

UHI Research Database pdf download summary

Investigating the great Ring of Brodgar

Downes, Jane; Richards, Colin ; Brown, John ; Cresswell, A. J. ; Ellen, R.; Davis, A. D. ; Hall, Allan; McCulloch, Robert ; Sanderson, David C. W. ; Simpson, Ian A.

Published in:

Building the Great Stone Circles of the North

Publication date:

2013

The Document Version you have downloaded here is:
Early version, also known as pre-print

[Link to author version on UHI Research Database](#)

Citation for published version (APA):

Downes, J., Richards, C., Brown, J., Cresswell, A. J., Ellen, R., Davis, A. D., Hall, A., McCulloch, R., Sanderson, D. C. W., & Simpson, I. A. (2013). Investigating the great Ring of Brodgar. In C. Richards (Ed.), *Building the Great Stone Circles of the North* Windgather Press.

General rights

Copyright and moral rights for the publications made accessible in the UHI Research Database are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights:

- 1) Users may download and print one copy of any publication from the UHI Research Database for the purpose of private study or research.
- 2) You may not further distribute the material or use it for any profit-making activity or commercial gain
- 3) You may freely distribute the URL identifying the publication in the UHI Research Database

Take down policy

If you believe that this document breaches copyright please contact us at RO@uhi.ac.uk providing details; we will remove access to the work immediately and investigate your claim.

Chapter 4

Investigating the great Ring of Brodgar, Orkney

Jane Downes, Colin Richards, John Brown, A. J. Cresswell R. Ellen, A.D. Davies, Allan Hall, Robert McCulloch, David C. W. Sanderson & Ian A. Simpson

4.1 Situating the Ring of Brodgar

Situated on rising ground on the isthmus separating the lochs of Stenness and Harray, the Ring of Brodgar (Fig. 4.1) is a truly dramatic monument. It is the largest stone circle in Scotland and is perhaps the most impressive of the ‘Heart of Neolithic Orkney’ World Heritage Sites. The stones form a true circle, as opposed to an oval or ellipse, and are surrounded by a rock-cut ditch with an immense diameter of c. 123m. Two opposed causeways are positioned in the northwest and southeast. The internal stone circle has a diameter of c. 103m, and is thought to have originally incorporated 60 monoliths (Renfrew 1979, 39; A. Ritchie 1995, 78; Burl 1995, 145). In the Alexander Thom memorial volume *Records in Stone* (Ruggles 1988), Graham Ritchie goes so far as to suggest that ‘the henge monument known as the Ring of Brodgar is perhaps one of the most impressive prehistoric sites in Britain’ (1988, 337). Yet, until recently very little was known about the monument, allowing Burl to lament that in contrast to the Stones of Stenness, ‘despairingly, little has been learned about the age and purpose of the ring since 1694’ (1995, 145).

In assuming a high point along the spine of the isthmus, the topographic situation of the monument has always aroused curiosity (Fig. 4.1). ‘Why was a more level site not chosen’ muse Thom and Thom (1978, 123), who go on to provide an unpersuasive answer in terms of the requirements of an astronomical observatory (cf. Burl 1995, 146). Surely, if visibility and prominence were determining factors, should not the great circle have been erected on higher ground to straddle the ridge?

Returning briefly to the Stones of Stenness, it was suggested in the previous chapter that its location was predetermined by the presence of a large house structure. Could the same be true of Brodgar? No recorded excavation has ever taken place within the centre of the monument although several detailed geophysical surveys have been conducted (Figs. 4.3 & 4.4). Although hints of internal anomalies are present, none of the surveys, which include magnetometry and resistivity, have provided convincing evidence for the existence of any coherent internal features as are present at Stenness. So we are left with the question of what factors influenced the positioning of the Ring of Brodgar. Equally, why was it built on such a huge scale?

The Ring of Brodgar is conventionally classified as a Class II henge monument (e.g. Atkinson 1951, 82). Regardless of the dubious status of such typology, the defining characteristic of this group is the presence of two opposed causeways across the ditch. The provision of two causeways, especially in an opposed arrangement, indicates points of entry and exit (Fig. 4.2). In a general discussion relating to double entrance henge monuments, this architecture has been suggested to relate to movement through the monument. ‘Unless we envisage two separate groups entering by the opposed entrances and meeting at the centre, the logic of these is of passage through them, whether directly or cyclically’, notes Loveday (1998, 17). More recently, Harding (2012) has discussed double-entrance Yorkshire henges as punctuating longer journeys, which he characterizes as a form of pilgrimage. In following this line of reasoning, it is interesting that when examining the micro-topography directly outside the Ring of Brodgar, small, flattened ridges seem to emanate externally from both causeways. It is almost as if a relatively modest pathway, originally running along the isthmus, had, at a single place, become enveloped and aggrandized by the construction of a huge stone circle and deep rock-cut ditch.

If passage through the Ring of Brodgar was a defining feature, it is curious, especially given its substantial size, that the widths of the causeways are so narrow (Fig. 4.2). The northern causeway measures a mere three metres in width while its counterpart in the south is even smaller in being little over a metre wide. The narrow southern causeway is particularly restrictive in forcing any presumed passage down to single file (see Bradley 2011, 100-5).

While the enclosure of a section of pre-existing pathway may account for the unusual topographic position of the Ring of Brodgar, it does not provide any direct indication as to its geographic location or massive scale. Significantly, the Ring of Brodgar actually lies at the end of a much broader and elevated section of the isthmus before it suddenly constricts and drops down into a relatively thin neck of land (Fig. 4.1). When moving southeast, because of the elevated position, once the monument is traversed, the isthmus stretches away below for just over a kilometre until it terminates at the confluence of the lochs of Harray and Stenness. Leaving aside the nature of envelopment, if the purpose of building the monument was to punctuate movement in an extremely dramatic manner along a pre-existing route, then the isthmus was effectively being subdivided into sequential qualitatively different spaces (see Fig. 4.1). In this scheme, the Ring of Brodgar acted as an awe-inspiring form of transitional architecture, effecting a change in state to those who entered and passed through its confines.

The Ring of Brodgar appears not have been the first division encountered when passing along the isthmus in a southeasterly direction. The Dyke of Sean is a large bank that meanders laterally across the isthmus (Fig 4.1). Today, the dyke acts as a parish boundary between Stenness and Sandwick, and has always been assumed to be of later prehistoric origin. Cattle erosion in 2009 scuffed away some of the earth from the northwest face of the bank, exposing a section of sophisticated masonry adjacent to an in-turned entrance (Fig. 4.5). Not only is the masonry of distinctive late Neolithic quality, the courses are of a slightly stepped structure reminiscent of the wall discovered beneath the earthen bank surrounding Maeshowe passage grave (Challands *et al.* 2005, 233-5). Such linear ordering along the isthmus creates a graduation of space invariably accentuating the significance of the final destination. Once through the initial division, the Dyke of Sean, the monumentality of the Ring of Brodgar is encountered. However, to what extreme goal does the construction of this great monument relate?

Towards the end of the isthmus lies the recently discovered Ness of Brodgar settlement complex (Card *et al.* 2007). Although still in the process of excavation enough of this site has already been exposed to provide clear evidence for the

extraordinary architecture of the structures (Fig. 4.6). In terms of spatial organization, the northern end of the settlement area appears to be defined by a substantial wall, c. 4m in width, running laterally across the isthmus (Fig. 4.7). Like the Dyke of Sean, its entranceway appears to be curved inwards towards the area of occupation. Unsurprisingly it is the point of entry into the settlement, when approaching the Ness from the direction of the Ring of Brodgar, that is enhanced.

Passing through the entrance and into the area of habitation, at least seven monumental house structures (Fig. 4.6), resembling larger versions of House 2 at Barnhouse are sequentially revealed. Consequently, it seems likely that the structures at the Ness of Brodgar are equivalents or analogues of the ‘big houses’ located within the different settlements (see Chapter 3), perhaps being the prerogative of separate and distinct social groups occupying particular villages across Orkney. As will be seen in the composition of the stone circle at the Ring of Brodgar, this strategy of gathering people, places and things together is a common theme of the Stenness–Brodgar landscape. At this place through architecture and materiality, a microcosm of the Neolithic Orcadian world is constituted.

However, the Ness of Brodgar habitation is not positioned at the tip of the isthmus. In Orkney, large mounds are frequently interpreted as Iron Age brochs, and the large, denuded mound at the extreme southern tip of the Brodgar isthmus is no exception. Standing to a height of over two metres, it lies just over thirty metres beyond the southern wall of the Ness. This mound, however, has previously been identified as a ruined cairn and noted to have produced a number of ‘relics’ (RCAMS 1946, 304). A recent investigation of the mound has produced Grooved ware and flint and pitchstone flakes (Nick Card pers comm.). Two interpretations present themselves; either the mound represents the remains of a massive standing building, or alternatively, a large passage grave. Whichever is preferred, this monument represents the final place, the ultimate destination, to which all the monumental architecture of the Brodgar isthmus, including the Ring of Brodgar, is referenced.

Even if the Ness of Brodgar settlement has a history of conventional dwellings, its graduation into monumental status, in tandem with the building of the great Ring of Brodgar, drastically altered the imagery of the isthmus. But into what

landscape was this monumentality inserted? In terms of vegetation and tree cover in the early third millennium cal BC, it seems to be not so dissimilar to the open aspect present today. The 2008 excavations of two trenches across the Ring of Brodgar ditch (Fig. 4.10) allowed pollen samples to be taken and the following report on the immediate environment is by Robert McCulloch.

4.1.1 Southern Trench C

The southern margin of the Ring of Brodgar is higher than the northern side and so water flows away from Trench C. This has resulted a relatively drier site with the accumulation of less organic material resulting in a shallower section. The basal two pollen samples were found to be barren at the assessment stage (indicated by the shaded bar across the pollen diagram, Fig. 4.8). After c. 1400 cal BC six pollen samples contained sufficient TLP (Total Land Pollen) to provide satisfactory results.

The pollen assemblages are dominated by *Poaceae* (grasses) with rare occurrences of tree, shrubs and other herbaceous types. In the lower (i.e. earlier phase) sediment infill there are indicators of human activity in the vicinity of the site in the form of *Hordeum*-type pollen (this includes barley and oats but may also signify wild cereal types) and this is contemporary with low but consistent proportions of charcoal. The charcoal is predominately <25 um in size so may represent more distal burning. In the upper sediment infill there is a relatively small increase in heathland taxa and the virtual absence of cereal type pollen and charcoal, which is representative of the present vegetation cover.

4.1.2 Northern Trench A

The more waterlogged site at Trench A is better suited for organic accumulation and preservation and this has resulted in a deeper profile. Twenty-three pollen samples contained sufficient TLP to provide satisfactory results. One basal and two lower pollen samples were found to be barren at the assessment stage (indicated by two shaded bars across the pollen diagram, Fig. 4.9), and the lower pollen samples counted exhibited signs of severe deterioration due to aerobic conditions preceding

the development of more bog-like environment. After c. 1600 cal BC the broad pattern of vegetation change at Trench A is very similar to that of Trench C. However, the increase in sample resolution for this profile enables a more detailed reconstruction of the vegetation record. The lower (i.e. early) part of the record is dominated by Poaceae (grasses) and although there are still only rare occurrences of tree, shrubs and other herbaceous types the site is more floristically diverse, perhaps a result of better preservation of organic material. In the lower sediment infill there are also indicators of human activity in the vicinity of the site in the form of *Hordeum*-type pollen and this is also contemporary with relatively higher and consistent proportions of charcoal. The charcoal particles are <50 µm in size so may also represent more distal burning but it does suggest a more significant fire event or period of higher fire frequency. After c. 200 cal BC, in the upper sediment infill, there is a rise in heathland taxa (*Calluna vulgaris* and *Empetrum nigrum*) but differing from Trench C in the apparent continuity of cereal-type pollen. This may be an artefact of the focusing of the pollen input received by the ditch around the Ring of Brodgar to the deposits recorded at Trench A.

The vegetation history of the isthmus around the Ring of Brodgar during the early to mid-third millennium BC appears to be consistent with that around the Stones of Stenness and Barnhouse (Caseldine & Whittington 1976, 40; Hinton 2005, 342). The stone circle was erected and the surrounding ditch dug in open grassland. Traces of cereal pollen suggest small garden plots, consistent with the small amount of charred cereal recovered from Barnhouse (Hinton 2005). This is essentially an open grassland landscape where cattle and sheep graze, cereal agriculture is minimal and probable limited to small plots around settlements. During construction, open views from and to the Ring of Brodgar would probably have been very similar to the present, ensuring that not only the Ness of Brodgar, but also Barnhouse, the Stones of Stenness and Maeshowe would have been visible to the east.

4.2 Raising the stone circle

‘Yet there must have been more to these henges than just routeways and exchange’, reflects Harding (2012, 47), when considering the large Yorkshire henge monuments. The same concern can be directed towards the Ring of Brodgar, which apart from anything is a truly enormous monument. It is worth remembering that after the Outer Circle at Avebury, Wiltshire, and the Great Circle at Stanton Drew, the stone circle at Brodgar is the third largest in the British Isles, possessing a diameter of c. 103m. Such magnitude is surely a clue. The question to be asked therefore is for what reasons would a stone circle be erected on such a great scale. One avenue to explore is the architecture and geological composition of the stone circle.

The ring of stones at Brodgar is consistently stated to have been originally composed of 60 monoliths (Renfrew 1979: 39; J. N. G. Ritchie 1985, 124; A. Ritchie 1995, 78; Burl 1995, 145; etc.). Wisely, the Royal Commission were a little more cautious in its estimation:

the original number of stones is uncertain. At the present time the position of at least forty can be identified, and there are spaces for twenty more, if it is assumed that they were erected at approximately equal distances apart. This would bring the total in the original plan to sixty, the number suggested by Thomas many years ago (1946, 299).

Today, the stone circle comprises 21 erect monoliths (Fig. 4.10). The position of a further ten is represented by either stumps or packing stones projecting through the turf. Two more stones lie prone just inside each causeway respectively. Of the standing monoliths, eight were re-erected in 1906-7, and we can have confidence in their accurate position as the H. M. Office of Works were scrupulous in locating the appropriate sockets at both the Stones of Stenness and Ring of Brodgar (J. N. G. Ritchie 1988). Nonetheless, it is clear that out of c. 60 stones only 13 remained standing.

Because it is one of the largest stone circles in Britain claimed to be truly circular in plan, the Ring of Brodgar is renowned for its overall regularity (e.g. Burl 1995, 145). Regularity also extends to the stone spacing of the circle. Indeed,

accuracy was the cornerstone of the surveys of Alexander Thom. After surveying the Ring of Brodgar, it was noted that ‘the 60 stones were equally spaced 6° apart (probability level = 0.05 per cent) starting from an azimuth of 9° ’ (Thom & Thom 1978, 24). Given that the original position of many of the assumed 60 stones is no longer visible, it is difficult to understand how this observation was obtained. There is, however, a deeper problem with this analysis.

At first glance, the remaining stones do seem to conform to the claimed spatial regularity. For example, mid-way between the opposed entrances, on the eastern side of the circle, the distance between Stones 5 and 6 is c. 4.25m. Corresponding standing stones (Stones 23, 22, 21 & 20) in the western circuit are also regularly spaced at c. 4m apart. Indeed, when walking around the perimeter of the circle many of the stones appear remarkably consistently spaced in relation to their neighbours. But this impression is more a consequence of survival than design, and is in fact illusory.

Isolated in the southeastern circuit of the stone circle, close to the causewayed entrance, is a pair of standing monoliths (Stones 11 & 12). They have divergent histories; Stone 12 had fallen and was re-erected in 1906-7, but Stone 11 is one of the thirteen to have remained standing since the third millennium BC. Their juxtaposition catches the eye because atypically the angled tops of the stones are opposed (Fig. 4.11). Yet there is another reason why this pairing attracts attention. In contrast to the remaining stones within the circle, Stones 11 and 12 are very closely set in being only 2.5m apart. Nor is this an anomaly caused by careless re-erection. The remaining packing stones of an absent monolith adjacent to Stone 11 are similarly only 2.3m distant. Clearly, in this area of the stone circle, the stones become progressively closer spaced as they approach the southeast causeway.

As part of the 2008 fieldwork at the Ring of Brodgar, Adrian Challands and Susan Ovenden undertook geophysical surveys employing Resistivity, Electrical Resistance Pseudosection Imaging and Ground Penetrating Radar (Figs 4.3 & 4.12). The results were mixed but two different trends soon became apparent. First, supporting the observations concerning Stones 11 and 12, the monoliths appear to become more closely spaced as the causeways are approached. Second, the size and

frequency of some of the anomalies adjacent to the southeast causeway suggest that a façade-like arrangement of posts may once have also been present. This architecture appears very different from that seen at the Stones of Stenness where the stones are very evenly spaced around the circle.

Since it is the causeways that are the focus of more closely spaced stones, it seems that the position of monoliths in the Ring of Brodgar is determined more by imagery than regularity in plan. Here, the plan is of great importance, but not in the traditional sense of geometric precision (cf. Thom & Thom 1978, 24; Case 2004). Indeed, the positioning of stones is subtly controlled to provide the external appearance of a massive stone circle, which is dramatically enhanced at the points of direct encounter, entrances and exits.

The manipulation of the stones adjacent to the causeways was not just restricted to the increased frequency of stone spacing. A further strategy of augmentation was the selection of broader-faced monoliths positioned adjacent to the two causeways (Fig. 4.13). In conjunction, these architectural devices must have effected a dramatic and contrived experience of the monument on encounter - in either direction. Obviously, imagery and display are principal elements of stone circle architecture, but at the Ring of Brodgar additional strategies were implemented to facilitate an architecture of illusion.

At this point yet another strand of evidence demands consideration. In both the 2008 excavation trenches at the Ring of Brodgar a stone socket was encountered and examined (A. Thomas *et al.* 2009). The southern Trench C caught part of the socket of a missing monolith that was centrally positioned between Stones 16 and 17 (Fig. 4.14). Excavation revealed the ragged-edged socket to be extremely shallow, having a depth of only 0.27m, the irregular shape of the socket together with the displaced packing stones could be attributed to damage incurred through the collapse or removal of the monolith.

On the opposite side of the circle, the stump of Stone 3, which is famous for its runic inscription, was partially uncovered in Trench A. Running around its inner surface a concrete collar had been employed to re-attach and consolidate the

laminated section, with the runic inscription, to the remainder of the stump (Fig 4.15). At the rear of the stump was an area of stone paving. These paving stones also served to fill an elongated hollow cut into the natural till which resembled an irregular ramp to facilitate erection of the monolith. Partial examination of the stone socket revealed it also to be extremely shallow in having a depth of only c. 0.18m.

Even when stone sockets have been exposed to constant ploughing, such as the Stone of Odin and its adjacent monolith, they retain depths of between 0.60m and 0.75m (Challands *et al.* 2005, 213-4). Extrapolating from the stone sockets examined as part of the 2008 excavations, monoliths within the circle appear to be inserted into very shallow sockets, far shallower than those at the Stones of Stenness or outlying standing stones. Thus, it should come as no surprise that a large number of the Brodgar stones fell in antiquity.

Taken together, different strands of evidence create a surprising divergence between the stone circles at the Stones of Stenness and Ring of Brodgar apart from scale. The regular spacing of stones in the former is manipulated in the latter to create an illusion of greater frequency and scale. Such an augmentation of the circle at the causeways is a manipulation of encounter. Indeed, erecting broader stones closer together towards the causeways creates an image of a ‘wall of monoliths’.

The erection and positioning of monoliths at the Ring of Brodgar appears paradoxical. On the one hand there is clearly a great concern with imagery, in terms of encounter. Yet, little concern with longevity is demonstrated through the erection of monoliths in shallow sockets; a procedure that could be described as haphazard. Overall, the architecture of the stone circle within the Ring of Brodgar appears to be more concerned with representation than substance or longevity. It is tempting to go further and see this architecture as representing both immediacy and expediency in the creation of the massive stone circle. Under these circumstances, the erection of individual monoliths appears to embody what can only be seen as a form of ‘quick’ architecture as described by McFadyen (2006a).

4.3 Constituting the stone circle

Given the differences in stone type noted by Collins (1976) at the Stones of Stenness, a macroscopic geological analysis of the remaining Ring of Brodgar monoliths was undertaken by John Brown and Allan Hall (Table 4.1).

Although there are difficulties in accurately characterizing the broken stones, as represented by stumps and fallen monoliths, and allowing for variation in bedding characteristics within specific quarries, there appears to be at least seven different strata of sandstone present. Groups 1 – 5 are variations on a theme in being fine-grained laminate sandstone of grey-brown colour. Apart from Groups 1 and 4, which appear to embrace a degree of diversity, when the jointing characteristics and bedding profiles are examined through width and particularly thickness, Groups 2, 3 and 5 display considerable coherence and uniformity (Table 4.2). Group 6 is visually distinctive in its honey-brown colouring, banding and cross-hatch injection pattern on the outer surfaces of the stones. This group includes the broadest stones within the circle. Group 7 is only represented by the broken pieces of a single stone, but when standing, this monolith would have been very distinctive in displaying the yellow colour and fine-grained texture of Eday flagstone.

The broader practical and social implications of the presence of stones from at least seven sources will be pursued in the following chapter. Suffice is to note that as recognized at the Stones of Stenness, the stone circle within the Ring of Brodgar is clearly of a composite nature. Indeed, the different lithologies are readily discernible when walking around the stone circle, through variation in colour, texture, and shape. This is an important observation as it demonstrates that the material qualities of different types of stone would always have been appreciable to those visiting the Ring of Brodgar. Such divergent materiality embodied more than physical characteristics, however, but related back to labour, people and place, and a form of material habitus (cf. Meskell 2005, 3).

The location of the different lithologies within the circle reveals a tendency towards grouping (Fig. 4.16). Since each lithology was derived from specific sources or quarries, and as these places were inevitably associated with, and referenced, specific social units (A. Jones 2005), then it seems that different sections of the Ring of Brodgar were the prerogative of particular social groups equating to house, or village societies (see Chapter 3). This leads to a very different view of the construction and imagery of the stone circle. Rather than building a unitary monument, work would be punctuated, both temporally and spatially. If there was a commemorative or corporeal component to the addition of monoliths, then the sequence of building was based on discrete projects of individual stones, as opposed to the construction of the circle as a whole. Such practices were both situated and dispersed in that the erection of a monolith constituted the final act in a series of activities stretching web-like away from the Ring of Brodgar (see Chapter 5).

We can suggest that within such a complex and piecemeal process, a ‘complete’ stone circle at the Ring of Brodgar becomes almost illusory. At any given time in the early-mid third millennium cal BC, a visit to the site would have presented an appearance that is not so very dissimilar to that seen today. Different sections of the great ring would be standing, short arcs of stones, large gaps, isolated pairs and individual stones (Fig. 4.10). Ultimately, an entire ring of stones may have been accomplished - the geophysical surveys are mute on this point but given the very shallow sockets uncovered during excavation the possibility exists that stones may have already begun to lean precariously, when others were still being hauled to the circle.

4.4 Digging the great ditch at the Ring of Brodgar: time and method

If the erection of monoliths at the Ring of Brodgar represents the closing episode of practices which in their entirety were distributed across the social and physical landscape (see McFadyen 2008), then the digging of the great Brodgar ditch can be characterized as more situated practice. Although wider resources are obviously necessary to support a workforce, apart from the procurement of tools, the principal

focus of labour was at the Ring of Brodgar. The ditch is enormous. It entirely bounds the stone circle, its circuit only being broken by two opposed causeways in the northwest and southeast (Figs. 4.2 & 4.10). When freshly excavated, the ditch surrounding the stone circle would surely have constituted the most impressive component of the monument. It has a diameter of c. 123m, a width of c. 10m at ground level and a depth of over four metres, of which the lower portion is cut through solid bedrock (Fig. 4.18). It has been calculated that some 4700 cubic metres of rock and glacial till were excavated, involving at least 80,000 person/hours (Renfrew 1979, 213). Given the magnitude of this figure, it is unsurprising that a centralized political formation in the third millennium BC was postulated by Colin Renfrew (1979, 218). Whilst the scale of the Brodgar ditch is unequivocal, the social conditions and working practices that allowed such a monumental undertaking are less certain.

The main objective of excavations undertaken in July-August 2008 was to investigate the method and date of digging the Ring of Brodgar ditch. This fieldwork involved re-excavating and extending two trenches (A & C) across the ditch previously excavated by Colin Renfrew in 1973 (Fig. 4.2). Trench C in the eastern circuit had been completely excavated in 1973 and was simply re-excavated for sampling purposes. In contrast, the lower ditch fills in Trench A had never been exposed because the trench was abandoned due to waterlogging (Renfrew 1979, 40). As the weather was hot and dry before and during the 2008 excavations, waterlogging did not constitute a major problem and a 4m section through the ditch was opened. A smaller section, 2.3m in width, was excavated to the base of the ditch (Fig. 4.19). Initial removal of the upper peat and silt layers confirmed the shape of the ditch to be fairly regular, a feature that is observable around its circuit. As the lower fills were sequentially removed, the character of the ditch changed dramatically. In contrast to the regular, parallel-sided cut exposed in its upper section, the lower ditch was formed by a clearly defined rock-cut segment (Fig. 4.19). The rock face displayed a rounded form which narrowed giving a clear indication that the ditch had been dug in sausage-shaped portions, the ends of which were subsequently broken through to create the continuous ditch form encountered now.

Moreover, just as was observed at the Stones of Stenness (J. N. G. Ritchie 1976, 10), the basal deposits and bedrock were stained a blue-grey colour due to prolonged periods of standing water. Despite numerous colour changes due to hydrological fluctuations, the ditch stratigraphy in Trench A tells an uncomplicated story of it having silted and filled naturally, with no evidence of re-cutting. Standing water had created numerous lenses of iron-pan, which confusingly ran between and through deposits at all levels (Fig. 4.18 & 4.20). Substantial amounts of merging stone debris in the form of chips and fragments, and silts formed the primary fill. Curiously, the stone debris had mainly fallen in from the inside of the monument soon after the ditch segment was dug. Again, from the interior, some larger blocks of stone had subsequently slipped down and collected in the inner-central area of the ditch. Micromorphological analysis of the silts by Ian Simpson revealed this infilling process had occurred shortly after the ditch was dug. Finer silts resulting from glacial till eroding and washing into the ditch had accumulated around and over the stone debris. Prolonged periods of silting, including fine mineral material and vegetation resulted in the deposition of a sequence of homogenous layers e.g. [111] and [112], filling the bulk of the ditch (Figs. 4.18 & 4.20). All through these layers ferruginous material, bands and nodules provided further evidence of periodic wetting and drying. Above a stabilization level a thick layer of peat grew towards the top of the ditch providing the gently rounded profile seen today.

In the second trench (C) on the southern side of the monument, exactly the same process of ditch filling occurred (see Renfrew 1979, Fig.15). However, soil micromorphological analysis by Ian Simpson of the lower silts in this trench found evidence of cultural disturbance at the base of the ditch. The occurrence of 'dusty' silt infill and rubified mineral materials may be interpreted as evidence for periodic clearing out of the ditch and the burning of vegetation to keep the base of the ditch clear. Of significance is the similar occurrence of stone rubble in a primary context which had clearly fallen into the ditch from the interior of the monument. In the southern trench the amounts of rubble seen in layer [212] exceeded that of the northern trench (Fig. 4.20). While a small amount of eroded rock fell into the ditch from the outside, e.g. layer [214], the remainder of the ditch is filled with consecutive layers of silt.

Intriguingly, these same characteristics of ditch filling, with stone rubble falling from the interior and accruing on the ditch floor, is replicated in the stratigraphy of the Stones of Stenness ditch (J. N. G. Ritchie 1976, Fig. 3). Given that no evidence exists for an outer bank (see below), we suggest that this occurrence may indicate the presence of an internal platform, possibly laid to level particular areas of the interior.

One of the biggest surprises of the 2008 excavations was the discovery of segmented ditch construction. If the segmented construction exposed in Trench A is truly representative, then the ditch was originally dug as a series of interconnected, elongated pits. The technique of ditch digging employed was by following the closely set angled fissures present within the laminar bedrock (Fig. 4.21). This entailed the use of substantial hammer-stones to fracture and fragment each stratum of rock working along the fault lines.

Two broken hammer-stones (SFs. 05 & 08) were recovered from the lower silts of the ditch in Trench A (Table 4.3), one of which was of considerable size and weight (Fig. 4.22). Besides hammer-stones, antler picks and wedges, to open fissures and prise out stone, almost certainly featured strongly in the digging process. Just as the stone circle was erected in a piecemeal manner, so the massive enclosing ditch was also the product of a large number of discrete constructional events.

4.4.1 Dating the great ditch at Brodgar

As opposed to the Stones of Stenness, ‘there are no dates for the building of the great circular ditched enclosure and stone circle at Ring of Brodgar in Orkney’ laments Ashmore (1996, 86), and suggests ‘it was probably built at some time between 3000 and 2000’ BC. This broad estimation followed Colin Renfrew (1979, Fig. 54) and Graham Ritchie (1985, 127), both of whom considered the Ring of Brodgar to be built in the third millennium BC. Anna Ritchie is a little more precise in stating ‘it is likely to have been built during the early or middle centuries of the third millennium BC’ (1995, 79). The general tendency to provide a slightly later date of construction than that of the Stones of Stenness (see Chapter 11) can be attributed to typological and

culture-historical reasoning which placed Class I before Class II henge monuments (see Atkinson 1951, 90-1).

One of the principal archaeological aims of the 2008 excavations was to locate material for dating purposes. Obviously, the absence of a chronology for the Ring of Brodgar, especially in relation to the Stones of Stenness and the habitations Barnhouse and the Ness of Brodgar, is unacceptable for a major monument with World Heritage Site status. Just as had occurred in the 1973 excavations (Renfrew 1979, 42), the 2008 excavations failed to locate material from the basal ditch silts for radiocarbon dating. However, during fieldwork David Sanderson collected a set of 40 small samples from the two trenches to permit field and laboratory appraisal of the luminescence profiles. The field measurements were undertaken with a portable OSL instrument. Samples for laboratory profiling were collected in small opaque tubes in the same positions. A set of 15 larger tube samples was also collected for Optically Stimulated Luminescence (OSL) dating analysis, accompanied by bulk material for laboratory gamma spectrometry. *In situ* field gamma spectrometry (FGS) measurements were also recorded from the 15 tube sampling positions.

For most of the samples collected, the quartz mineral grains displayed low sensitivity and as a result the number of aliquots measured is relatively small, with low precision for most of the samples. This has reduced the ability of OSL methods to produce high precision dates for the samples analysed. Nevertheless, a set of dates with reasonable precision and confidence has been determined. Profile measurements conducted in the field and in the laboratory indicated that there was a relatively small change in stored dose for the lower part of each trench, indicating a rapid build up of sediment, with a more rapidly changing stored dose in the upper sections of each trench. It was also observed that the top section of the trenches had quartz with higher sensitivity than that further down implying a different sediment source for this later material.

A small number of aliquots from profile samples crossing the interface between the higher and lower sensitivity materials were analysed using a SAR procedure. For Trench A, samples just above and just below this interface all give a similar date of 1900 ± 150 BC. For Trench C, the profile samples date the interface as

before $2000\pm300\text{BC}$ and after $1200\pm200\text{BC}$, consistent with the 1900BC date from the Trench A profile samples. The tube samples give a date of $1600\pm300\text{BC}$ just below the interface in Trench A, and between $1600\pm200\text{BC}$ and $1800\pm300\text{BC}$ in Trench C. These would imply a slightly younger date for the transition from low sensitivity to high sensitivity material of around $1700\pm200\text{BC}$. Taken together, these suggest a date for this transition at $1800\pm200\text{BC}$.

With some samples producing very few usable data points, some composite samples were generated combining data from two or more samples in similar stratigraphic locations. For the composite sample at the bottom of Trench A, there is evidence that both samples are indeed contemporary, but with some aliquots showing ages consistent with the inclusion of minerals with residual luminescence signals. With the outliers removed, these samples give a date of $3700\pm300\text{BC}$, which is older than anticipated. With large aliquots there may be residual geological signals present in most of these aliquots, increasing the apparent age.

Composite samples for the middle sections of both trenches, between the bottom layers with evidence of significant residual geological signals and the high sensitivity layer, show evidence of a smaller number of minerals with geological residual signals, and age estimates consistent with a rapid infill of the ditch at a similar rate and time in both ditches. The mean date for these layers is $2000\pm200\text{BC}$.

On the basis of the data presented here, it is concluded that a reasonable estimate for the date of the digging of the ditch is 2600-2400BC (Fig. 4.23). The ditch then rapidly fills with sediment that is mostly reset with little residual signal over the next 500 years. A transition occurs around 2000 to 1800 BC, with a change in the sensitivity of the quartz probably reflecting an environmental change affecting the source of the wind blown sediment, and subsequently much slower accumulation of sediments in the ditch.

4.5 The elusive outer bank

Finally, there is the question of the presence of an outer bank arises. Its expectation is obviously predicated on the recognition of the Ring of Brodgar as a Class II henge monument (e.g. Atkinson 1951). Given the huge amount of debris, mainly sandstone rubble, removed while digging the ditches at both Stenness and Brodgar, it seems almost inconceivable that if a bank had once existed at either site, no evidence would survive. In an attempt to resolve this question, Renfrew cut a third trench (B), over a slightly raised area beyond the ditch to the northeast, to search for the remains of an outer bank. The raised area turned out to be a result of the ‘configuration of the bedrock’ (Renfrew 1979, 41), and despite a greater depth of topsoil being encountered no evidence of an outer bank was obtained.

Such is the power of typology to influence perspective, that on the basis of an old account providing the unlikely occurrence of people removing the bank for ‘manure for the infield’ (Thomas 1852, 103), Renfrew concluded that ‘on balance I am inclined to regard the faint trace found outside the ditch in trenches B and C as the remnants of an outer bank now effectively destroyed by erosion and deliberate removal’ (1979, 43). In a way, such arguments maybe irrelevant because on stratigraphic grounds the presence of an outer bank is improbable.

Approximately seven metres beyond the ditch, in its southern circuit, is the denuded barrow known as South Knowe (Fig. 4.2). Although this mound has been excavated no records survive, but presumably the barrow dates to the early second millennium cal BC. If a substantial bank of mixed stone rubble and glacial till had been present, either the barrow would have been positioned elsewhere or erected over the bank and assume an elevated position. This is exactly the situation present at Arbor Low, Derbyshire, where a barrow is constructed on the henge bank. At Brodgar, the barrow is neither elevated nor displaced; thus, an outer bank of any form was absent when the barrow was constructed. The evidence appears strong. An outer bank probably never existed around the Ring of Brodgar.

4.6 Making the Ring of Brodgar: situated and dispersed practices

Like the other monuments within the Stenness-Brodgar area, the Ring of Brodgar was built in a fairly open and treeless environment. Given the proposed date range of between 2600 – 2400 BC for the digging of the Brodgar ditch, the Stones of Stenness and two settlements of Barnhouse and the Ness of Brodgar would already have been present. Although the ditch of the Ring of Brodgar appears to have dug 400 years after the Stones of Stenness, it is difficult to be absolutely certain of the relative chronological relationships of the stone circles. Accepting that no excavation has occurred within the Ring of Brodgar, there do appear to be magnetic anomalies within the Ring of Brodgar (see Fig. 4.4). However, these do not seem to possess the regularity of the features encountered within the Stones of Stenness. Although it cannot be discounted, it seems unlikely that the Ring of Brodgar has such an extensive biographical depth.

Following Graham Ritchie (1976, 16) and Alex Gibson (1998, 54-5; 2004, 75; 2010b, 243-4), it is possible to assign the ditches at both Orcadian stone circles to a latter stage in their lives. For Julian Thomas, the digging of a henge ditch to form the western enclosure in Durrington Walls represented a ‘means of sealing off a location that was imbued with memory of powerful past events and performances, creating a rift between past and present’ (2010, 11). Accepting, as argued in the previous chapter, the ditches enclosing the two stone circles were actually dug explicitly to contain water (Figs. 3.20, 3.26 & 4.24), then the imagery of islands and their watery definition provided a potent means of sealing off, or rather forming a ‘natural wrapping’ (Richards 1996a & b). If the ditches at both the Stones of Stenness and Ring of Brodgar are subsequent to their respective stone circles, they constitute the final demarcation and containment of each site.

The stone circles at the Stones of Stenness and Ring of Brodgar display similarities and differences. It was noted in Chapter 3 that the monoliths at the Stones of Stenness are of different lithologies, but the circle (apart from Stone 12) is regularly set and generally the stones are well bedded in deep sockets. Like the Stones of Stenness, but on a greater magnitude, the stone circle at Brodgar comprises at least seven different lithologies. As Barrett notes, ‘architecture is a material technology enabling the regionalization of a place to emerge through practice’ (1994, 18). If the recognizable lithological differences manifested in the juxtaposition of monoliths can

be said to act as material citations (A. Jones 2007, 182), or material metaphors for different places and peoples, the importance of their gathering within the stone circle transcends social microcosm (Richards 1996b). This is because through the performance of construction, such material metaphors ‘revitalize and empower... connect things together, establish and re-establish... a sense of wholeness and the relatedness of things’ (Tilley 1999, 10). Hence, the variant lithologies of the monoliths and their juxtaposition within the Ring of Brodgar attempt to resolve the paradoxical nature of village or rather house-societies (see Chapter 3). It could be argued that through the erection of the stone circle we see a tangible materialization of imagined communities and an ordering of their underlying social relations. Here it is worth recalling the claimed *communitas* of pilgrimage and ritual gathering (e.g. Turner & Turner 1978).

Overall, the erection of monoliths may well have been piecemeal, and can perhaps be best described as an ongoing project. Nonetheless, there can be little doubt of the strategic and planned nature of its architecture (see Whittle 2006, 21-2). Accepting the social expediency of the erection of such material metaphors, it is difficult to ignore the overall design and deployment of the monoliths within the circle. Here we encounter the broad fusion of themes woven into the architectural representation of the Ring of Brodgar.

The more closely positioned, broader monoliths set up adjacent to the opposed causeways betray a very definite attempt to enhance the grandeur of the circle and manipulate the experience of those entering and exiting the monument. The fairly haphazard manner of monolith erection, not only provides an important contrast with the Stones of Stenness but also indicates both expediency in architecture and lack of concern with longevity.

The Brodgar ditch is segmented. This indicates a series of discrete events, as opposed to a unified general effort, combined to create its immense perimeter. However, this need not be the case. It has long been suggested that the digging of early Neolithic causewayed enclosures represents ‘gang construction’, that is that different gangs or social groups were responsible for the different ditch sections (e.g. Mercer 1980, 36; Startin & Bradley 1981). The assumption here was that social

identity was being articulated through spatial definition, with specific social groups being responsible for particular ditch sections. Regardless, of the applicability of this idea to causewayed enclosures, the important point to emphasise is that the segmentation observed in the Brodgar ditch may have related to the social organization of labour as a manifestation of social identity. As noted earlier, Renfrew (1979, 213) estimated that at least a staggering 80,000 person/hours were employed in digging the Brodgar ditch. At first glance, it is hard to reconcile this input of labour with the seemingly hasty erection of monoliths. However, during the excavation of Trench A, it was noticed that there was a correspondence between the position of Stone 3 and the ditch segment being excavated. Accepting the small scale of the excavated section in comparison to the massive size of the Brodgar ditch, it is suggested that the differential organization of labour as represented by segmented construction compares with the material citation embodied in different lithologies of the stone circle. Under such circumstances, both the distributed practices embedded in the construction of the stone circle and the situated practices of segmented ditch construction fuse to ‘provide a basis by means of which communities create and understand their collective experience’ (Tilley 1999, 10).

It is noticeable, however, that the two components constituting the Ring of Brodgar, the stone circle and surrounding ditch, embodied entirely different practices through space and time. The former involved more dispersed practices (cf. McFadyen 2008), in the quarrying and transportation of stones, while the latter can be characterized as the more situated practices of the digging of the ditch. But are these constructional practices commensurate or paradoxical?

Given the absence of evidence for the existence of an external bank surrounding the Stones of Stenness or the Ring of Brodgar, there would be no restriction of visual access into the centre of either monument (see Bradley 1998a, 124-8). At the Stones of Stenness, the large house was effectively opened and activities surrounding the central hearth that were previously obscured revealed as visual spectacles. Nonetheless, any suggestion that there is a general tendency towards more public-focussed ritual practices in late Neolithic Orkney is to some degree flawed (cf. Bradley 1998a, 109-15). Instead, there seems to be a greater emphasis on the wrapping of places in very different ways. Obviously, the means of

enclosure is contingent on requirement; consequently, a substantial wall surrounds the inner building at Barnhouse Structure 8. No one could have seen or heard what occurred inside this building, and entry was restricted to a low narrow ‘side-door’ (Fig. 3.11).

Even Barnhouse Structure 8 is eclipsed by the mechanism of wrapping the passage grave at Maeshowe (Fig. 3.25). Here, an unbroken surrounding ditch or membrane of water and wall physically divided the monument from the world of everyday practices. Such enclosure is also internalised and manifest within the construction of the mound itself, as Kilbride Jones recognized, ‘it could be argued, of course, that the Maeshowe mound contains three concentric walls. But they are not revetment walls because they support nothing..... All three walls are so battered, i.e. leaning towards the centre of the mound, that they could never have stood without support, and that support is forthcoming from the mound itself. It is obvious they served no practical purpose, so perhaps they were symbolic’ (Kilbride Jones 1973, 78). Interestingly, Robin (2008) observes a similar occurrence in the structure of the mound at New Grange passage grave. Perhaps crucial in understanding the different sites and monuments comprising the extraordinary Stenness – Brodgar landscape is to recognize that, through the materials and architecture of wrapping they all participate in a process involving the strategic concealment and revelation of entities and places.

In bringing this detailed re-evaluation of the two great Orcadian stone circles to a conclusion, the main point to emerge is just how different these two monuments are. Putting aside differences in scale and date of construction for a moment, the places that the stone circle architecture served to envelope and monumentalise appear to have been of a completely different nature and possessed very different histories. Any assumption of equivalence or analogue between the two (e.g. Renfrew 1979. 39) is suggested to be a misplaced acceptance of typological reasoning. The common denominator between the two seems to be less about final morphology, and more about transformational practice.

Finally, at both the Stones of Stenness and the Ring of Brodgar stone circles, the physical form of wrapping employed different materials arranged in a different manner, referencing different qualities, associations and memories. However, in each

case it was the deployment of labour that realized these different qualities through a variety of practices involving *substantial numbers of people working in different places*. Hence, the linkage between both monuments is that they embodied both situated and displaced practices. In the following chapter, another facet of the construction of the Orcadian stone circles will be explored - the labour and risk involved in the quarrying of large monoliths and their transportation.