BC, solar imagery was extremely widespread in northern Europe (Coles and Harding 1979, 314).

Applying the radial concentric model of structuration into the broader landscape is fraught with problems, not least because of the huge amount of data which is in large measure undifferentiated by date. Round barrows were constructed in great numbers, mostly within round barrow cemeteries. Links with the past are demonstrated by the fact that some barrow cemeteries included, and perhaps focused on, earlier long barrows; the legitimation of new orders through an appeal backwards in time to the old. In the Winterbourne Stoke Barrow Cemetery the earliest barrow is the long barrow. The later round barrows are set out fairly regularly with one main axis (now marked by a fence line) and a series of outliers. The long barrow has a dominant axis too but it is actually a few degrees west of the later axis. In all, the cemetery contains 20 round barrows including bowl, bell, disc, saucer, and pond barrow forms.

Figure 11 shows a provisional scheme for the late third and early second millennia BC which attempts to show possibilities rather than defined patterns. All the four main sectors established in earlier times now include barrows, while the distribution of settlements has apparently extended westwards. Around Stonehenge itself there seems to be a small area in which barrows were permitted. Beyond is an area where they are absent, the outer edge of which coincides with the distant end of the Avenue in Stonehenge Bottom. Linear barrow cemeteries are common in the third ring out from Stonehenge, while dispersed cemeteries are most numerous in areas beyond. Although these patterns are not as strongly structured as in other periods, research by Ann and Peter Woodward from a completely different starting position has established much the same patterning (Woodward and Woodward forthcoming).

During the early second millennium BC most of the monuments in use during the previous 500 years were abandoned; Stonehenge was an exception. As already noted, settlements became established further to the west than previously and cemeteries further to the east. Gradually, the area around Stonehenge seems to have changed from being arranged as sectors to being structured concentrically, with a ring of major barrow cemeteries positioned to overlook Stonehenge itself with, around and between them, modest settlements. The full implications of the symbolic arrangement of this landscape have yet to be explored. The construction of the Avenue may in this scenario be seen as a replacement for the Cursus, allowing movement on a different axis through the landscape towards Stonehenge, now with death to the right and life to the left; leaving Stonehenge down the Avenue literally involved walking into the sun along the defined alignment with death to the left and life to the right.

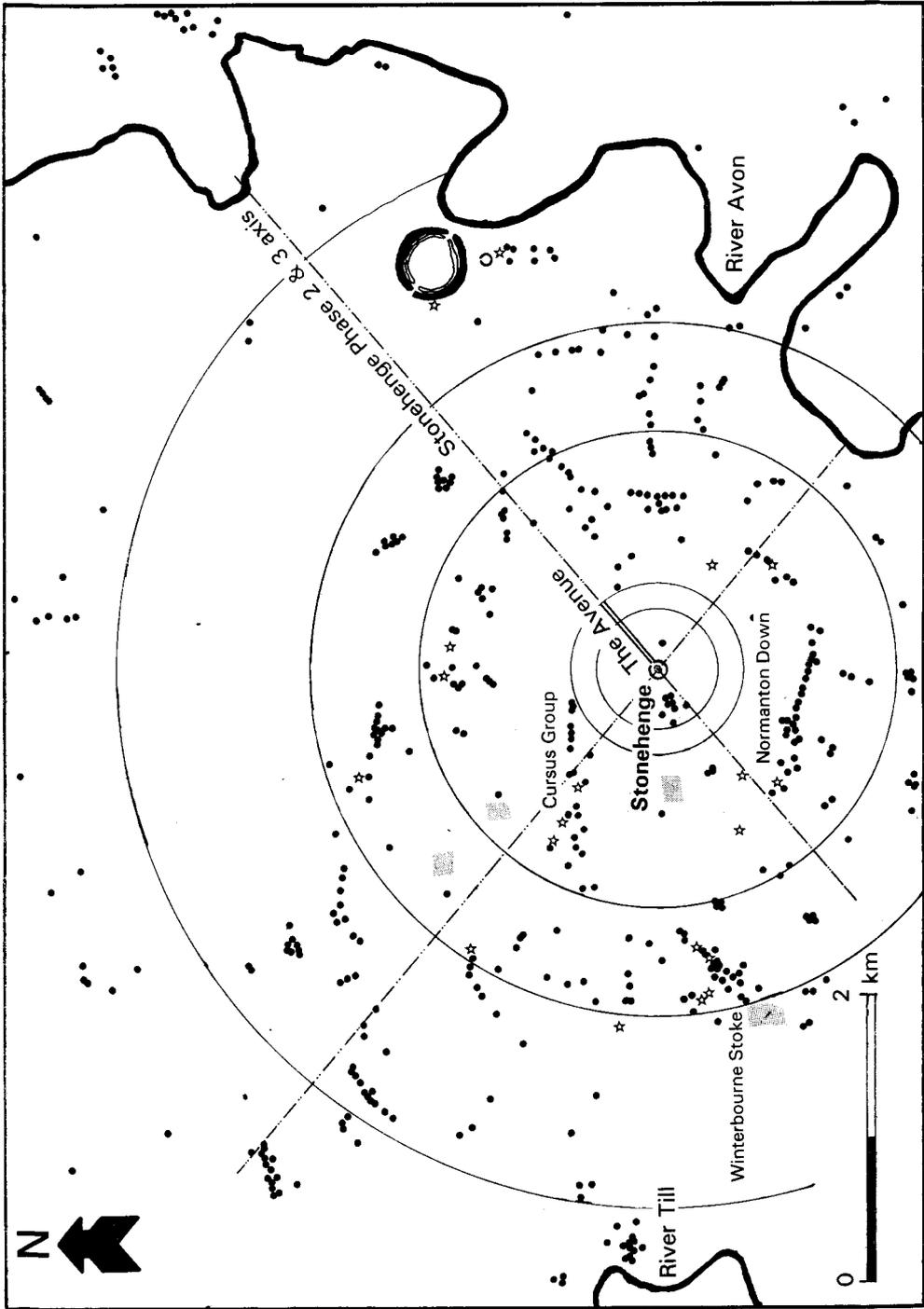


Figure 11. The Stonehenge landscape 2400-1500 BC. Round barrows are indicated with dots; open star-symbols indicate round barrows with beaker burials; settlement areas are indicated by stippling.

*Late second millennium BC*

Change continued. In what is conventionally the Middle and Later Bronze Age (c.1500–700 BC), the area around Stonehenge became subject to a more diverse range of uses. Stonehenge was not modified much during this period although continued to play a role in people's lives. There is a case to be made for the extension of the Avenue from Stonehenge Bottom to the river Avon at Amesbury around 1000 BC,<sup>11</sup> and this alteration in the relationship between Stonehenge and its landscape may reflect changing belief systems. Richard Bradley (1990, 97–154) has usefully brought together available evidence for an emergent preoccupation with water and wet places during the late second and early first millennia BC in northern Europe (but cf. Case 1991), so the creation of a formal link between Stonehenge and the river Avon should perhaps be seen as an inevitable and natural development. In some respects this could be seen as a return to the associations prevalent 1500 years earlier, but if the focus of attention was the same, the cosmology behind it was almost certainly different.

Burial arrangements also changed. Deverel-Rimbury style urns containing cremation burials are known in small bowl barrows and flat cremation cemeteries connected with round barrow cemeteries. Some barrow cemeteries were extended and a few new round barrows were built. They provide an element of repetition across the landscape, and together they document a continuing link between life and death in the landscape. Settlements are known near Fargo Plantation and elsewhere, and five main blocks of regular aggregate fieldsystem can be identified, perhaps fragments of one or two original systems.

Overall, the area around Stonehenge was extensively, and in places intensively, utilised by the Later Bronze Age. The linear boundaries which criss-cross the area suggest also that its control had been subdivided to the extent that the concentric arrangement had broken down and a more linear subdivision of space established, each such strip incorporating a portion of land in the surrounding valleys as well as the more exposed upland around Stonehenge itself. Figure 12 shows a provisional arrangement. The structuration of space on a linear concentric system may reflect the practical realities of land apportionment in an agrarian society. The decorative schemes on artefacts of the period, especially pottery (Fig. 13), perhaps show concerns with the almost regimental subdivision of land: the decoration on the miniature vessel from Winterbourne Stoke G68 could almost be a stylised map of the fields and boundaries shown on Figure 12.

## Discussion

The four successive phases just described provide a picture of the changing landscape around Stonehenge over a period of some 25 centuries. Throughout that time, as at any

<sup>11</sup> See Cleal *et al.* 1995, 326–7 for summary of the debate.

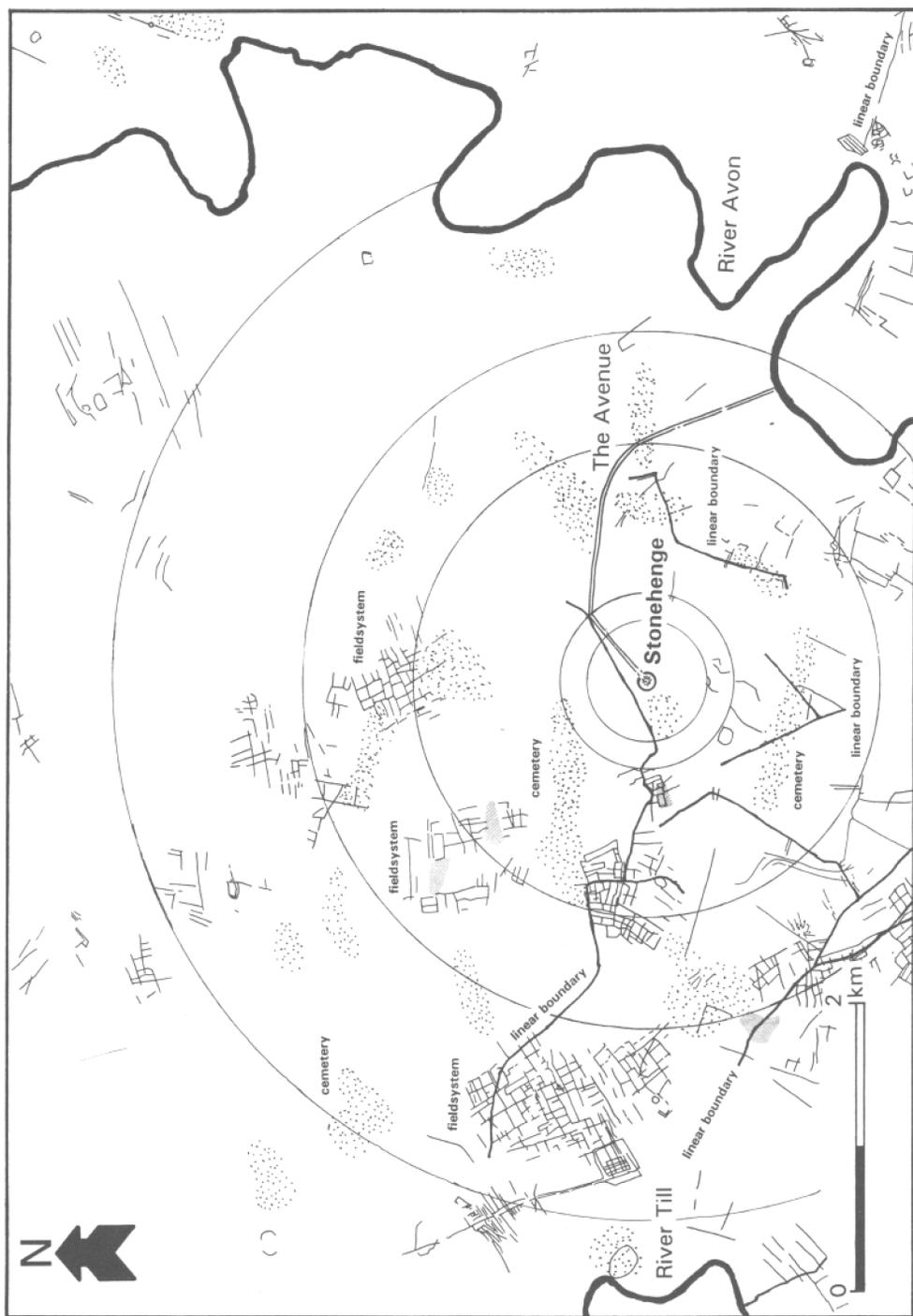
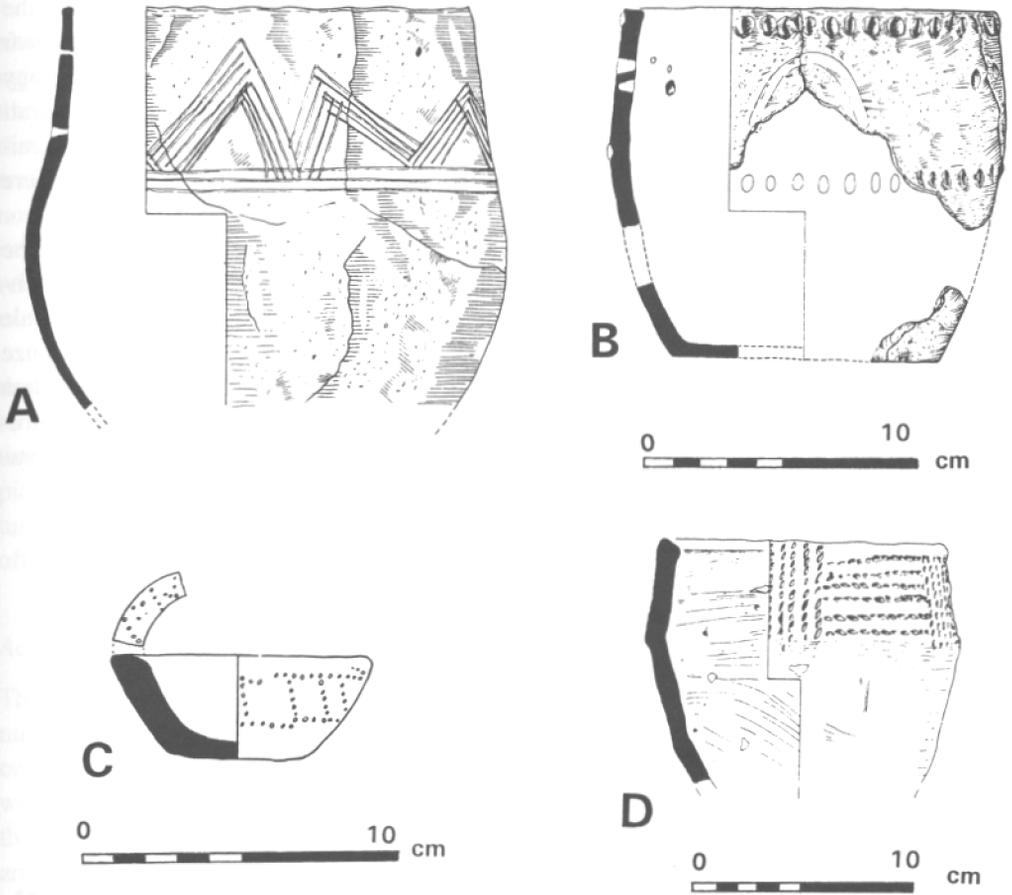


Figure 12. The Stonehenge landscape 1500–1000 BC. The position of round barrow cemeteries are indicated by coarse stipple; settlement areas are indicated by fine stipple.



**Figure 13.** Material culture with symbolic representations of linear concentric structuring of space. A and B: Globular and bucket urns from bowl barrow Shrewton G5a. C: Miniature vessel from primary burial in disc barrow Winterbourne Stoke G68; D: Urn from barrow Winterbourne Stoke G46. (A and B after Green and Rollo-Smith 1984, fig. 25; C after Annable and Simpson 1964, item 455; D after Gingell 1988, fig. 34.4.)

other, the values that people attached to different segments of the space all around them were deeply grounded in the cosmologies and belief systems that they held. These would have extended into the realm of explaining their very existence, right from wrong, and many other things too. The structuration inherent in the cosmological schemes used carry through into the domain of material culture and these can be studied archaeologically at many different scales. Indeed, it is only through the investigation of patterns in landscapes, structures and objects that some of these regularities become evident.

Looking across time two forces can be seen pulling against one another: continuity and modification. Some elements of a structure are selectively retained while others are

dispensed with. Figure 14 shows in summary form the progression in stages of the proposed structuring principles that underlie the social use of space. Thus the simple linear binary system of the fourth millennium BC, based perhaps on a terrestrial cosmology involving the separation of life and death, continued to influence sectoring in the landscape during the early third millennium BC. But by this time the sun had become a signifier of arrangements and where previously there had been two sectors now there were four.

The sun seems to have remained an important feature of later cosmologies as the formal quartering of space gave way to an increased emphasis on centrality and a concentric mode of differentiation. Separations between life and death became more small-scale and localised. Burial areas influenced the use of space in the Middle and Later Bronze Age as fields and settlements jostled for position in a countryside more crowded than ever before. By the end of the second millennium BC a new linearity was being introduced into the structuration of the landscape, the form of fieldsystems, and the decorative motifs applied to pottery.

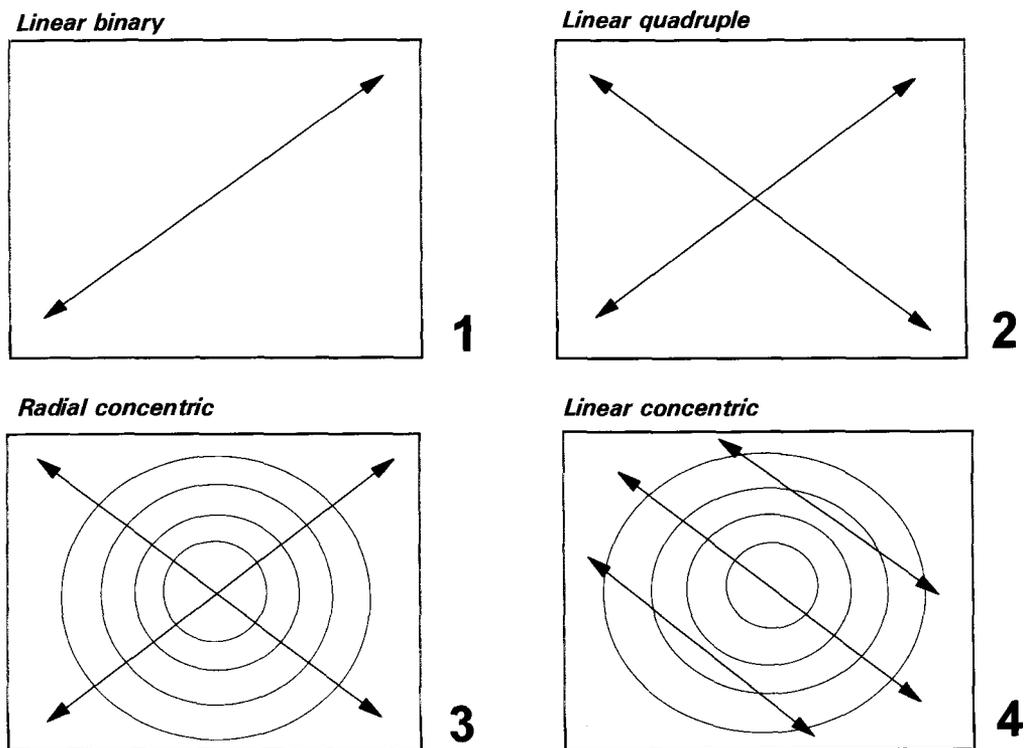


Figure 14. Summary of the structuration implicit in the four successive cosmological schemes proposed for the period 3000–1000 BC in central Wiltshire, England.

Throughout these changes there was no one Stonehenge but many. The space was always there but each generation gave it a different sense of place with meanings and values in accord with the ever-changing relationships between themselves and the beliefs they held. The centrality of Stonehenge relative to the lives of local people and the fact that it was reformed as beliefs changed surely endorses the general idea of the site as temple. And for part of its history at least there were a small number of significant astronomical alignments built into its design. However, the process of recurrent structuration is at once both a unique feature of the site and the source of its great mystery: what did relate to what at each of its different incarnations?; how much was retained for ongoing use and how much destroyed?

In the twelfth century AD, Henry of Huntingdon wrote in his history of England that Stonehenge had been erected in the manner of doorways, so that doorway appears to have been raised upon doorway (Chippindale 1983, 20). Turning outwards to look through those doorways at the sacred geography of the site and its surroundings, the picture perhaps subtly changes to one of ever-increasing circles of space, place, and structuration arranged so that each circle appears to have been set within another, their edges often obscured.

#### *Acknowledgements*

The work of producing this paper has benefited enormously from the assistance of a number of individuals: Nicola King was responsible for the assembly of much of the data on which this study is based; Miles Russell, Jeff Chartrand, and Claire Baker helped with bibliographic and computing queries; Jane Timby helped check the text and prepare the illustrations; and Ann Woodward, Peter Woodward, Barry Cunliffe, Colin Renfrew, and Humphrey Case kindly offered comments and helpful criticism after reading drafts of the main text.

### References

- ANNABLE, F.K. and SIMPSON, D.D.A. 1964: *Guide catalogue of the Neolithic and Bronze Age collections in Devizes Museum* (Devizes, Wiltshire Archaeological and Natural History Society).
- ASHBEE, P., BELL, M. and PROUDFOOT, E. 1989: *Wilsford Shaft: Excavations 1960-62* (London, Hist. Build. Monuments Comm. Archaeol. Rep. 11).
- ATKINSON, R.J.C. 1956: *Stonehenge* (London).
- ATKINSON, R.J.C. 1979: *Stonehenge* (Harmondsworth, revised ed.).
- ATKINSON, R.J.C. 1982: Aspects of the archaeoastronomy of Stonehenge. In Heggie, D.C. (ed.), *Archaeoastronomy in the Old World* (Cambridge), 107-16.
- BAUVAL, R. and GILBERT, A. 1994: *The Orion mystery* (London).
- BENDER, B. 1992: Theorising landscapes, and the prehistoric landscapes of Stonehenge. *Man* (ns) 27, 735-55.
- BENDER, B. (ed.) 1993: *Landscape: Politics and perspectives* (Oxford).

- BOOTH, A.StJ. and STONE, J.F.S. 1952: A trial flint mine at Durrington, Wiltshire. *Wiltshire Archaeol. Mag.* 54, 381–8.
- BRADLEY, R. 1983: The bank barrows and related monuments of Dorset in the light of recent field-work. *Proc. Dorset Natur. Hist. Archaeol. Soc.* 105, 16–20.
- BRADLEY, R. 1990: *The passage of arms. An archaeological analysis of prehistoric hoards and votive deposits* (Cambridge).
- BRITNELL, W. and SAVORY, H.N. 1984: *Gwernvale and Penywyrlod: Two Neolithic long cairns in the Black Mountains of Brecknock* (Cardiff, Cambrian Archaeol. Assoc. Monogr. 2).
- BURGESS, C. 1980: *The Age of Stonehenge* (London).
- BURL, A. 1987: *The Stonehenge people* (London).
- BURL, A. 1991: The Heel Stone, Stonehenge: A study in misfortunes. *Wiltshire Archaeol. Mag.* 84, 1–10.
- BURL, A. 1992: More about the Heel Stone. *Wiltshire Archaeol. Mag.* 85, 140.
- BURL, A. 1994: Stonehenge: Slaughter, sacrifice and sunshine. *Wiltshire Archaeol. Mag.* 87, 85–95.
- CARMICHAEL, D.L., HUBERT, J., REEVES, B. and SCHANCHE, A. (eds) 1994: *Sacred Sites, Sacred Places* (London, One World Archaeology 23).
- CASE, H.J. 1977: An early accession to the Ashmolean Museum. In Markotic, V. (ed.), *Ancient Europe and the Mediterranean* (Warminster), 18–34.
- CASE, H.J. 1991: Review of "The Passage of Arms" By Richard Bradley. *Proc. Prehist. Soc.* 57.2, 232–34.
- CHIPPINDALE, C. 1983: *Stonehenge complete* (London).
- CHIPPINDALE, C. 1986a: Stoned Henge: events and issues at the summer solstice 1985. *World Archaeol.* 18(1), 38–58.
- CHIPPINDALE, C. 1986b: Stonehenge astronomy: Anatomy of a modern myth. *Archaeology* January/February 1986.
- CHIPPINDALE, C., DEVEREUX, P., FOWLER, P., JONES, R. and SABASTIAN, T. 1990: *Who owns Stonehenge?* (London).
- CHRISTIE, P.M. 1963: The Stonehenge Cursus. *Wiltshire Archaeol. Mag.* 58, 370–82.
- CLEAL, R.M.J., WALKER, K.E. and MONTAGUE, R. 1995: *Stonehenge in its Landscape: Twentieth Century Excavations* (London, Engl. Heritage Archaeol. Rep. 10).
- COE, M. 1993: *The Maya* (London, 5th ed.).
- COLES, J.M. and HARDING, A.F. 1979: *The Bronze Age in Europe* (London).
- COSGROVE, D. 1985: Prospect, perspective and the evolution of the landscape idea. *Trans. Inst. Brit. Geogr.* (ns) 10, 45–62.
- COSGROVE, D. and DANIELS, S. (eds) 1988: *The Iconography of Landscape* (Cambridge).
- CRAWFORD, O.G.S. and KEILLER, A. 1928: *Wessex from the Air* (Oxford).
- CUNNINGTON, M.E. 1929: *Woodhenge* (Devizes).
- DARVILL, T. (ed.) 1991: *Stonehenge Conservation and Management Project: Environmental Statement* (London, 3 vols).
- DARVILL, T. 1996a: Neolithic buildings in England, Wales and the Isle of Man. In Darvill, T. and Thomas, J. (eds), *Neolithic houses in north-west Europe and beyond* (Oxford, Neolithic Studies Group Seminar Pap. 1 and Oxbow Monogr. 57), 77–111.
- DARVILL, T. 1996b: *The Billown Neolithic Landscape Project, Isle of Man, 1995* (Bournemouth, School of Conservation Science Res. Rep. 1).
- DRONFIELD, J. 1996: Entering alternative realities: Cognition, art and architecture in Irish passage-tombs. *Cambridge Archaeol. J.* 6.1, 37–72.
- EVANS, J.G. 1984: Stonehenge – The environment in the Late Neolithic and early Bronze Age and a Beaker-Age burial. *Wiltshire Archaeol. Mag.* 78, 7–30.

- GIDDENS, A. 1984: *The constitution of society* (Cambridge).
- GINGELL, C. 1988: Twelve Wiltshire round barrows. Excavations 1959 and 1961 by F. de M. and H.L. Vatcher. *Wiltshire Archaeol. Natur. Hist. Mag.* 82, 19–76.
- GLASS, P. 1988: Trobriand symbolic geography. *Man* (ns) 23, 56–76.
- GREEN, C. and ROLLO-SMITH, S. 1984: The excavation of eighteen round barrows near Shrewton, Wiltshire. *Proc. Prehist. Soc.* 50, 255–318.
- GRINSELL, L.V. 1957: Archaeological Gazetteer. In Pugh, R.B. (ed.), *Victoria County History of Wiltshire. Volume 1.1* (London, Institute of Historical Research), 21–279.
- HARDING, P. 1988: The chalk plaque pit, Amesbury. *Proc. Prehist. Soc.* 54, 320–6.
- HAWKINS, G.S. 1966: *Stonehenge decoded* (London).
- HODDER, I. 1987: Converging traditions: The search for symbolic meaning in archaeology and geography. In Wagstaff, M. (ed.), *Landscape and culture* (Oxford), 134–45.
- HODSON, F.R. (ed.) 1974: *The place of astronomy in the ancient world* (London, The British Academy).
- HUGH-JONES, C. 1979: *From the Milk River: Spatial and temporal processes in Northwest Amazonia* (Cambridge).
- INGOLD, T. 1993: The temporality of landscape. *World Archaeol.* 25(2), 152–74.
- LEFEBVRE, H. (trans. Nicholson-Smith, D.) 1991: *The production of space* (Oxford).
- LOCKYER, SIR N. 1909: *Stonehenge and other British stone monuments astronomically considered* (London).
- MORTIMER, J.R. 1905: *Forty years researches in British and Saxon burial mounds of east Yorkshire* (London).
- NEWHAM, C.A. 1972: *The astronomical significance of Stonehenge* (Shirenewton).
- NEWTON, R.R. 1974: Astronomy in ancient literate societies: Introduction to some basic astronomical concepts. In Hodson, F.R. (ed.), *The place of astronomy in the ancient world* (London, The British Academy), 5–20.
- O'KELLY, M.J. 1982: *Newgrange. Archaeology, art and legend* (London).
- PITTS, M. 1982: On the road to Stonehenge: report on the investigations beside the A344 in 1968, 1979 and 1980. *Proc. Prehist. Soc.* 48, 75–132.
- POLLARD, J. 1992: The Sanctuary, Overton Hill, Wiltshire: a re-examination. *Proc. Prehist. Soc.* 58, 213–26.
- POLLARD, J. 1995: Structured deposition at Woodhenge. *Proc. Prehist. Soc.* 61, 137–56.
- RCHM 1979: *Stonehenge and its environs* (Edinburgh).
- RENFREW, C. 1982: *Towards an archaeology of mind* (Cambridge, Inaugural Lecture).
- RICHARDS, C. 1993: Monumental choreography: Architecture and spatial representation in Late Neolithic Orkney. In Tilley, C. (ed.), *Interpretative archaeology* (Oxford), 143–78.
- RICHARDS, C. and THOMAS, J. 1984: Ritual activity and structured deposition in Later Neolithic Wessex. In Bradley, R. and Gardiner, J. (eds), *Neolithic Studies. A review of some current research* (Oxford, BAR Brit. Ser. 133), 189–218.
- RICHARDS, J. 1990: *The Stonehenge Environs Project* (London, Hist. Build. Monuments Comm. Archaeol. Rep. 16).
- RICHARDS, J. 1991: *Stonehenge* (London, English Heritage).
- SAVILLE, A. 1990: *Hazleton North. The excavation of a Neolithic long cairn of the Cotswold-Severn Group* (London, Hist. Build. Monuments Comm. Archaeol. Rep. 13).
- SCHAMA, S. 1995: *Landscape and memory* (London).
- SENNETT, R. 1994: *Flesh and stone. The body and the city in western civilization* (London).
- SHEE TWOHIG, E. 1981: *The megalithic art of western Europe* (Oxford).
- STONE, J.F.S. 1948: The Stonehenge cursus and its affinities. *Archaeol. J.* 104, 7–19.
- STUKELEY, W. 1740: *Stonehenge a temple restor'd to the British Druids* (London).

- THOM, A.S., KER, J.M.D. and BURROWS, T.R. 1988: A solar and lunar calendar for Stonehenge? *Antiquity* 62, 492–502.
- THOMAS, N. 1964: The Neolithic causewayed camp at Robin Hood's Ball, Shrewton. *Wiltshire Archaeol. Mag.* 59, 1–27.
- TILLEY, C. 1994: *A phenomenology of landscape* (Oxford).
- TUAN, Y.-F. 1977: *Space and place. The perspective of experience* (London).
- VATCHER, F. and VATCHER, L. 1973: Excavations of three postholes in Stonehenge car park. *Wiltshire Archaeol. Mag.* 68, 57–63.
- WAINWRIGHT, G.J. and LONGWORTH, I.H. 1971: *Durrington Walls: Excavations 1966–1968* (London, Rep. Res. Comm. Soc. Antiq. London 29).
- WHEATLEY, P. 1971: *The pivot of the four quarters* (Chicago and Edinburgh).
- WHITTLE, A.W.R. 1978: Resources and population in the British Neolithic. *Antiquity* 52, 34–42.
- WHITTLE, A.W.R. 1981: Later Neolithic society in Britain: a realignment. In Ruggles, C.L.N. and Whittle, A.W.R. (eds), *Astronomy and society in Britain during the period 4000–1500 BC* (Oxford, BAR Brit. Ser. 88), 297–342.
- WOODWARD, A. and WOODWARD, P. forthcoming: The topography of some barrow cemeteries in Bronze Age Wiltshire. *Proc. Prehist. Soc.*
- WOODWARD, P. 1988: Pictures of the Neolithic: discoveries from the Flagstones House excavations, Dorchester, Dorset. *Antiquity* 62, 266–74.

MICHAEL J. ALLEN

**Environment and land-use; the economic development of the communities who built Stonehenge (an economy to support the stones)**

Quaternary scientists and archaeologists employ palaeo-ecological evidence to investigate the development of past landscapes. Unlike their earth science colleagues, however, archaeologists use the interpretation of these data to illustrate and explain *human* action.

Stonehenge was constructed and reconstructed over a period of 1500 years. The communities providing work-forces for this enormous labour must have been large, structured and have operated under strong political control. Most importantly they had to be locally resident and capable of sustaining both the labour-force and residential population. But how was this possible for simple prehistoric farming communities 5000 years ago?

The secure economic base underpinning these communities required long-term investment. By employing palaeo-environmental analyses to examine the development of the prehistoric landscape and land-use in the Stonehenge region, we can provide an explanation of how that landscape was used to support a highly organised society and enabled the diversion of human resources for the construction of Stonehenge.

ALASDAIR WHITTLE

**Remembered and imagined belongings: Stonehenge in its traditions and structures of meaning**

Meanings can be ascribed to Stonehenge, especially in its main phase of lithic monumentality in the Later Neolithic, by considering: its contemporary setting; the tradition of sacred monuments, circular and other, to which it belonged; the layouts of successive phases; the materials from which it was formed; and the patterns of approach and experience which the monument may have engendered.

TIMOTHY DARVILL

**Ever increasing circles: the sacred geographies of Stonehenge and its landscape**

Using perspectives from sociology and social archaeology, this paper explores the changing meaning and use of Stonehenge and its immediate environment from c.4000–1000 BC. Distinctions are drawn between 'space' and 'place' to understand the development of certain sites, while the principle of structuration is used to show how ideas find expression in material culture, monuments, and landscape organization. Although Stonehenge had special significance for more than 2000 years, the successive structures reflect ever-changing relationships between people, their beliefs, and the cosmological systems of

meaning that underpinned those beliefs. Physical and celestial 'markers' were used at different periods to articulate meanings relative to the use and social significance of space, both within the monument and in the surrounding landscape. Four phases to these changes are proposed, each identified with a series of structuring principles: linear binary, linear quadruple, radial concentric, and linear concentric. All four phases are marked archaeologically by a re-design of Stonehenge and the restructuring of space around about.

## CLIVE RUGGLES

### **Astronomy and Stonehenge**

This paper begins by making some general observations about the perception and use of celestial phenomena in prehistoric times, what exactly is meant by 'astronomy', and why the prehistorian might be interested in it. We then proceed to establish a conceptual framework for studying prehistoric astronomy, identifying possible horizon 'targets' for symbolic alignments (which are less precise, fewer, and different in nature from those very often assumed), and explaining the significance of declination. This is followed by a critique of recent ideas about astronomy in and around Stonehenge, in the light of the newly published reports of twentieth-century excavations. The paper concludes with a summary of what we can begin to say with reasonable confidence about the nature and meaning of astronomy at Stonehenge, and presents some suggestions for the future research agenda at and around the site.

## JULIAN RICHARDS and MARK WHITBY

### **The engineering of Stonehenge**

A series of practical experiments, carried out at the instigation of the BBC, involved the transport and erection of the individual components of a full-scale replica of the Great Trilithon at Stonehenge. The use of a simple sledge running on a greased timber track demonstrated that a 40 tonne stone, representing one of the uprights, could be moved up a 1 in 20 slope using the motive power of 130 individuals. The raising of this stone to vertical was accomplished by rotating the stone over a solid pivot point with the assistance of a composite 6 tonne weight running along its length. An angle of 70 degrees to the horizontal was achieved by this method and the stone was hauled to vertical using a timber 'A' frame as a lever. The lintel was raised on a sledge running on rails up a ramp although a comparative experiment demonstrated that the orthodox timber 'crib' or platform provided a viable alternative method. For the purposes of all experiments a degree of proficiency in both woodworking and the manufacture of rope was assumed.

The overall labour requirements for the building of the sarsen structures at Stonehenge are recalculated from the newly available data. In addition, alternative interpretations of