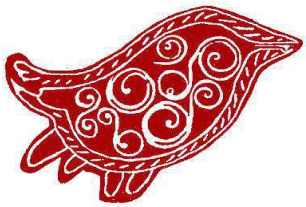

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Excavation of a Stone Row at Maughanasilly, Co. Cork

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Ill. 1. The stone row (from north) after excavation, with Lough Atooreen in the background. (*Photo: C. Brogan*)

INTRODUCTION

The excavation of a stone row at Maughanasilly (*Macha na Sailí* – milking place of the willows) near Kealkill, Co. Cork, was undertaken by the writer in a four-week period during June and July 1977. This was part of a postgraduate research project aimed at reconstructing the environmental background of the stone circle/stone row complex of south-west Ireland which was carried out with the aid of the Travelling Studentship in Archaeology at the Istituut voor Prae-en Protohistorie in Amsterdam (Lynch 1981)

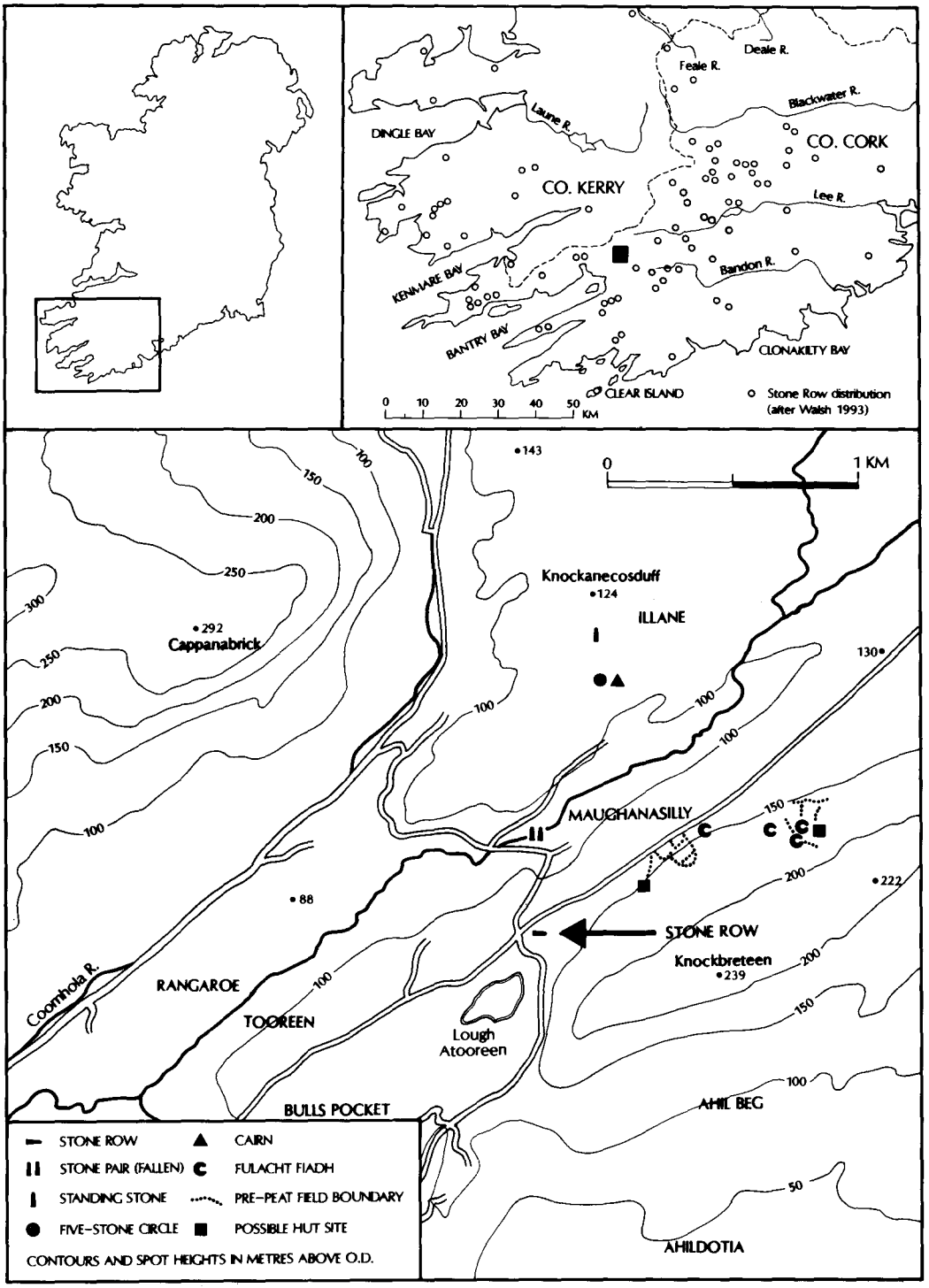

Fig. 1. Location maps, including distribution of monuments in the Maughanasilly valley. (*Based on the Ordnance Survey by permission of the Government. Permit No. 6680.*)

and which was an extension of an earlier study of the stone rows of the region (Ní Loingsigh 1976). The excavation had the following objectives: 1) To recover evidence concerning methods of construction, associated structures or artefacts which might throw light on the function or use of the stone row; 2) To recover dating evidence for the construction of the stone row; 3) To obtain a series of samples suitable for pollen and seed analysis which would help place the monument in its ecological context.

The stone row is sited at an altitude of 100-150m (328-492 ft.) OD in an upland valley occupied by a tributary of the Coomhola river, c. 4 km north of Kealkill village and 17 km north-east of Bantry town (exact location: Townland: Maughanasilly, Barony: Bantry; 6"OS Cork 92, 009E, 174N (not marked on either edition); NGR 10440,05851; SMR 92:19). The monument is prominently located on the crest of a small peat-covered ridge on the northern slopes of Knockbreteen mountain (243m OD) with Lough Atooreen lying c. 300m to the south-west. The monument commands sweeping views along the Maughanasilly valley which is c. 4 km long, hemmed in on the north, east and south by mountains of the Shehy range. A narrow gap to the west gives access to the Coomhola valley (Fig. 1). Local bedrock is Devonian Old Red Sandstone and the local landscape is one of rugged wilderness with rock outcrop, lake and extensive tracts of blanket bog. Small-scale mixed farming has been the traditional mainstay of the local economy, but since the early 1990s extensive tracts of land in the valley have been given over to coniferous forestry. The stone row was acquired by the State in 1997.

Before excavation, the site consisted of a row of five sandstone monoliths aligned north-east/south-west over a distance of 5.80m. For the purposes of discussion, the stones are described as lying east/west, stone 1 being at the east. The centre stone (stone 3) had split along a bedding plane and one half had fallen to the south-west. A large slab, partly overgrown by peat, lay c. 0.25m to the south of the row. To the north and north-west, two small quarries had been cut into the side of the ridge in modern times (Fig. 2).

	Max. Height (above ground)	Max. Width	Max. Thickness
Stone 1	0.50m	0.32m	0.18m
Stone 2	1.30m	0.74m	0.32m
Stone 3 (leaning)	1.10m	0.62m	0.24m
Stone 4	0.80m	0.52m	0.22m
Stone 5	1.00m	1.18m	0.26m

SOIL DEVELOPMENT

Prior to the excavation, three sondages (1m x 1m) were dug, one each at the north-west, north-east and south-east corners of the site, to allow examination of the soil profiles and some understanding of the soil development before excavation proper began.

The following is a simplified outline of the Maughanasilly soil profile (horizon notation after Romans 1970):

0–25cm peat

26–36cm hard light-grey gleyed clay (G horizon)

37–38cm intermittent iron pan

39–42cm fibrous black humus (A horizon)

43–73cm compact orange stony clay (B horizon)

73+ cm mid-brown sterile boulder clay (C horizon)

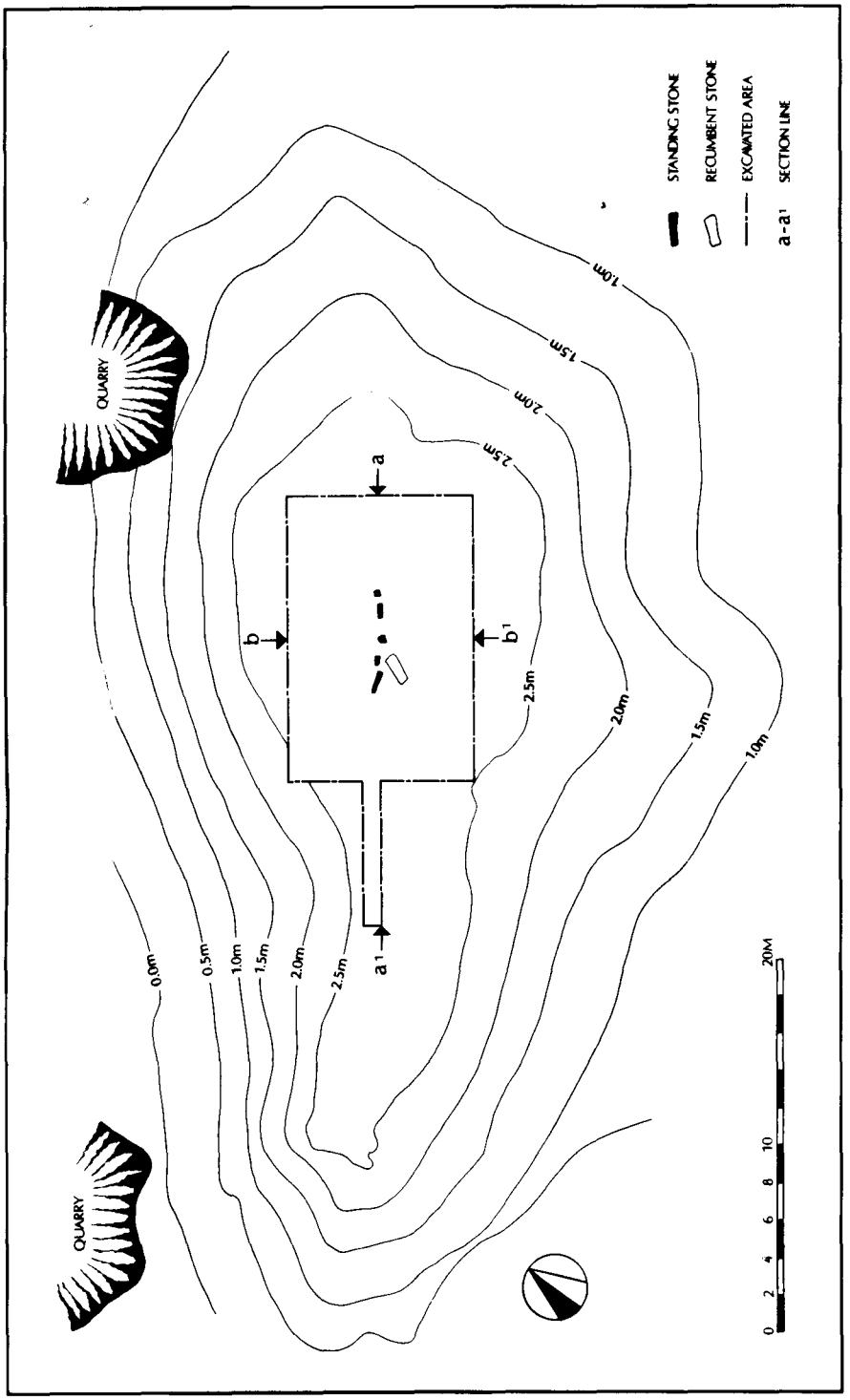

Fig. 2. The stone row on its ridge and the area excavated (contours relate to temporary site datum).

These soils belong to the Peaty Podzol soil association of the podzol great soil group (Gardiner and Ryan 1969, 97). These soils are considered to be amongst the poorest in the country and have severe fertility limitations due to deficiencies in phosphorous, manganese and cobalt and impeded surface drainage. The factors influencing podzol formation and peat initiation are discussed in detail in Lynch (1981, 53-63) and need not be repeated here. However, since an understanding of the various stages in soil formation leading to peat formation is essential for the interpretation of the archaeological stratigraphy, they may be summarized as follows: (i) Degradation of the humus layer begins, and weathering of the minerals in the uppermost soil horizons results in the formation of soluble complexes. (ii) These complexes are leached downward in the profile and accumulate in the B horizon. (iii) With increasing rainfall, the water table rises and leaching intensifies with resultant formation of iron pan at the water table level. Here at Maughanasilly a thin layer of black humus lies between the iron pan level and the enriched B horizon. This is interpreted as a relict of the A horizon (A-R) of the regional podzolization process, which lay below the water table level. (iv) Drainage is impeded by the iron pan and the overlying soil is waterlogged and subsequently gleyed. This gleying process reduced the Maughanasilly soils to a blue/grey mass of concrete texture (G horizon). These gleyed soils however were not uniform throughout the excavated area – in the north-east cutting a brownish/grey clay replaced the grey, and this pattern was repeated to the west of the stone row (Fig. 4, section a/a′). (v) Peat formation begins on the ridge, in the later half of the second millenium BC.

THE EXCAVATION

An area of 170 sq.m centred on the row was excavated with the main east/west section line (a/a′) running along the centre line of the row. Parts of the baulks were removed at a later stage to expose the sockets more fully. An exploratory trench (8m x 1m) was extended to the west of the site (Figs. 2, 4).

Construction and Morphology

Stone Sockets

The five monoliths were placed with some care in individual sockets. The sockets were carefully dug to size along the long axes of the stones but were wider than necessary in a north/south direction, possibly to allow some manoeuvring of the stones into alignment (Figs 3 and 4).

Stone 1 was placed on a large boulder in the boulder clay with several packing stones wedging it firmly in place. The sockets for stones 2 and 5 were not used to their full depth – the shape of stone 5 did not allow it to sit into the tapered socket but there is no obvious reason why stone 2 rests c. 0.12m above the base of its socket. Perhaps its height above ground level was critical? The fill of both sockets was a moist black humic soil with packing stones tightly set in the upper levels. The centre stone (stone 3) had split in two and the stone-lined socket exposed by the fallen half had become filled with peat. Stone 4 was tightly set in its socket with just a few small packing stones on its south side.

The sections a/a′ and b/b′ (Fig. 3) illustrate the difficulty of determining exactly from which level the sockets of the standing stones had been dug. The leaching and gleying as described above had altered both the upper fill of the sockets and the adjacent soil to a uniform hard

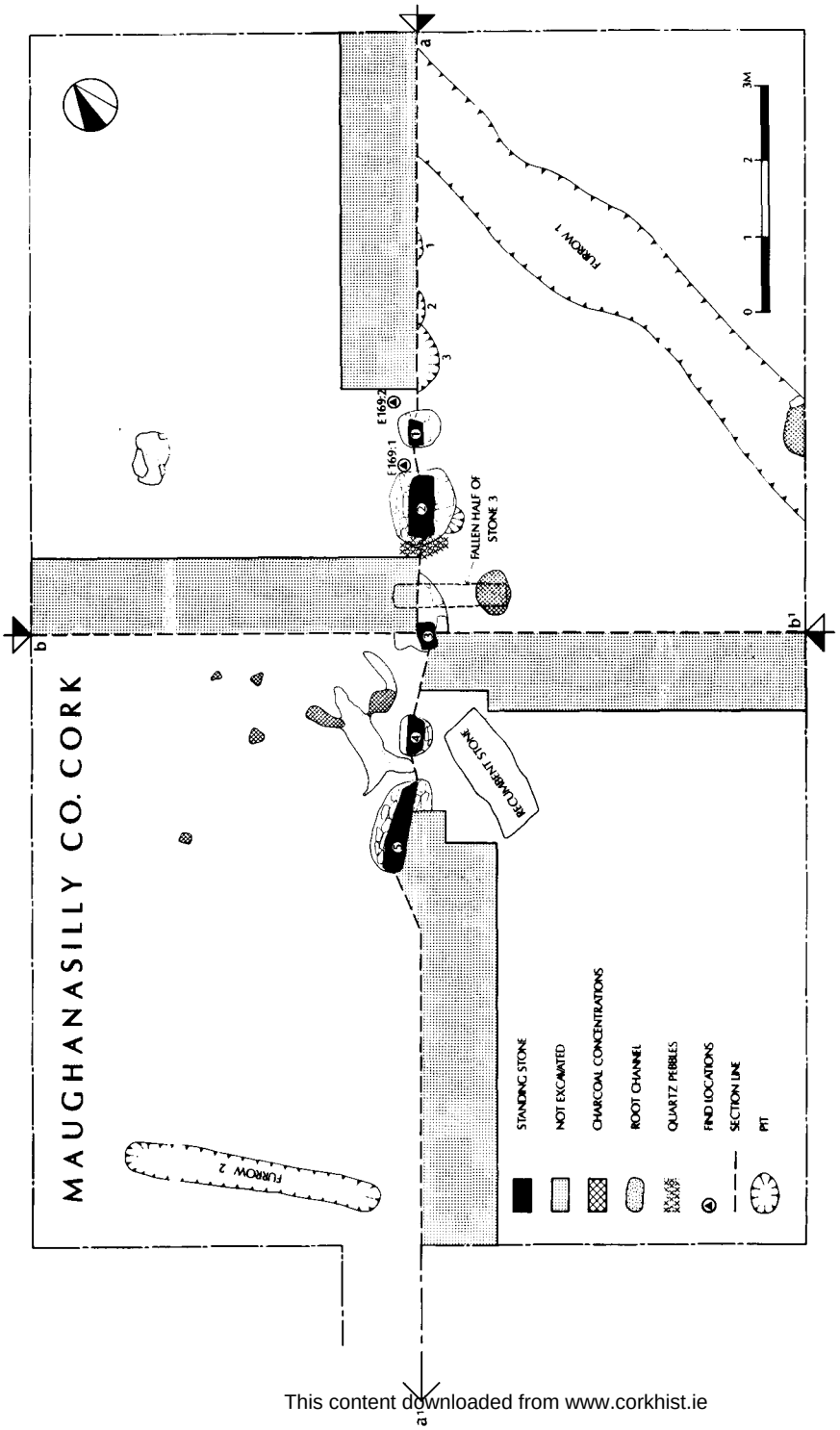

Fig. 3. Plan of excavated features.

grey layer indicating that these processes (and subsequent peat growth) took place after the row was built. Where packing stones were present (Fig. 3, stones 1, 2 and 3), the top stone was usually just flush with the top of the grey layer, suggesting that the sockets were dug from this level, which would therefore have been the old ground surface. The soil changes that have taken place mean, in fact, that even though one assumes that all five of the standing stones were erected at the same time, this cannot be demonstrated conclusively.

Quartz

A thin scattering of quartz pebbles was noted on top of the grey layer around the base of the standing stones with a distinct concentration occurring immediately to the west of stone 2 (Fig. 3). The local sandstone outcrops and even the standing stones themselves contain small veins of quartz which would have been convenient quarries for such pebbles.

Recumbent Stone

Excavation revealed that the slab lying to the south of stone 4 (dimensions 1.60m x 0.60m x 0.20m thick) lay on the grey layer. There is no evidence to suggest that this ever formed part of the row (see description of pits below).

Pits (Figs 3, 4)

Several pit features which may be associated with the construction and/or use of the stone row were noted during the excavation. The stratigraphic relationships of these features is unclear due to the masking effect of the gleying process as described above.

Pit 1 (Figs 3, 4) Possibly a posthole, visible in the orange (B horizon) layer, outlined by iron-pan and filled with a black humic deposit. Diameter: 0.30m narrowing to 0.10m; Depth: 0.17m.

Pit 2 (Figs 3, 4) Shallow pit, visible in the orange layer, filled with black humic deposit. Post-dates pit 3. Diameter: 0.50m; Depth 0.13m.

Pit 3 (Figs 3, 4) A pit outlined by a strip of gley in the orange layer and filled with redeposited orange clay from the enriched B horizon. Dimensions: 1.0m x c. 0.60m x 0.30m deep.

Pit 4 (Fig. 4) Noted in section only, a pit 0.50m x 0.10m deep filled with homogeneous brown/grey clay and a single stone on edge.

Pit 5 (Fig. 4) Noted in section, a pit 1.40m x 0.30m deep filled with grey/brown clay and small stones.

Pit 6 (Fig. 4) Noted in section, a pit 0.30m x 0.18m deep filled with homogeneous grey/brown clay.

Associated features

Very little evidence of prehistoric activity was uncovered during the excavation. This may be due in part to the masking effect of the leaching and gleying processes on the old ground surface and adjacent horizons.

Two furrows cut into the orange layer were recorded (Fig. 3). That in the south-east cutting varied in width from 0.80m to 1.40m, had a maximum depth of 0.25m, its edges were clearly demarcated by iron pan and its fill had been reduced to a hard grey gleyed mass. Flecks of charcoal were the only inclusions noted. A similar, but smaller, feature was traced running roughly north/south in the north-west cutting (Fig. 3). This furrow averaged 0.40m in width, 2.80m in overall length and 0.10m in depth, with small gravel-sized stones compacted into the

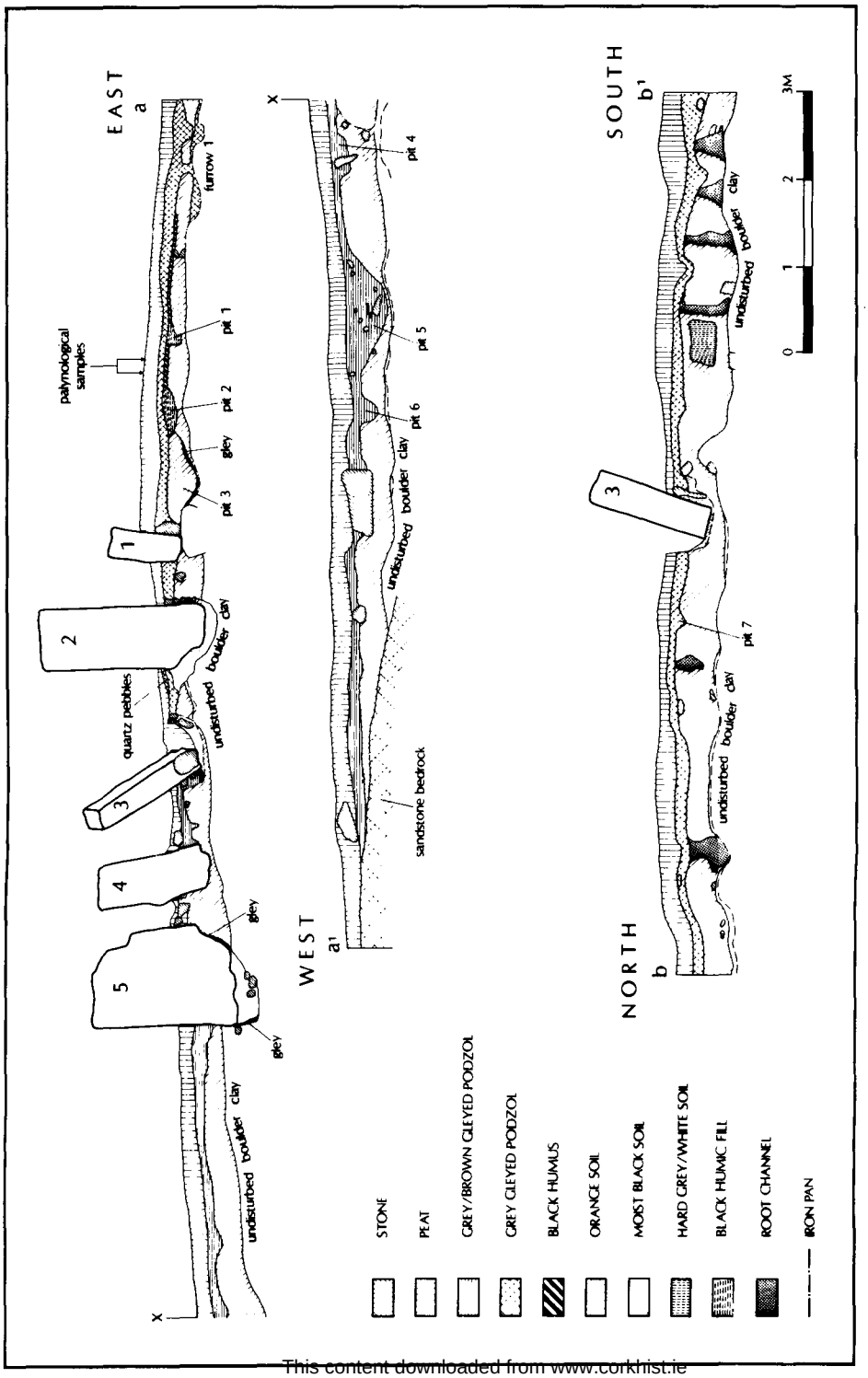

Fig. 4. Sections.

bottom of the feature. Again, the fill had been reduced to a hard grey gleyed deposit. These furrows were dug and backfilled before the leaching and gleying took place, which suggests that stratigraphically they may be associated with the construction or use of the stone row.

Charcoal was noted throughout the grey G horizon and ranged from sparse flecking to denser concentrations with burnt soil (Fig. 3). None were sufficently well-defined to be termed hearth sites, and are probably best explained as the result of burning off the tree-cover on the ridge when the monument was built. This is particularly clear just north of stones 3 and 4 where root channels still contained charcoal identified as scots pine (*Pinus Sylvestris*). Some oak (*Quercus*) and possible alder (*Alnus*) were represented together with scots pine in the other charcoal spreads which may have resulted from fires lit on the ridge (see p. 10 below). There was extensive tree/scrub cover on the ridge prior to, or in the very early stages of, peat formation as evidenced by the mosaic of root channels which survived to depths of up to 0.60m.

Peat growth and associated features

The upper slopes of Knockbreteen consist of rock outcrop interspersed with pockets of blanket bog that coalesce to form a more continuous cover as one descends to the stone row. The peat cover on the crest of the ridge is shallow, ranging from 0.06m to 0.25m in depth. The lower 0.10-0.15m is a black highly humified peat with some charcoal in its basal layer, grading upwards to a brown, more fibrous and less humified deposit.

A scatter of stones (0.10-0.50m max. length) was found within the peat in the south-west corner of the south-west cutting. These may have been thrown onto the ridge during turf-cutting activities in the vicinity.

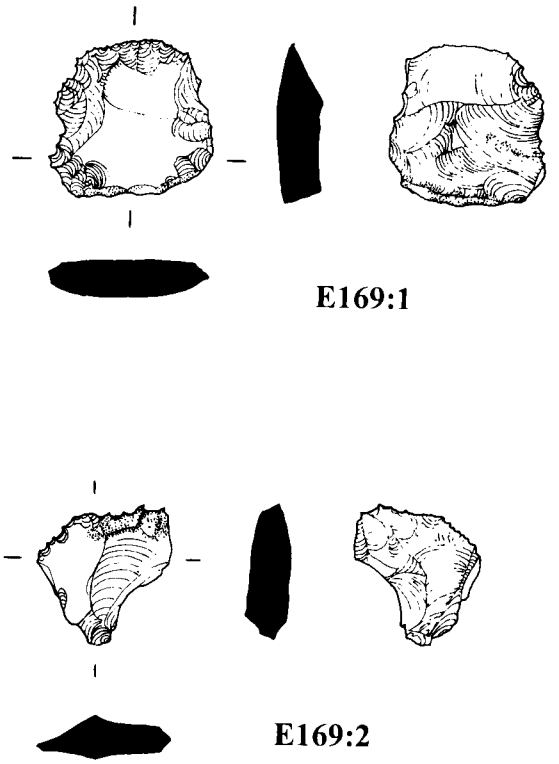

Fig. 5. Flint artefacts (actual size).

Finds (Fig. 5)

Two flint flakes were recovered during the excavation:

E169: 1 A thumb-scraper of dark grey flint with traces of cortex still adhering to the platform. Length: 20 mm; Max. Width: 21mm; Max. Thickness: 6mm. Found 0.18m east of stone 2, just below the surface of the grey, gleyed layer (Fig. 3).

E169: 2 A struck flake of dark grey flint with a little cortex still adhering. Slight evidence of retouch on one edge adjacent to cortex. This piece could have been used as a small side scraper. Length: 18 mm; Max. Width: 14mm; Max. Thickness: 6mm. Found 0.30m

east of stone 1, in the top of the grey, gleyed layer (Fig. 3).

Neither artefact can be assigned to a particular lithic tradition and could belong to any time within the later Neolithic or Bronze Age.

DISCUSSION

Dating

Two charcoal samples were submitted for dating to the Radiocarbon Laboratory, Groningen, the Netherlands.

Sample 1 Combined charcoal from root channels north of stones 2 and 3 and the gleyed G horizon (Fig. 4). The root channels contained Scots pine (*Pinus Sylvestris*) while oak (*Quercus*), possible alder (*Alnus*) and Scots pine are represented in the other spreads.

3265 + /– 55 BP (GrN–9280) 1678–1438 cal BC (95.4% probability level).

Sample 2 Charcoal embedded in the basal peat layer. Identified as Scots pine (*Pinus Sylvestris*).

3265 + /– 55 BP (GrN–9281) 1678–1438 cal BC (95.4% probability level)

(see Appendix 1 for comment on calibration).

Neither date can be definitively linked to the construction of the stone row. The charcoal in Sample 1 was derived from the root channels and the grey gleyed horizon and may be attributed, at least in part, to burning of the trees on the ridge. This burning took place prior to gleying (on stratigraphic evidence) and it probably represents site clearance before the row was built. Sample 1 therefore provides a *terminus post quem* for the construction of the row which means that the row dates to sometime after the period 1678-1438 cal BC. However, assuming site clearance took place immediately prior to construction it is possible that both events fall within this date range.

The origin of the charcoal in Sample 2, which was extracted from the basal layer of peat, is problematical. It may well be derived from the same burning episode(s) which produced Sample 1 and subsequently became incorporated in the basal layer of peat, which would mean that it too provides a *terminus post quem* for the construction of the row. Alternatively, it may be derived from a separate, later, event which took place during the early stages of peat growth and which postdates the construction of the row. There is a 95.4% probability that the two dates fall within a 240-year period, which means that over two centuries could have elapsed between the two events, i.e. the burning of tree cover prior to construction of the row and the production of the charcoal which became incorporated in the spreading peat.

The most which may be inferred from these dates, therefore, is that the construction and use of the Maughanasilly row belongs to the middle centuries of the second millenium BC, placing it within the later Early and Middle Bronze Age or Transition Phase (Brindley 1995, 8) context within Irish prehistory. The podzolization process and extension of peat growth to the ridge also fall within this period.

Dating the construction of Irish stone rows has always been problematical because so few sites have been excavated and no good contextual samples have been retrieved from those sites. The frequent spatial association of stone row, circle and boulder burial in the southwest suggests possible contemporary usage or, at very least, a continuity of ceremonial practices which allows us to consider the dating evidence for the complex as a whole and which, in turn,

may help place the rows in a more secure chronological context (see p. 13 below and also Walsh 1993, 101-113). These monuments have traditionally been assigned to the later Neolithic/Early Bronze Age (Ó Nualláin 1975, 1978, 1984, 1988), but radiocarbon determinations from recent excavations and from the Groningen Research Project in Irish Prehistory, which involves dating material from older excavations and collections, now indicate a later Bronze Age date (Brindley 1995, 9).

The general date-range of c. 1400–c. 700 BC, suggested by this writer in 1981 for the construction of stone circles and rows, was based on uncalibrated radiocarbon dates derived mainly from the excavations at Cashelkeelty, Co. Kerry, and Maughanasilly, Co. Cork, and other sites sampled for palynological analysis throughout Cork and Kerry (Lynch 1981, 74). The calibration of these dates now extends the range to c. 1650–c. 800 cal BC.

At Cashelkeelty, Co. Kerry, a three-stone row stands just 2m distant from a recumbent stone circle. Excavations carried out in 1977 provided a date range of 1370-790 cal BC for the construction of the circle which is also the *terminus ante quem* for the construction of the adjacent row (Lynch 1981, 66).

Recent excavations carried out by William O'Brien at Cooradarrigan boulder-burial in Co. Cork have provided a calendrical age range of 1426 – 1266 cal BC for that monument type, and recent dates for the circles at Drombeg and Reanascreena, both in Co. Cork, have confirmed a later Bronze Age (c. 1200–c. 800 cal BC) context for their construction (O'Brien 1992, 31-34).

A rescue excavation was carried out in 1989 at the three-stone row at Dromteewakeen, Co. Kerry, but the level of destruction caused by land reclamation was such that no dates relating to construction or usage were obtained, and the only artefact recovered was a chert end scraper (Sheehan 1990, 30). This site is part of a complex which includes *fulachta fiadha*, a possible boulder-burial, and a stone wall and stone trackway in the peat, all located at an altitude of 100m OD on the floor of the Caragh River valley which is steeply enclosed by the mountains of the Magillycuddy Reeks. A palaeoecological study was undertaken by Karina McDonnell in conjunction with the excavation. This indicated an opening-up of the Atlantic oak woodland and pastoral-based farming in the period c. 1600–c. 800 cal BC with the stone wall and trackway being constructed at the end of this period (McDonnell 1991, 53). This indicates human settlement and activity in the valley throughout the Middle/Late Bronze Age when we would also expect the stone row to have been constructed.

The evidence as it stands at the moment, therefore, points to a Middle/Late Bronze Age date for the circle/row/boulder-burial complex in south-west Ireland, with the possibility that the rows might belong to the earlier part of the series. This suggested date-range agrees broadly with the provisional chronology for stone rows in Britain and Ireland generally as put forward by Burl, where he places the stone rows in the period 1800-1200 cal BC with stone pairs, 'the final manifestations of a linear tradition', continuing to about 1000 BC (Burl 1993, 23, 181). Burl argues, however, that circles in general are earlier than the rows. Recent work in Scotland also provides confirmation for these dates with construction of the two three-stone rows at Ardnaross in

Ill. 2. The stone row from west, during excavation. (*Photo: A. Lynch*)

Mull being placed at around 1000 BC (Ruggles and Burl 1995, 523).

The row in context

A stone row, in its broadest sense, could be defined as a 'prehistoric linear setting of regularly spaced stones', and would therefore include stone pairs, avenues, tangential rows, long rows and short rows. There is a concentration of stone pairs (over 100) and short rows in south-west Ireland but, for the purposes of this paper, a row is defined as 'three or more stones, intervisible and in a straight line', which places the Maughanasilly row in a group of over 80 distributed throughout counties Cork and Kerry. This is a very distinct monument group, where up to six stones, often of megalithic proportions, can be arranged in a line ranging from 2.70m to 13.4m in length. The orientation of the rows is consistently NE /SW, and in many cases the stones are roughly graded in height with the tallest stone at one end – this stone height gradation can be in either direction. The majority of these rows are found in isolation but a number are sited close to five-stone circles, boulder-burials, cairns and enclosures (Ní Loingsigh 1976; Ó Nualláin 1988; Walsh 1993).

The distribution of the Cork and Kerry rows overlaps with that of the circles, with concentrations in the highlands flanking the head of the River Lee, in the hinterland of Bantry Bay and on the Beara peninsula (Fig. 1). The distribution is predominantly inland and at altitudes ranging from 30 to 280 metres above sea level (Ó Nualláin 1988, 190-91).

Stone rows occur sporadically outside counties Cork and Kerry with a small concentration recently identified in Connemara (Gibbons and Higgins 1988). The second major grouping occurs in mid-Ulster, particularly counties Tyrone and Fermanagh. In general, the Ulster rows consist of numerous small stones set close together, often set tangentially to circles, and they can run for up to 30m or more in length. The circles and rows at Beaghmore in Co. Tyrone are the only ones to have been examined in any detail and have produced dates ranging from the late Neolithic to the Late Bronze Age (Pilcher 1969, 73-91). The morphological differences between the Munster and Ulster rows is striking and may well represent different cultural traditions

These Irish rows belong to a wider 'western seaboard' tradition of Bronze Age ceremonial monuments which includes stone pairs, short rows, long rows, avenues and multiple rows which are to be found in Brittany, Wales, the west coast of England, the Western Isles and mainland Scotland. Pairs and short rows seem to have a distinctive Irish Sea distribution, being confined to the western coastal regions of Wales and Scotland, the northern coast of Brittany and, somewhat out on a limb, south-west Ireland. The significance of the differing distributions is as yet unclear and neither do we have sufficent evidence to suggest the *loci* of inspiration or indeed the nature of the interrelationship between the separate groups and externally between these groups and related monument types.

The Maughanasilly valley

The 'catchment area' of the Maughanasilly row is well-defined by the encircling mountain ranges, and within this enclosed landscape there are several monuments attesting to later prehistoric activity (Fig. 1). A five-stone circle adjacent to a cairn and a single standing stone are sited on the northern slopes of the

valley in the townland of Illane. Close to the floor of the valley is a fallen monolith which may originally been one of a pair, and c. 100m west of the row, close to Lough Atooreen, a site marked as 'Gallaun' on the 6" OS map (1902 edition) no longer survives. The latter may in fact be a misplaced marking for the stone row which strangely does not appear on any edition of the 6" OS maps.

Prior to tree-planting in 1995, extensive fieldwalking was carried out by Redmond Tobin on the northern slopes of Knockbreteen, extending eastwards from the row to the townland boundary. A number of previously unrecorded sites, including three well-preserved *fulachta fiadha*, two possible hut sites and traces of pre-peat field systems, were identified between the 100m and 180m contours, reaffirming the valley's importance in the prehistoric period (Fig. 1). Although in the absence of dating evidence these cannot be shown to be contemporary with the row, the mid- to late Bronze Age dates now emerging for *fulachta fiadha* in general (Brindley 1995, 7-9) would suggest that what we have at Maughanasilly is a relict Bronze Age landscape. With the exception of the two possible hut sites, settlement sites of the period have remained elusive, but more detailed aerial reconnaissance along the valley floor and in the environs of Lough Atooreen might yield results.

The changing patterns of vegetation in the Maughanasilly valley during later prehistoric and early historic times were reconstructed from palynological analysis of peat and mineral soil samples taken from the main east/west sectional profile of the excavation (Lynch 1981, 107-111). Extensive sampling for plant macro-remains was also undertaken during the excavation, but yielded only a small number of fungal spore covers.

Around the time the stone row was constructed, before peat growth invaded the ridge, the local landscape was one of open woodland comprising hazel (*Corylus*), birch (*Betula*), alder (*Alnus*), holly (*Ilex*), oak (*Quercus*) and Scots pine (*Pinus sylvestris*). There was limited open grassland with some indicators of pastoral activity. Heathland was widespread on the hillsides and peat growth had commenced. Since the pollen record in the mineral soil only relates to the period of podzolization, we have no way of knowing whether there was more extensive clearance and cultivation during earlier Bronze Age times, but it is clear that by the time the stone row was constructed lands were lying fallow or were being used for limited grazing, before final abandonment.

By the time peat growth had extended to the ridge in the mid-second millennium BC, woodland cover had increased in the valley with holly (*Ilex*), hazel (*Corylus*) and birch (*Betula*) having invaded the abandoned clearings. This abandonment of the Maughanasilly valley appears to have continued to early historic time (precise dates were not obtained), when extensive clearance of the secondary woodland took place and both cereal cultivation and pastoral farming became established and continued to this century. A single grain of maize (*Zea mays*) was identified in the upper levels of the peat, probably a legacy of the Famine period (mid-nineteenth century) when maize was introduced to Ireland and some experimentation with its cultivation took place.

The surviving ceremonial monuments, together with the *fulachta fiadha*, pre-peat field boundaries and possible hut sites, point to a well-established settlement in

the valley in the mid-second millenium BC. This was a period of settlement expansion in the south-west generally with increased woodland clearance and agricultural intensification. The copper mines at Mount Gabriel, only 27 km to the south-west of Maughanasilly, were also exploited at this time and, according to O'Brien (1994, 251), this copper production was probably geared to servicing the metalworking needs of the expanding agricultural communities in addition to supplying the market for prestige objects such as decorated bronze axes.

Function and use

The results of the excavation have done little to clarify the motivation which led to the construction of the row and what function(s) it might have served within the community that erected it. In the absence of any obvious function, stone rows have traditionally been labelled as possible route markers or territorial boundary markers. The siting of the Maughanasilly row, while prominent locally, would not appear to mark any directional change in the main east/west route along the valley slopes. Similarly, one might expect territorial boundaries to coincide with some fairly obvious topographic features such as rivers or hilltops rather than midway along a hillslope.

The excavated features which may be associated with the construction/use of the row include the two shallow furrows whose function remain obscure, some evidence of burning and a series of shallow pits. One of the pits (Fig. 4, pit 1) which lies just over 2m east of stone 1 may have functioned as a posthole and could conceivably have held a 'ranging' post used to set out the alignment. The remaining pits could also be related to the laying out and construction of the row although an alternative funerary function is also suggested below.

When one 'climbs' the ridge and stands at the stone row, the sense of an elevated place, so common at many of the circles and rows of the south-west, becomes overwhelming. The steep slopes of Knockbreteen rising to the south means that the visitor's visual field sweeps from south-west through north and along the valley to the north-east. The irregular gradation of stone height does not 'draw the eye' in any one direction, but Lough Atooreen to the south-west, with the Bull's Pocket rising to 168m OD behind it, provides a natural focus. Sweeping views are also to be had across the valley to the peak Knockanecosduff (124m OD) and for a distance of c. 4 km to the head of the valley. It is not difficult to imagine the crest of this ridge being the focus of ceremony and ritual for the Bronze Age families living in the Maughanasilly valley.

But why a row of stones? Why not a circle which at least encloses a space which could be termed sacred or special? The deliberate placing of stones in a short straight line suggests the creation of a line of sight which, when extended to the horizon, may mark a prominent feature in the landscape or an event of astronomical significance which occurs in that sector of the horizon.

This possibility of an astronomical orientation was recognised early this century, with Boyle Somerville's examination of the sightlines of a range of megalithic monuments in Co. Donegal (Boyle-Somerville 1909), and further papers, which included the Cork sites, appeared during the following years (Boyle-Somerville 1922-23; 1927). A paper published by Alexander Thom in 1954 entitled 'The Solar Observatories of

Megalithic Man' marked a resurgence of interest in megalithic astronomy in Britain, but no further work was carried out on Irish sites until Barber (1973) analysed the orientation of the main axes of the recumbent stone circles of Cork and Kerry and concluded that out of a total of 30 sites examined, 12 appeared to have been orientated on solar or lunar events. These results have since been re-assessed and while it is accepted that the distribution of the azimuths of the axes is not random, preferential orientation to the rising and setting positions of the sun and moon has been discounted (Heggie 1981, 183). A study of the stone rows by the author in the early 1970s also tested the hypothesis that the centres of the stones in a stone row define a line which is orientated on an event of astronomical significance (Ní Loingsigh 1976; Lynch 1982). The results of the tests carried out indicated that a significant number of the rows were orientated on events including the lunar standstill positions, the solstices and equinoxes and a slight preference for lunar alignments was suggested (Lynch 1982, 212). This study, however, did not produce orientations of any significance for the Maughanasilly row.

In recent years, Ruggles has undertaken detailed analyses of the stone circles and rows of Scotland and south-west Ireland in the light of new ideas and approaches within archaeoastronomy (Ruggles 1994; Ruggles and Burl 1995; Ruggles and Prendergast 1996; Ruggles 1996). He included Maughanasilly in his data collection and, quoting slightly higher azimuth values than in the original survey, concluded that the sightline to the north-east was of primary interest and was orientated on the northern lunar standstill (i.e. the most northerly point at which the moon rises during the 18.6 year lunar node cycle). Ruggles also notes that there is a prominent mountain peak (1017 ft OD in Curraghlass Td.) on the horizon within the sightline range (Ruggles 1994, 14).

The general conclusions emanating from this more recent research on stone rows suggest that the preferred direction of sightlines, as determined by stone height gradation, corresponds with distant rather than near horizons and, in many instances, a prominent hill or high point occurs in the preferred direction. The rows of Cork and Kerry can have significant orientations in both a south-west or a north-east direction, whereas at the rows and recumbent stone circles of Scotland the predominant interest is in the south-west direction.

The repeated occurrence of lunar alignments in a significant proportion of these sites suggests a common interest in the symbolism of the moon. There is no evidence however for high-precision 'lunar observatories' as espoused by Thom (1967, 1971) but rather imprecise and symbolic alignments. Ethnohistorical sources give many examples of the special bond between agrarian societies and the heavenly bodies whose movements must have been carefully observed as indicators of changing seasons which in turn governed their food supply. This knowledge of celestial phenomena and nature in general has led societies to forge mythical and religious associations with the sun, moon and stars as fundamental features of their world view. In the words of Burl (1993, 62) 'the rapidity of the moon's movements, its changing shape and periodic disappearance must have intrigued, perhaps awed prehistoric people'. Even though the cycles of the moon are among the most obvious in the sky and form the basis for many simple calendrical systems, an interest in the

horizon rising or setting of the moon is relatively rare. Ruggles and Burl (1995, 526) suggest that because of the high latitude of these sites, the major standstill moon would be seen to scrape along the northern or southern horizon, which would have been quite a rare and spectacular event and may consequently have assumed some importance. The moon has had considerable influence on folk custom and belief in Ireland and many aspects of the folklore of the moon may show links with ancient moon worship. In Irish moonlore, the new moon was undoubtedly the most important of the lunar phases and its appearance was greeted in most parts of the country with a particular ceremony. The waxing and waning of the moon was also believed to have an influence over certain things, and in folk medicine certain cures were considered to be more effective if they were carried out under the moonlight (McClafferty 1988).

Was astronomical symbolism the driving force behind the construction and location of the stone rows or was it just one element of a more complex system of beliefs and rituals? An association with burial and burial rites has been argued convincingly for the stone circles and boulder burials (Ó Nualláin 1984; O'Brien 1992) but the situation is less clear for the rows. At Cashelkeelty, Co. Kerry, a large grave-like pit, which could have held an inhumation, was located adjacent to the row (Lynch 1981, 66) but neither of the excavated rows at Maughanasilly or Dromteewakeen in Co. Kerry produced evidence for burials. It could perhaps be argued that some of the pits at Maughanasilly may have contained token deposits of cremated human bone which did not survive the podzolization process, a burial rite which is also tentatively suggested for the boulder burials at Cooradarrigan and Ballycommane, Co. Cork by O'Brien (1992, 30).

While the link with funerary rites is at this stage rather tenuous, there is no doubt that the scattering of quartz pebbles around the base of the stones at Maughanasilly had some special significance. A similar scattering of quartz was found during the excavation of the stone circle at nearby Knocknakilla (Gogan, 1931) and the tradition was also well-established among the circle and row builders of Scotland (Ruggles and Burl 1995, 526) and Wales (Burl 1993, 162). The use of quartz in the construction of certain Irish megalithic tombs, particularly passage tombs, has been well recorded (Macalister 1932; Herity 1974; O'Kelly 1982; Eogan 1984; and Mount 1988) and quartz monoliths have been incorporated in stone circles and rows, the most notable example being the row of six quartzite boulders at Gleninagh in Connemara, Co. Galway (Gosling 1993). The placing of quartz and other white pebbles with burial deposits was a frequent occurrence in the Neolithic and Bronze Age (Koeberl 1997, 8; Lynch and Ó Donnabháin 1994, 5), and in some instances, most notably the domestic sites at Lough Gur, quartz was used as a substitute for flint in the manufacture of implements. The association between quartz or white pebbles and burial or 'sacred' places can be seen even today in the white stones placed as 'votive offerings' at holy wells and the many graves covered with white stone chippings in modern graveyards. White stones or pebbles play a significant role in Irish folklore and can be associated with ill-luck or good luck and in some areas they were believed to have curative powers (Ó Súilleabháin 1970; Ríonach Uí Ógáin pers. comm.).

The scale of the Maughanasilly monument is such that it could have been erected by a single family or small group of people. We know that at the time of its construction the surrounding lands were being used for limited grazing, but soil degradation was well advanced and peat was rapidly spreading, leading to the eventual abandonment of the valley. The impression we get is of a society in the final stages of occupation of the Maughanasilly valley. Their stone row, majestic on its ridge, would have been the focus for their gatherings and ceremonies, possibly involving the moon, death and fire. As Robinson (1996, 203) so eloquently states in relation to the row at Gleninagh 'the practical astronomy of horizons is not enough to determine the positioning of the stone alignment ... (but rather) this site marks the intersection of an astronomical constant of human spatial awareness; it is in itself ceremonious, observant of the geometry of humanity and the heavens'.

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APPENDIX ONE

The Calibration of the Maughanasilly Radiocarbon Dates

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3265 +/-55 BP GrN-9280 Combined charcoal from root channels (*Pinus sylvestris*) and the gleyed old ground surface (*Pinus sylvestris*, *Quercus* and possible *Alnus*).

3265+/-55 BP GrN-9281 Charcoal embedded in the basal peat overlying the site (*Pinus sylvestris*).

The calibration programme used is that of Van der Plicht and Mook (1989). The date range at two sigma (95.4%) is:

1678 cal BC ... 1438 cal BC.

Comment

Although the radiocarbon ages of the two samples are the same, calibration indicates that the actual calendar dates (with 95.4% probability) fall within a range of about 240 years, i.e. anywhere between 1678 cal BC and 1438 cal BC, and could be anywhere up to 240 years apart. Further consideration of these dates must take into account both the archaeology of the two dates and the statistical nature of the dating method. The first has to do with the quality of association and the possible own-age of the sample (Waterbolk 1971, 1983). The second has to do with the fact that every radiocarbon date is a statistical probability. Although statistically the two dates may be the same, in terms of Waterbolk's guidelines the actual gap between the two remains unknown.

It is possible that all the charcoal

originated from a single event and later became incorporated in a secondary feature (the peat), but if the two samples are derived from separate events, it is equally likely that a period of anything up to three centuries could have elapsed between the possible construction date as represented approximately by GrN-9280 and the deposition of the charcoal (GrN-9281) which became incorporated in the peat when it started to invade the site.

There are no other radiocarbon dates from stone rows which can either confirm or refine the result above. Radiocarbon dating of stone circles has tended to place them at a somewhat later date in the Bronze Age.

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