

Excavation of Bookan chambered cairn, Sandwick, Orkney

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ABSTRACT

Excavation at the chambered cairn of Bookan, Sandwick, Orkney, in June 2002 revealed that the cairn excavated by James Farrer in 1861, and later described and planned by George Petrie and Henry Dryden, was only the primary phase in the history of the site. After the site had fallen into disrepair or been deliberately slighted, the original cairn, c 7m in diameter, was incorporated in a stepped cairn or platform, c 16m in diameter, bounded by three concentric revetments. The role of Bookan as the type-site for a variety of early style of chambered cairn is reconsidered, along with the ‘monumentalization’ of the site in an Orcadian context.

INTRODUCTION

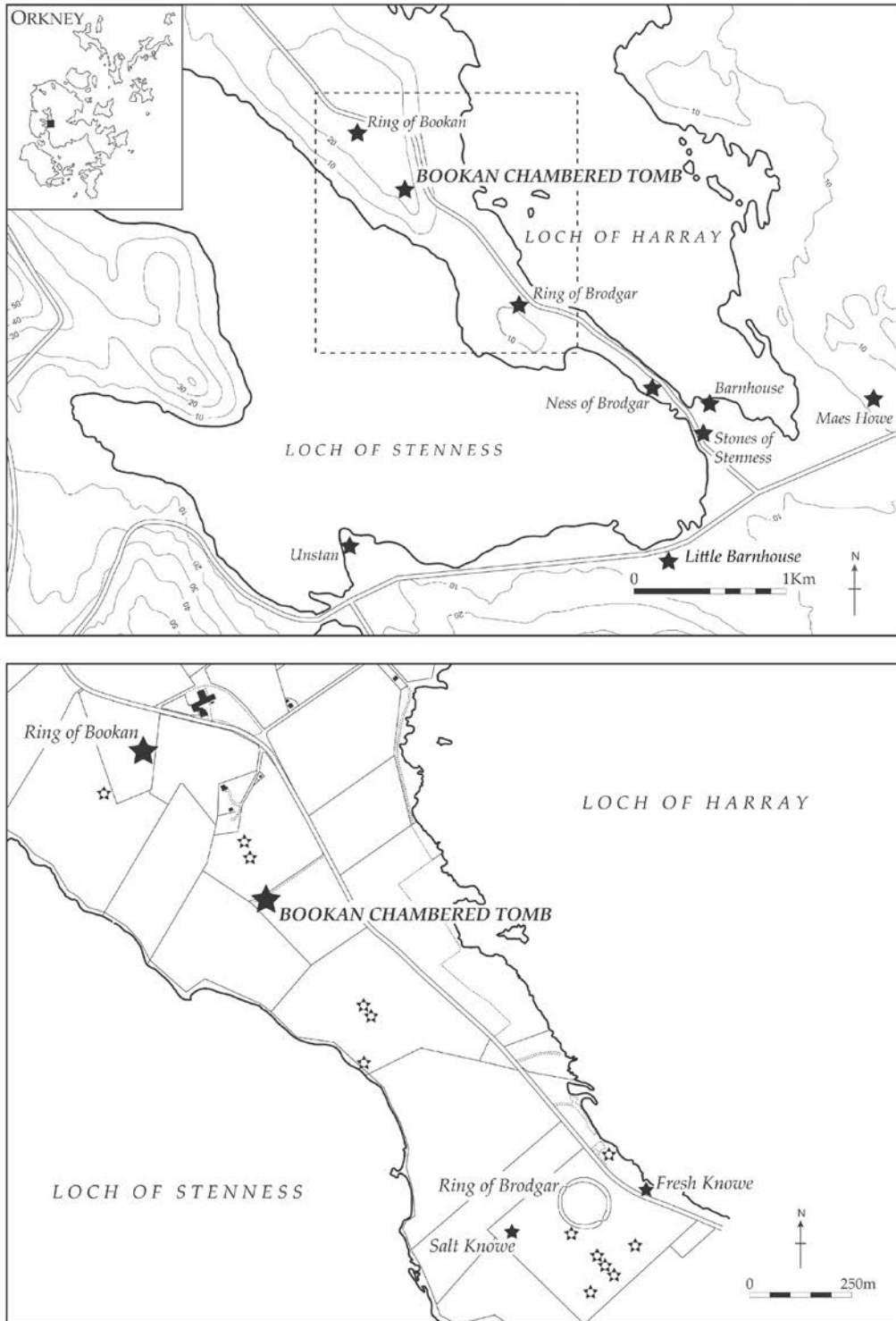
Excavation was undertaken at the chambered cairn of Bookan (HY21 SE10) in June 2002. The site is situated in central mainland Orkney (NGR: HY 2864 1412), on the crest of a ridge, at c 26m OD, c 1km north-west of the Ring of Brodgar, with commanding views over the Brodgar peninsula and the Lochs of Stenness and Harray (illus 1). The geology is Lower and Upper Stromness Flags of the Middle Old Red Sandstone series overlain by boulder clay. The monument lies at the north edge of a field of improved grassland. The field was not brought into cultivation until the early 1960s. The site is located within the ‘Inner Buffer Zone’ of the ‘Heart of Neolithic Orkney’ World Heritage Site (Historic Scotland 1998).

The Scheduled status of the site and its location within the Inner Buffer Zone of the World Heritage Site meant that in recent years

Historic Scotland’s Monument Warden had reported the condition of the site on an annual basis. These reports highlighted the ongoing damage to the site by farming practice, and rabbit and rat activity. Subsequently, the site was identified by Historic Scotland as a priority for management. In light of these factors, coupled with research objectives, a trial excavation was mounted. The main aims were to assess the damage being done to the monument; formulate a management strategy; assess the site’s potential for public display; obtain dating evidence; and assess the surviving evidence against the archive.

The excavation was also intended to resolve some fundamental questions as to the nature and date of this rather enigmatic site. Although used as the type-site for a sub-group of Henshall’s ‘Orkney–Cromarty’ (O–C) group of chambered cairns (Henshall 1963, 84–5), several aspects of the architecture and its apparent association

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ILLUS 1 Site location (Based on Ordnance Survey maps © Crown copyright)

with late Neolithic Grooved Ware pottery (Henshall 1985, 108) cast doubt as to its position in classic chambered tomb typologies.

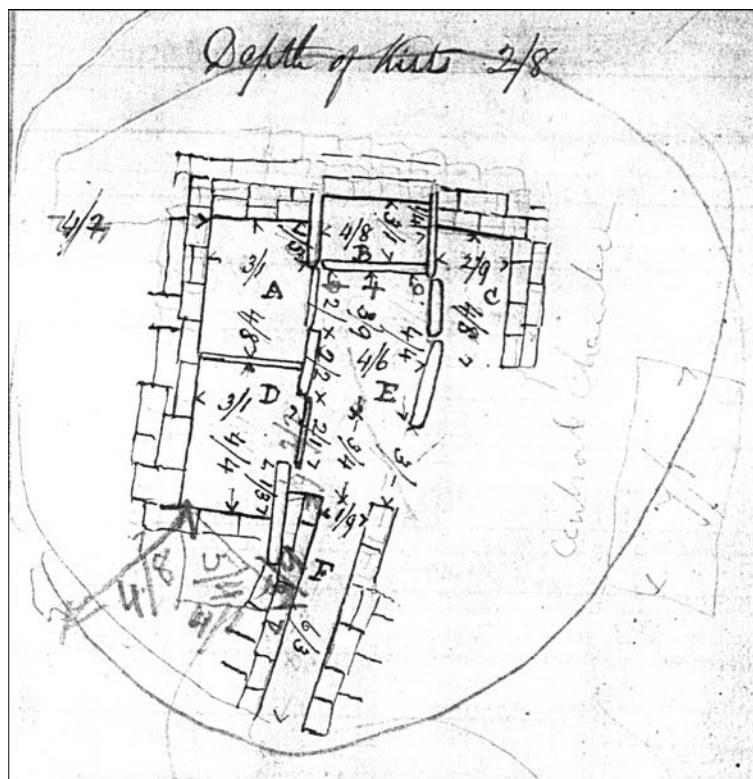
The Orkney Archaeology Trust undertook the excavation over a two-week period with the assistance of Dr Colin Richards and students from Manchester University, with funding from Historic Scotland and the Orkney Islands Council.

ARCHAEOLOGICAL BACKGROUND

The first recorded excavation of the site was in July 1861. James Farrer, the MP for Durham and who was responsible for investigating many archaeological sites in Orkney, instigated this investigation. As frequently occurred on many sites Farrer opened, the excavations were recorded by George Petrie, a local estate factor (nd; 1863; 1866; 1871). Petrie's plans and sketches (illus 2 & 3) were later copied by Henry Dryden (1879), the famous architectural illustrator. Petrie noted that a party of labourers, who were employed by Mr Farrer to open Maes Howe, were ordered to 'explore a smaller mound on the margin of a very large quarry' (1866, 222).

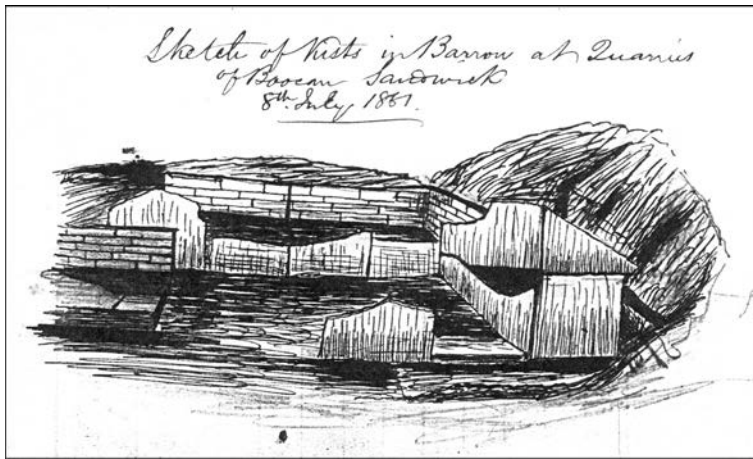
The mound was:

about 44ft (13.4m) in diameter and about 6ft (1.8m) high when opened; but had been partially examined on some former occasion, and the upper part was consequently in a ruinous state ... a circular wall or facing, about a foot in height ... was found



ILLUS 2 Detail of Petrie's sketch plan of Bookan (Notebook 7; © *The Trustees of the National Museums of Scotland*)

about 11ft (3.4m) within the base of the barrow. A low passage, 6ft 3in (1.9m) in length, and 21in (0.55m) in width and height [later noted by Petrie as being too small to have been crawled through and considered to be a drain], extended from the outer surface of the wall on the south side of the barrow to a small chamber or kist, 7ft 1in (2.16m) long and 4ft 6in (1.37m) wide, formed by flagstones set on edge. At the north end of this was another kist 4ft 8in long (1.42m) and 3ft 1in (0.94m) wide. On the east side was a similar kist, 4ft 8in (1.42m) long and 2ft 9in (0.84m) wide, and on the west side were two similar kists, each of which was the same length as the eastern kist, and both were 3ft 1in (0.94m) wide. All the kists were about 2ft 8in (0.8m) deep. A flint lance head and some pieces of small clay vessels or urns lay at the north end of the central kist, but no bones were found in it. Remains of human skeletons, greatly decayed, lay in the surrounding kists (Petrie 1863, 35–6).



ILLUS 3 Detail of Petrie's isometric sketch of Boocan (Notebook 7; © The Trustees of the National Museums of Scotland)

Later Petrie noted that although this barrow 'resembled in construction the ordinary Picts-house ... the chambers were formed by large flagstones set on edge' (Petrie 1866, 222). The pottery Petrie described as 'clay cups or small vessels ... with a rudely formed raised moulding in a waved form encircled the upper part of one or more of the cups' (Petrie 1871). The finds from these investigations remain unlocated.

In the first scientific account of the chambered cairns of Orkney, Dr Joseph Anderson saw Boocan as a 'link between the triply subdivided chamber of the Caithness group and the chamber surrounded by cells' (Anderson 1886, 291). The RCAHMS visited the site in 1928 as part of their survey for the Inventory of Orkney (RCAHMS 1946, 263–4, no 708). The surveyor, J M Corrie, recorded the site as:

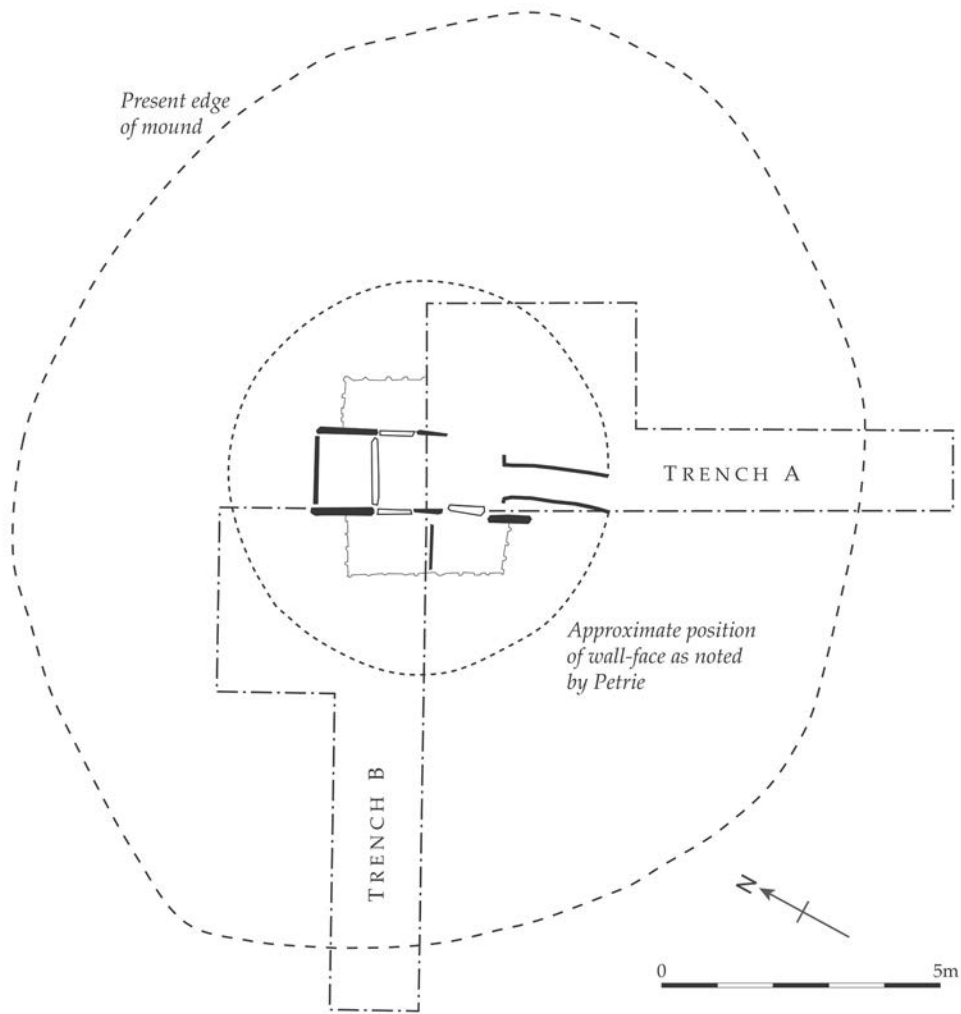
now roofless ... much broken down, ... exposed in the centre almost at ground level ... On the north side where the mound has been to some extent been banked up as the result of the excavation it rises to a height of about 6ft 6in (2m) and elsewhere has a height of about 4ft (1.2m) on average. Overall the structure measures, N/S 53ft (16.2m); E/W 55ft (16.8m) (Corrie 1928, Notebook 2; 24.7.28, no 59).

Audrey Henshall visited the site in 1955 and 1981, as part of her research for the inventories of chambered tombs (Henshall 1963, 186; Davidson & Henshall 1989, 103–4). Her description of the site corresponds with that visible today. The discrepancy between Petrie's dimensions (c 13.5m in diameter) and later descriptions (c 17m in diameter) is the result of the spread of Farrer's excavation spoil. Only

the top of the uprights defining the sides of the north chamber and the west side of the passage were recognizable before this excavation. The slabs shown in black on illus 4 were considered by Henshall as roof supports, while the stones shown in outline were thought to be kerb-stones at the entrances to the side chambers. The possibility of later structural alterations by 'a simple enlargement of the cairn, apparently without an extension of the passage to allow access' was noted (Davidson & Henshall 1989, 61). The apparent simplicity of its layout and similarities to some presumed early forms of chambered cairns led Henshall (1963, 84–5) to use the site as the type-site for a sub-group of her O–C group of chambered cairns.

GEOPHYSICAL SURVEY

As part of the 'Heart of Neolithic Orkney' World Heritage Site Geophysics Programme, it was planned to survey the field in which site is located prior to excavation. However, due to agricultural considerations this was not done until after the excavation (GSB 2002, Area 6). It was hoped that this would identify



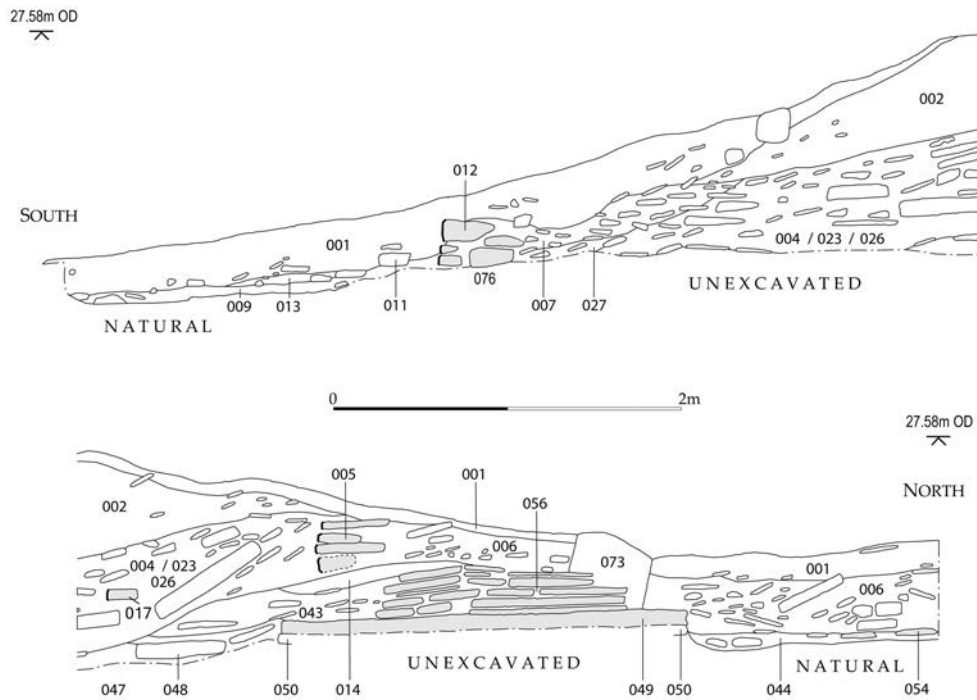
ILLUS 4 Trench locations based on details from Davidson & Henshall (1989, 104) and present observations

possible associated features. The surrounding area, however, was magnetically quiet, with only small isolated anomalies being identified. In the immediate vicinity of the cairn magnetic disturbance was interpreted as the result of ferrous interference from old fencing material. In conclusion, the geophysics failed to identify any definite associated features. It must be noted, however, that the areas to the north and west of the cairn, in the adjacent fields, were not surveyed.

EXCAVATION/STRATIGRAPHIC SEQUENCE

The following presents a summary of the excavation results; fuller detail can be found in the Data Structure Report contained in the site archive (Card 2002). Due to time constraints and the possibility of conserving the site for public display, the main structural elements were left undisturbed where possible.

The trenches (A and B) were laid out on a quadrant basis (illus 4), to provide cross-sections and profiles through the cairn and extended beyond the visible



ILLUS 5 Trench A, main north-south trench section

upstanding remains (illus 5–8). The location of the trenches was determined from the plans of Petrie (illus 2) and Davidson & Henshall (1989, 104), and laid out in relation to the visible upright slabs of the northern end chamber. The trenches were placed to expose a cross-section of features including the passage, part of the central chamber, two side chambers and sections through the surrounding cairn material. All excavation, including the removal of topsoil and turf, was conducted by hand.

The present limited excavation has meant that many presumptions have been made, including that the unexcavated structures follow the excavated structures both in terms of sequence and construction method. Although discrepancies did arise between Petrie's findings and those of the present author, it is presumed that Petrie reported in good faith and that his observations were as accurate as his measurements.

EXCAVATION RESULTS

Five main phases were identified in the recent excavation: Phase I: The construction of the tomb;

Phase II: Use of the 'tomb' with the interment of human remains; Phase III: The abandonment and destruction of the tomb; Phase IV: The 'monumentalization' of the site with the construction of three concentric revetments on the remains of the original cairn; Phase V: Evidence of 19th-century investigations.

PHASE I: CONSTRUCTION OF PRIMARY TOMB (ILLUS 9)

By extrapolation from the excavated evidence in conjunction with measurements from Petrie's plan, the primary cairn was roughly oval in plan and measured *c* 7m north/south by *c* 5m east/west. In brief, the tomb consisted of a short passage, *c* 2m in length by *c* 0.5m wide that led into a rectangular central chamber, *c* 2m north/south by 1.4m wide. Originally, five side chambers were symmetrically arranged around the central chamber: two to the west, two to the east and one to the north opposite the passage. The chamber to the south-east had been partially removed in prehistory. The side chambers were all of a similar

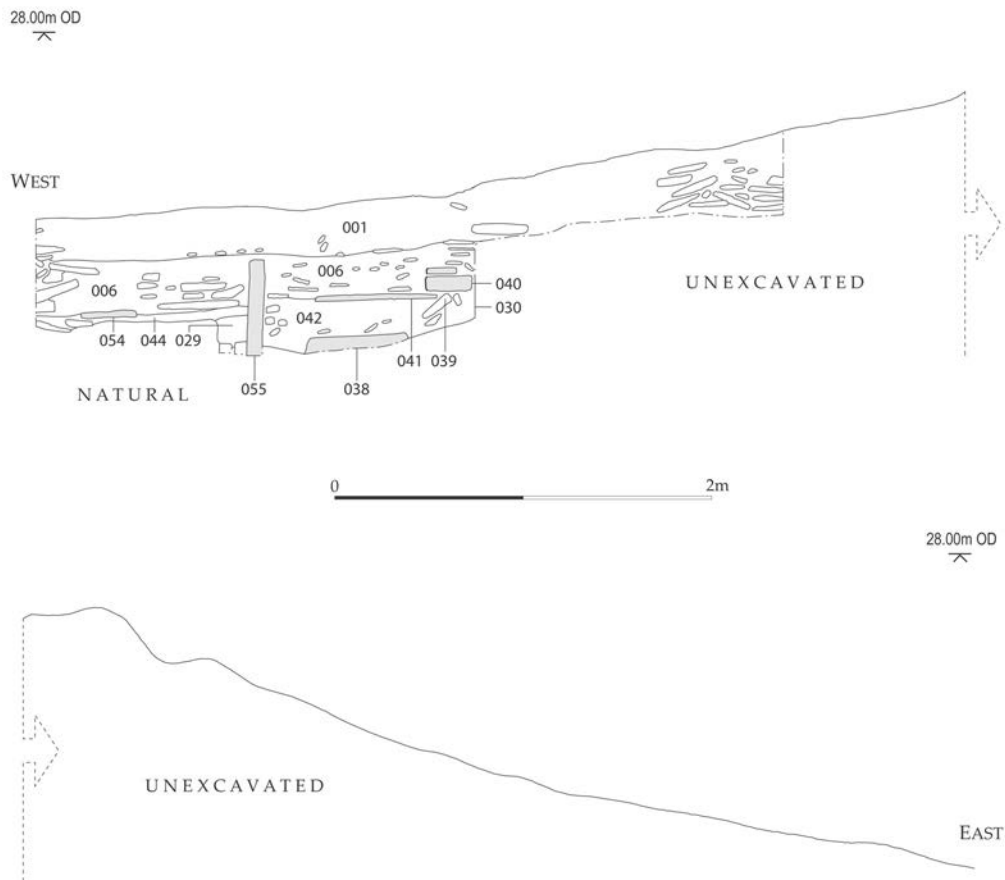
size, c 1.3m long by 0.9m wide. The back wall of the north chamber was, according to Petrie's sketch (illus 3), formed by a single orthostat. This would imply that this chamber had the appearance of an above ground cist (Richards 2005, 194) unlike the other side chambers where drystone masonry formed the outside walls. It should be noted, however, that in Petrie's sketch plan (illus 2) and in the Dryden (1879) 'copies' (reproduced in RCAHMS 1946, 264) of both of Petrie's illustrations, the back wall of the north chamber is depicted as drystone masonry similar to the other side chambers. The extent of this excavation did not allow the nature of the northern chamber's back wall to be confirmed.

The masonry forming the back of most of the side chambers also formed the inner face of the outer encasing wall of the tomb. On average this encasing

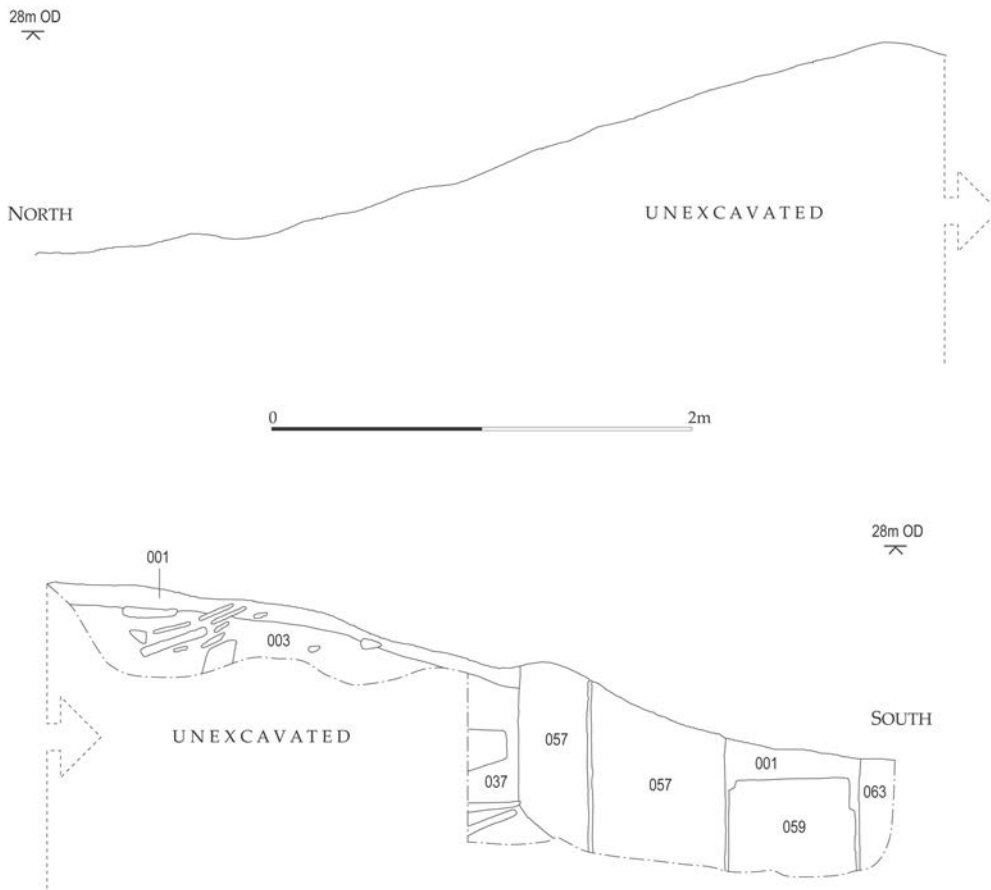
wall was c 1m thick, apart from the front where it was c 1.5m thick. The north chamber and the divisions between the chambers consisted of a series of large orthostats.

The sequence of construction started with the stripping of turf and topsoil down to natural boulder clay. The outer wall was built on the old ground surface (OGS). A similar episode of ground preparation was noted at Point of Cott (Barber 1997, 9). Next was the digging of sockets for the main structural orthostats (as shown in black in illus 4) defining the central chamber, the north chamber and the divisional uprights between the side chambers.

The uprights defining the north and west sides of the south-east chamber had been removed in antiquity, allowing the partial examination of their sockets. The socket (052) adjacent to the east side



ILLUS 6 Trench A, main east-west trench section



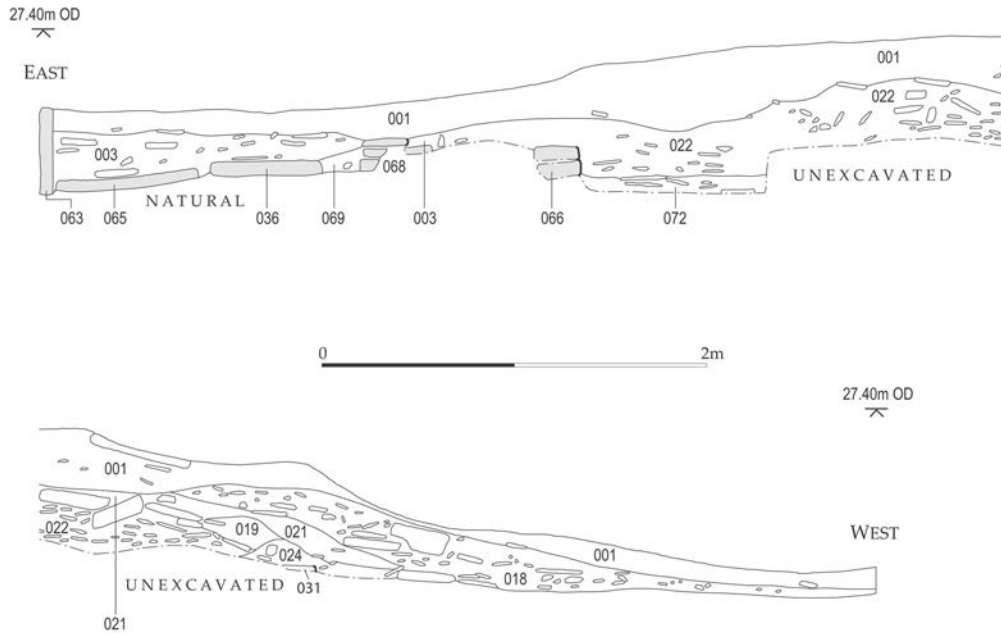
ILLUS 7 Trench B, main north–south trench section

of the passage inner end was *c*0.9m long by 0.35m wide by 0.18m deep (illus 10). This socket was not fully excavated as it was partially covered by the flagstone (049) that formed the floor of the entrance passage. The socket (030) for the stone forming the divisional upright between the north-east and south-east chambers was 1.1m long by 0.4m wide by 0.25m deep (illus 11). This socket continued into the trench edge, so was excavated only in section. The west end of this cut widened out to accommodate Orthostat 055. At the base of both sockets were similar large packing stones set on edge. These were presumably set directly against the original orthostats, as in the case of a similar packing stone revealed adjacent to the west side of Orthostat 055. Both sockets were then filled and packed with re-deposited natural clay (042) and a yellow clay (061). These fills were relatively

loose in nature as a result of the removal of these orthostats in antiquity.

The slabs forming the thresholds to the side chambers were then inserted between the main structural orthostats. The slot (060) for the threshold stone (059) at the entrance to the north-west chamber was partially excavated. This cut was shallower, *c*0.12m, than the cuts for the main orthostats, as the threshold stones were smaller than the main orthostats and not load-bearing. The packing (074) consisted of re-deposited natural and two on-edge packing stones.

Spoil from the digging of the sockets for the orthostats and threshold slabs was probably used in the next phase of construction as levelling material for the insertion of the flagged floors of the chambers and passage. Although Petrie made no mention of the chambers being flagged, excavation showed that



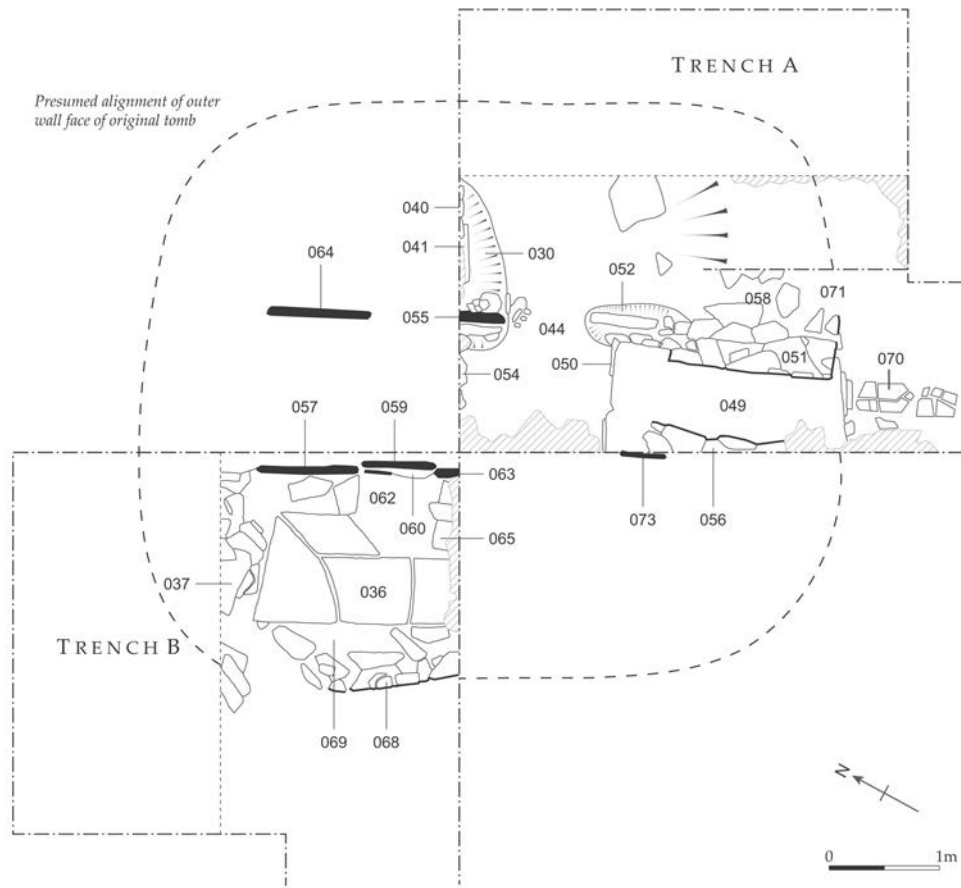
ILLUS 8 Trench B, main east-west trench section

the side chambers at least and possibly the central chamber were originally paved. The paving of the north-east chamber (041) was only revealed in section in the north side of Trench A (illus 6). This thin flagging, *c*0.02m thick, presumably covered most of the floor of this chamber, as hinted at by differential shading in Petrie's isometric sketch (illus 3). One large fragmented flag (036), *c* 1.9m by 1m by 0.1m, and some smaller flagging (065), covered most of the floor of the north-west chamber (illus 12). This flagging sat directly on natural boulder clay. Whether or not the central chamber was flagged was more problematic. No actual flags were encountered during the excavation of the central chamber. However, some small flat slabs (054) were noted in the trench sections (illus 5 & 6). In Petrie's isometric sketch, differential shading of the central chamber's floor also suggests some flagging survived in the north-east corner of the chamber (illus 3). Thus it seems likely that the central chamber was originally flagged, but was partially removed at the same time as the 'demolition' of the south-east chamber in Phase III. Flags (054) lay on top of a thin greasy clay layer (044), which overlay natural boulder clay.

At the same time as the chambers were paved, a single large flag (049) was laid, forming the floor

of the entrance passage (illus 13); it measured 2.1m north/south by 0.9m by 0.07m thick. This was levelled using a series of thin chocking stones (050). As well as lifting the flag to the same level as the floor level of the side chambers, *c*0.15m above the flags of the central chamber, the chocking stones also provided an outward tilt to the slab. The inner end was *c*0.04m higher than the outer end, presumably to help prevent water ingress into the central chamber. The outer end of this slab aligned with the outside face of the encasing wall whereas the inner end extended into the central chamber.

Once the paving was complete, the outer encasing drystone wall was built. This was not the 'circular wall' noted by Petrie who mistakenly identified the later inner revetment of Phase IV as the encasing wall of the tomb. At the front of the tomb, partial dismantling during recent excavation of the outer face to the east of the passage (071) revealed a *c*0.2m thick layer of clean grey clay (075). Analysis of this (see Miller & Ramsay below) confirmed that it had been brought onto site and not accumulated naturally. This layer was either a foundation deposit for the construction of encasing wall and/or a sealant layer to prevent water entering the tomb. The inner wall faces of the north-west, north-east, south-west



ILLUS 9 The primary tomb of Phases I and II – excavated and visible features

and south-east chambers also formed the inner wall-face of the encasing wall. The chamber walls were built partially sitting on the floor flags of the chambers. This was illustrated in the cross-section of the north-east chamber provided by the north section of Trench A (illus 6), where the inner wall-face (040) sat on paving (041). Likewise in the north-west chamber, although the inner wall face did not survive, the width of the chamber supplied by Petrie, coupled with the position of the outer wall face (068), would imply that here too the inner wall-face sat on the flagged floor (036). This was also confirmed by possible remnant wall-core (037) covering the north edge of flag (036). In the west and east pairs of side chambers, the divisional upright between the chambers extended into and divided the inner wall-faces. This is clearly shown in both Petrie's isometric

sketch (illus 3, east pair of side chambers) and in the way the socket (030) for the divisional upright between the east pair of side chambers extends beyond the inner wall-face (040).

As noted before, the encasing wall was *c* 1m thick at the sides and rear, splaying out to *c* 1.5m thick at the front to accommodate the length of the passage. It consisted of a carefully constructed inner and outer face of tabular stone, as found in the nearby quarries to the north of Bookan. The wall-core (contexts 037 and 058?) was made of thin tabular stones. In general, these stones had been laid flat, but the stones forming the wall-core (037) to the north of the north-west chamber were inclined slightly outward. This may be a result of collapse or slumping, but may have been a deliberate constructional technique to help shed water.

The circuit of the encasing wall was broken by the entrance passage, *c*2m long by *c*0.5m wide. The sidewalls of the passage were built using the floor slab (049) as a foundation. The east wall of the passage (051) was built squarely on this slab, which accounts for the better preservation of the east side of the passage in comparison to the west wall (056), which was ‘perched’ on the west edge of the floor slab. The east wall was straight and survived up to eight courses (*c* 0.3m) of fine, drystone masonry. The west wall had partially collapsed, with the outer end missing and many of the stones were dislodged. The alignment of the passage (*c* SSE/NNW), as in many other chambered tombs, is slightly askew to the axis of the chambers.

Although no direct evidence of the roofing method survived, it is envisaged that it was similar to that of the still roofed chamber of Calf of Eday North-west (Davidson & Henshall 1989, 109–10) or Crantit (Ballin Smith 1998). Corbelling was not an option, as the thinness of the encasing wall could not have counterbalanced corbelling (Barber 1992). It is envisaged that long slabs were first balanced between the main orthostats creating lintels for the ‘doorways’ into the side chambers, as at Crantit (Ballin Smith 1998, 19). The side chambers would then have been roofed by slabs supported on the encasing wall and the lintels. Next the passage would have been covered in lintels that may have continued up and over the central chamber. Otherwise the central chamber would have been roofed by interleaving flags sitting on the side chamber roofs. The height of the central chamber would therefore be higher than the side chambers. The roofing slabs would then have been capped with clay, providing an overall domed profile to the roof.

The height at which the chambers were roofed would be determined by the height of the encasing



ILLUS 10 Trench A, passage and chambers of primary tomb, from the south

wall. Although no direct evidence for this height survived, it seems likely that the maximum height of the encasing wall was similar to the maximum height of the main orthostats. The height of the orthostats forming the north chamber appear to be standard, as shown on Petrie’s sketch (illus 3). This suggests that they survive to their original height. The maximum height of the orthostat (057) on the west side of this chamber (illus 7) was revealed as *c*0.85m above the top of the floor slab of the north-west chamber or *c*0.95m above the natural. It is therefore presumed that this was also the height of the encasing wall and the approximate height of the side chambers. This height tallies with the 2ft 8in as the ‘depth of the kists’ noted by Petrie. The height of the threshold stone (context 059) of the north-west side chamber,



ILLUS 11 Trench A, Socket 052 at the inner end of the passage, from the east

which appears unbroken, would mean that the opening to the north-west chamber would have been *c*0.5m high by 0.6m wide.

Petrie noted the height of the passage as being only 21in (0.55m) and was considered too low to have been crawled through. This assumption was based on the mistaken identification of the inner revetment of Phase IV as the outer lintel of the passage, and that this defined the height of the passage. It is assumed, however, that the passage walls were originally of a comparable height to that envisaged for the side chambers, *c*0.85m. This would have therefore made the interior of the tomb accessible through the passage. One final feature presumably associated with this construction phase was a small area, *c*0.8m by 0.4m, of paving (070), lying on the OGS outside the entrance to the passage.

The resultant tomb from this phase of construction would therefore have presented an oval, rather squat, free-standing, vertical-sided structure, with a domed roof, a little more than 2m high. No evidence of any covering cairn abutting the outer wall-face was revealed in excavation, implying that the outer wall-face of the encasing wall would have been visible, *c* 1m high.

In summary, the construction sequence was: stripping of topsoil in area of chambers; insertion of main structural orthostats; insertion of threshold orthostats

of side chambers; paving of chambers and passage; encasing wall built; roof construction.

PHASE II: USE OF TOMB

Due to the 19th-century investigations, evidence for the subsequent use of the tomb was sparse. The processes that led to the deposition of the finds recovered by Farrer and Petrie can only be surmised. It is presumed, however, that this phase of the site relates to its use as a depository for human remains and that the finds recorded by Petrie (1863, 36) were associated with this activity. The analysis of samples taken from within the tomb (see Duncan below), apart from suggesting that bone had been present in the central and south-east chambers, failed to identify any enhancement due to human intervention such as burning.

Evidence for external activity during this phase was limited to two small, circular, shallow scoops (contexts 045 & 046). They were *c*0.1m apart, cut into the OGS (047), some 2m south of the entrance to the passage. They were sealed below the later cairn material of Phase IV. Both features were *c*0.2m in diameter by 0.05m in depth and filled with dark charcoal-flecked material. Flotation, however, recovered only small amounts of charcoal, possibly carbonized heather stems. Similar features have been recorded outside the cairns of Bigland Round and the Knowe of Craie in Orkney (Davidson & Henshall 1989, 52). The only fragment of pottery found during



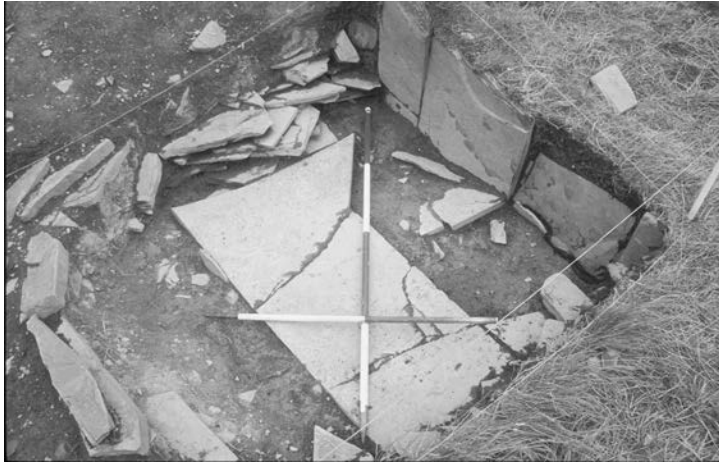
ILLUS 12 Trench A, Socket 030 and associated elements, from the south

this excavation (SF 15; see MacSween below) was recovered from between these two shallow scoops on the OGS.

The final act relating to the use of the tomb could be argued as being the ‘blocking’ of the entrance passage. A rough pile of large slabs (033), up to 0.4m by 0.2m in size, was uncovered in the middle section of the passage (illus 14). These slabs were sealed by Phase IV cairn material (043). This ‘blocking’ could originally have been more extensive and filled the passage. Farrer’s clearing out of the central chamber could have removed similar blocking at the inner end of the passage, while blocking towards the outer end of the passage could have been effected by subsequent collapse/removal of the outer end of the west passage wall (056). However, the haphazard nature of this ‘blocking’ suggests its interpretation as natural collapse of the passage walls, or preparation for the construction of the Phase IV cairn.

PHASE III: THE ABANDONMENT AND DESTRUCTION OF THE TOMB

Prior to the ‘monumentalization’ of the site in Phase IV, the primary tomb was reduced to about half its original height judging by the height of the passage walls below the Phase IV inner revetment. This may have been partly due to natural decay. As noted above, the west wall of the passage (056) was built precariously close to the edge of the passage floor slab. A rubble layer (048) sitting on the OGS (047), and extending for some 1.4m from outer end of the passage (illus 5), was interpreted as collapse of the outer encasing wall in Trench A. An equivalent layer of primary collapse (072) was revealed in Trench B (illus 8) under the later revetment (066). Contemporary with this collapse was the removal of the orthostats, walling and flagged floor of the south-east chamber. Although not fully revealed by this excavation, Petrie’s sketches (illus 2 & 3) imply that this chamber was totally removed. The partial sealing of the ‘footprint’ of this chamber by the foundation deposit (014), for the later inner revetment (005), proves its removal was prior to Phase IV. The complete reduction of this chamber implies a deliberate act.



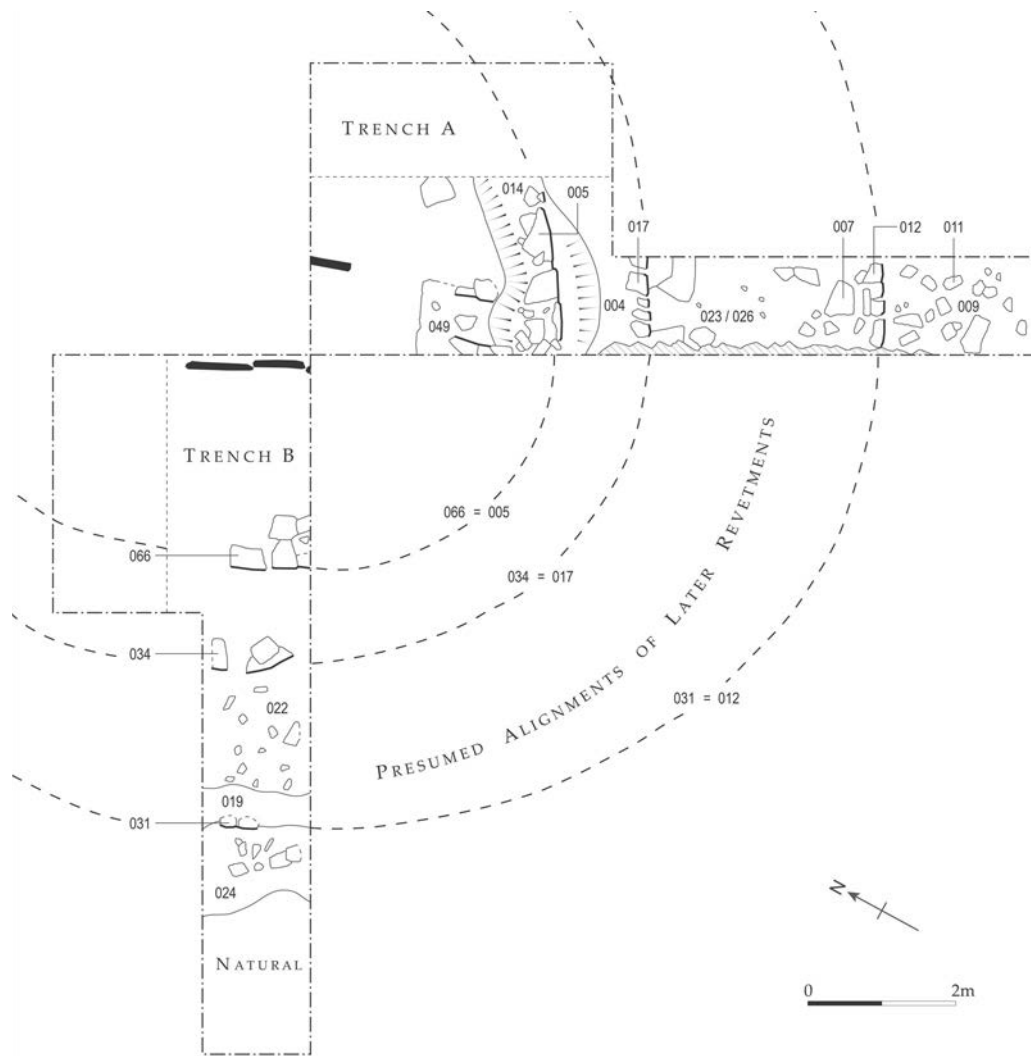
ILLUS 13 Trench B, north-west chamber, from the south-west

PHASE IV: THE ‘MONUMENTALIZATION’ OF THE SITE (ILLUS 15 & 16)

After the decay/destruction of the previous phase, a cairn contained by three roughly concentric revetments was built over the remains of the tomb. The overall diameter of the monument was increased from *c* 7m to *c* 16m (assuming that the revetments were uniformly concentric, see illus 15). The maximum surviving height of the cairn was *c* 0.8m above the OGS. The revetments were revealed in Trench A as: context 005, the inner revetment, which probably followed the line of the encasing wall of the primary tomb; context 017, the middle revetment, *c* 1.2m beyond the inner; and context 012, the outer revetment, *c* 3.3m beyond the middle revetment (illus 16). Although a stratigraphical relationship was not proven, three similar, though less well-preserved, revetments were revealed in Trench B: context 066, the inner



ILLUS 14 Trench A, ‘blocking’ in the passage, from the east



ILLUS 15 Revetments of Phase IV – excavated features

revetment; context 034, the middle revetment; and context 031, the outer revetment. In the exposed sections all the revetments were single-faced. The inner and middle were built of fine tabular stone, whereas the outer revetment consisted of generally larger slabs.

The sequence of construction of this phase was revealed in Trench A (illus 5). The inner and outer revetments were constructed first. The outer revetment (012) sat on a thin band of grey clay (076), restricted to immediately below the revetment and sitting directly on the OGS (047). Immediately behind the outer face of this revetment lay a compact,

silty deposit (027), containing some large stones. This layer extended *c* 1.2m to the north into the cairn. Compared to the two other revetments the more massive nature of the outer revetment would have been necessary to resist the outward pressure of the cairn material.

For the construction of the inner revetment, the remains of the passage and its 'blocking' (033) were first prepared by the addition of a loose shaley material (043), similar to other cairn material relating to this phase. This was presumably to produce a level platform for the revetment's construction. Within context 043, six fragments of human rib (SF 13) were

recovered. On top of this a band of compact yellow clay (014), c 1.2m wide by 0.1m thick, was placed as a foundation for the inner revetment (005). Based on Petrie's sketch plan, and his mistaken identification of this revetment as the outer wall-face of the tomb, this revetment was c 6.7m in diameter.

Cairn material (contexts 023 & 026), consisting of loose, mainly tabular rubble of varying size, within a matrix of loose soil and shattered stone, was then dumped between the two revetments. This material appeared to be freshly quarried (very similar to general quarrying debris noted in the nearby quarries). All of the cairn material (contexts 004, 023 & 026 in Trench A; and context 022 in Trench B) was very similar although there was slight variation in the soil matrix and the percentages of shattered stone. After this material had been deposited to a depth of c 0.3m, the middle revetment (017) was constructed sitting on this unconsolidated mass of material. Several slabs, however, were noted beneath this revetment. They were larger than the majority of those within the cairn material and may have formed a rough foundation for the middle revetment. The construction of the middle revetment was similar to the inner revetment with the use of flat tabular stone presenting a finely built outer face. The middle revetment, however, was less substantial and built of generally smaller slabs. Further cairn material (004) was then added between the revetments. This material partially covered the middle revetment (017), which only survived to c 0.12m in height. This is presumed to be a result of later spreading due to natural decay/collapse and stone robbing. A localized decayed turf horizon (019), sealed by spoil (021) from the 1861 excavation in Trench B, formed after this phase of the site had fallen into disrepair.

The resultant 'monument' of this phase is envisaged as c 16m in diameter with a stepped profile. The quality of the stonework, from the basal courses upwards, implies that the inner and middle revetments were designed to be visible for their full height. This, coupled with the limited height difference between the bottom courses of each revetment, suggests that they formed a series of low, widely spaced steps. This view is supported by the slight nature of the inner and outer revetments and their inability to support a large depth of structure above. The resultant monument would be like a stepped 'platform' not much more than a metre high. Obviously the possibility of further revetments/steps within the inner revetment would have increased this height slightly.

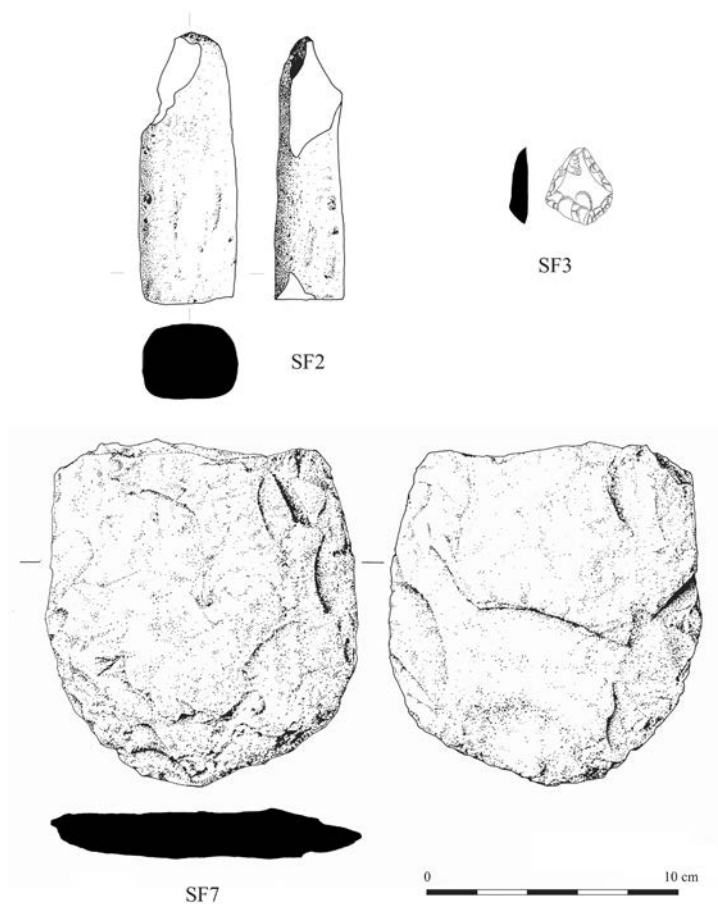


ILLUS 16 Revetments in Trench A, from the south

PHASE 5: EVIDENCE OF 19TH-CENTURY INVESTIGATIONS AND LATER ACTIVITY

On 8 July 1861, Petrie (nd) recorded Farrer's excavations as commencing two days earlier on 6 July. This was the same date that Farrer began his investigation at Maes Howe. In typical antiquarian tradition, Farrer's workmen cleaned out the chambers and, by following the internal wall lines, revealed their extent. Recognized artefacts were removed. No attempt was made to investigate the exterior of the cairn. Contrary to that suggested by Petrie's sketch, the passage was not fully excavated. Spoil from the chambers was not removed from the site but merely dumped on the external slope of the mound beyond the cleared chambers. This spoil was encountered as context 002 in Trench A, and contexts 018 and 021 in Trench B. These deposits were very mixed and up to 0.6m deep. The north-west side of the mound, which still rises to a height of c 1.6m, is presumed to consist mainly of banked up spoil from Farrer's excavation.

The present excavation found that the chambers of the original tomb were filled with a fairly homogenous fill of mixed clayey silts containing much stone and



ILLUS 17 Stone and flint tools, SF 2, SF 3 & SF 7

post-mid 19th-century artefacts such as bottle-glass, a clay pipe stem and glazed pottery. This was excavated in three, c0.1m thick, 'spits' in Trench A (contexts 006, 010 & 015), and two 'spits' in Trench B (contexts 003 & 020).

The discrete nature of the pile of bone fragments (SF 11) that were found during this excavation in the north-west chamber would suggest that the primary backfill of the site occurred soon after Farrer's excavation was complete. This, however, seems to have been only partial 'reinstatement' and corresponds to the lower 'spits' (015 & 020), that were slightly more greasy and compact than the upper 'spits'. The discrepancies between Petrie's sketches and the remains as excavated in 2002 would suggest that the wall lines were left uncovered and suffered from subsequent stone robbing. This partial infilling

by Farrer fits with Corrie's description of the site in 1928 (RCAHMS 1946, 263–4). The upper 'spits' of infill (003, 006 & 010) are presumed to have occurred since Corrie's visit, being the result of erosion of Petrie's spoil heap and field clearance when the surrounding land was brought into cultivation in the early 1960s.

FLINT

Caroline R Wickham-Jones

A single struck lithic artefact (SF 3; illus 17) was recovered, from within the 19th-century backfill (006). This consisted of an inner segment of a red flint flake with steep edge retouch around left, right and distal sides. The base is rough, but not retouched. The original platform is missing. The retouch is irregular and there is considerable undercutting suggesting use-wear. This piece is carefully made on a fine blank of flint that is likely to be local. It has been worked down from a considerably larger blank that has been deliberately snapped in order to provide a piece of the

right size and shape. It is difficult to parallel as most scrapers have much more rounded faces while this piece has three almost straight retouched sides that meet at blunt curved angles. It is not dissimilar to the angled scrapers from Kinloch, Rùm (Wickham-Jones 1990, 91–2), some of which may have Neolithic associations.

POTTERY

Ann MacSween

One small abraded fragment of low-fired, crumbly pottery (SF 15), was recovered from the OGS (047). The fabric is fine clay with angular rock fragments up to 10mm long. Weight 3g; thickness c 8mm.

COARSE STONE ASSEMBLAGE

Ann Clarke

Three definite stone artefacts were recovered: an anvil stone (SF 8; unstratified; illus 18), a hammerstone (SF 2; context 009; illus 17) and a stone disc (SF 7; context 004; illus 17). A fourth object, the broken beach pebble (SF 1; context 003), was most likely brought on to the site to use though there are no signs of use wear on the cobble fragment.

Very few coarse stone tools are associated with burial rites of the Orcadian Neolithic. In Orkney, 13 chambered cairns (three of the Maes Howe type and ten of the O-C group) have recorded coarse stone artefacts (Davidson & Henshall 1989, 64–84). Excluding axes and beads, only four of the cairns have stone finds within the chamber: Quanterness, Quoyness, Corquoy Hill and Unstan. Only the sculpted objects from Quoyness may be considered non-utilitarian, the rest are stone tools such as Skaill knives, cobble tools and stone discs which would be found on domestic sites.

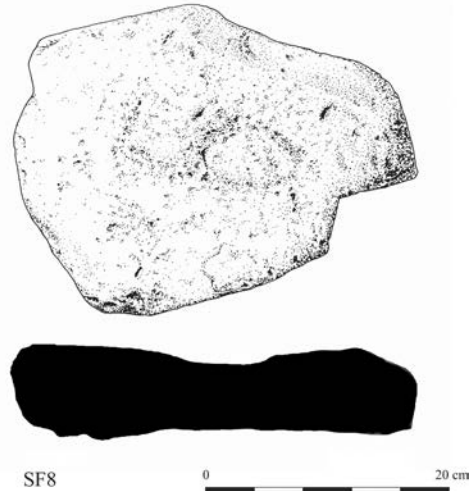
The stone artefacts found within the cairn material rather than the chambers (for example at Bookan, Cuween Hill, Huntersquoy, Midhowe and Sandhill Smithy) are not directly associated with the primary use of the tombs, and the finds from the latter three sites are most certainly of a Bronze Age date.

The utilitarian nature of the stone tools from Bookan is a common characteristic of stone artefacts associated with chambered tombs. None of the objects are characteristic of a particular period, indeed the stone disc and hammerstone are types that could appear at any point during prehistory of the Northern Isles but, given the lack of later objects such as flaked stone bars or ard points, it is most likely that the hammerstone and stone disc are Neolithic deposits. These were found outwith the chamber in cairn material and stony clay. The large anvil slab is more reminiscent of an Iron Age period where hollowed slabs are quite common, for example at Iron Age Pool, Sanday (Clarke forthcoming). Unfortunately, this was unstratified so no external Iron Age activity can be confirmed.

HUMAN REMAINS

Daphne Home Lorimer

The 2002 excavations recovered a small heap of human bone fragments (SF 11) on the floor slab



ILLUS 18 Stone anvil, SF 8

(036) of the north-west chamber. A further six small friable fragments of walls of rib shafts (SF 13) were recovered from the later cairn material (043).

The human skeletal fragments were very few and very small. No identified fragments were duplicated; using a minimum number count, they appeared to represent only one individual. This impression was reinforced by the fact that the larger fragments such as the petrous bone (SF 11, 7B), the right frontal bone (SF 11, 2B) and the lower end of the humerus (SF 11, 1B) appeared to be from a small individual.

There were no bones from the vertebral column, or from the hands and feet. The majority of the fragments came from the cranium, of which only five fragments came from the basilar portion. The remaining fragments consisted of 34 pieces of tabular bone of the cranial vault. There were two possible fragments of maxilla (facial bone) and five teeth which appeared to come from the same upper jaw.

The thorax was represented by four rib fragments, and the pelvic girdle by two small fragments of (possibly) ilium. There was one possible fragment of an acromion process of the scapula and a substantial portion of the lower end of the shaft of a right humerus with part of the olecranon fossa plus four possible very small fragments of humeral shaft wall. The lower extremity was represented by one fragment of the shaft wall of a femur, two similar tibial fragments and one of the shaft of a fibula with a greenstick fracture, probably made post mortem.

It was not possible to confirm the sex, although the small size might indicate a female. The teeth,

which all appeared to come from the same jaw, were adult as all the roots were closed. The wear was considerable, and using Brothwell's (1981) formula for dental wear pattern, the age appeared to be between 37 and 45. This was slightly younger than the age suggested by the suture obliteration, but in view of the variability of both methods and lack of knowledge of the population as a whole, could be considered compatible.

ENVIRONMENTAL SAMPLES

ARCHAEOBOTANICAL

Diane Alldritt

A series of six bulk environmental samples were taken during the excavations at Bookan. The main objective was the recovery of carbonized plant and/or other organic material for radiocarbon dating purposes. The samples related to both the primary tomb and the later revetted structure.

Very few carbonized or other environmental remains were recovered during the assessment of the samples from Bookan chambered cairn. The carbonized remains that were recovered consisted entirely of vegetative stem and twig-like fragments, which were small and poorly preserved. It is possible that some of these were heather stems, but the possibility of these being other species cannot be ruled out, providing very little indication of either the use of plant resources at this site or the contents of the local environment. This lack of carbonized material may be due to taphonomic processes, with the loose aerated shale and Old Red Sandstone soil matrix not being particularly good for the preservation of carbonized material, or perhaps by more recent disturbance over the past 100 years.

The tiny fragments of carbonized stem and twig present in contexts 019 and 046 probably represent locally growing heather or other vegetative plant material, but in the main are too small and poorly preserved to provide any firm conclusions.

POLLEN AND PLANT MICROFOSSILS

Jennifer Miller & Susan Ramsay

Botanical analyses of samples recovered from Bookan indicate that the landscape around the site was essentially treeless by the Neolithic period and that

the local environment was dominated by heathland, with small areas of pastoral grassland also present.

Two 150mm monoliths of clay material, one from each trench, were analysed for pollen and plant macrofossils. This material is thought to be contemporaneous with the construction of the initial tomb (Trench A) and the later remodelling (Trench B).

Trench A Context 075 was described during excavation as very clean grey clay overlying the natural, and was interpreted as a foundation deposit for the construction of Wall 071. Botanical analysis revealed that the samples examined were entirely devoid of plant macrofossil remains, and that pollen concentrations were extremely low. The majority of pollen grains recorded were unidentifiable, due to corrosion. Consequently, any conclusions drawn would not be considered valid due to the small pollen counts obtained and the likelihood of differential preservation of those grains. However, the results do concur with the theory that the clay had been brought onto the site intentionally during the initial construction of the tomb, rather than having accumulated through natural processes.

Trench B Context 024 was interpreted during excavation as a grey clay deposit partially underlying decayed turf layer (019), representing the remnants of the mound surface prior to the 1861 excavation. Botanical analysis of the Kubiena samples taken from context 024 indicated that macroscopic remains were only present at one level, namely 40–50mm depth, but that pollen concentrations in all samples examined were far higher than had been recorded for Trench A (075). Furthermore, the pollen grains recorded were in much better condition than those of Trench A, meaning that that differential preservation was less likely to be a matter for concern in this case. However, there was no significant difference observed in the pollen assemblages over the different levels examined, which suggests that context 024 may represent a single depositional event, rather than a slow build up of material over time. As such, the results will be discussed as one assemblage.

The provenance of context 024 remains unclear after the botanical analyses. Although described during excavation as grey clay, the samples analysed for botanical remains contained a high percentage of organic silt, suggesting the deposit had been soil rather than purely clay. However, it is not possible to determine from these results whether the material had

been deposited as loose soil, or whether it represents the remains of highly degraded minerogenic, heathland turfs. The environment indicated by the pollen results from context 024 is entirely consistent with the landscape generally envisaged for Orkney in the Neolithic period, some 5000 years ago. The landscape is open, effectively treeless, and dominated by heathland and grassland plant communities. The heathland was dominated by *Calluna vulgaris* (heather), with Cyperaceae (sedges) also present. The tiny fragments of Ericales (heather type) stems recorded within the sample from 40 to 50mm depth concur with heathland forming a significant component within the landscape. Grassland was also a significant part of the local landscape, albeit to a lesser extent than heath. The diversity of herbaceous pollen types in that grassland, and the relatively high percentages of some of them, in particular *Plantago* (plantain) species and *Aster* (daisy) type, would suggest that at least some of the grassland was grazed.

The pollen results from Trench B (024) concur with wider and more in-depth studies undertaken on mainland Orkney. Work on post-glacial vegetation change on West Mainland by Bunting (1994) indicated that woodland was completely absent from this area by the Neolithic period, in part as a result of human activity in the area, and that heath and rough grassland made up a substantial proportion of the vegetation by this time.

SOIL ANALYSIS

John Duncan

Ten samples were analysed for a variety of soil properties with the aim of allowing comment upon a number of archaeological issues. Eight of the samples were from context 044 (basal floor deposit across central and south-east chambers) within Trench A. The other two were control samples from the topsoil and the natural subsoil. All the samples were analysed for phosphates, loss-on-ignition, magnetic susceptibility and pH.

The results indicate that bone was most likely to have been positioned within the areas covered by Samples 4 and 5 in the central chamber, and Sample 11 in the south-east chamber. This conclusion has been formulated due to the high quantity of phosphate (including % inorganic state) present within the samples together with the low pH values. Similar results have been returned from many sites, such as

at Crantit, St Ola, Orkney (Duncan 2003), where the presence of bone both increased phosphate levels and reduced pH. None of the other samples give the indication that bone was present for a considerable length of time during the history of the tomb. The only alkaline pH value was produced by Sample 11 (7.173), with all other samples being slightly acidic. This is difficult to explain, although it could relate to the presence of material such as shell or wood ash that can produce higher pH levels within acidic environments (Loveluck 1998). The acidic nature of all the other samples may be a cause for the lack of bone retrieved from the tomb.

The results from the magnetic susceptibility analysis show little evidence of enhancement. Although the % frequency dependence of Sample 8 is high, the high frequency result is low. To be confident of enhancement due to human activities, such as burning, high frequency dependence must be backed up by high frequency values (Clark 1996), which in the case of this sample, was not observed.

DISCUSSION

It is not appropriate in this paper to review all aspects of chambered tombs in Orkney. The discussion will concentrate on aspects relative to the results at Bookan and other recent discoveries in the immediate vicinity. For details of tomb typologies and individual sites the reader is referred to Davidson & Henshall's *Chambered Cairns in Orkney* (1989), to whom this author is grateful for the requirement not to repeat this information.

DATING

Suitable dating material was not recovered from the samples taken on site. In light of the condition and uncertain context of the human bone, it was considered unsuitable for worthwhile dating using present techniques (P Ashmore, pers comm). Consequently, no detailed discussion of absolute dating is considered. Discussion is limited to the relative chronology of the phases at Bookan. The limitations of available dates from similar sites, as noted by Barber

(1997, 7) and Ashmore (2000), make direct comparisons presently problematic. It is worth noting, however, that Petrie's description of the pottery – 'with a rudely formed raised moulding in a waved form encircled the upper part' (Petrie 1871) – would suggest that it was Grooved Ware with applied decoration. In the chronological sequence suggested for Grooved Ware by Hunter & MacSween (1991), the Bookan material would be late.

TYPOLOGIES

In brief, two main groups of chambered tomb have been recognized in Orkney, the Orkney–Cromarty (O–C) group and the Maes Howe (M–H) group. Within these two groups, four types of chamber are listed: tripartite, stalled and Bookan belonging to the O–C group, with the M–H type cairns forming their own group. In most typological schemes, Bookan is viewed as the type-site for a local adaptation of the early tripartite style of O–C tomb, peculiar only to Orkney, or as a transitional form between O–C and M–H groups (Russell 2002, 157). However, the position of the Bookan itself and its group as a whole within the classic typology has been queried (Sharples 1985, 68–9; 1992, 323). Henshall herself has noted (Henshall 1985, 108; Davidson & Henshall 1989, 28) that many of the attributes used to define the Bookan group do not apply to Bookan itself. These attributes, in conjunction with observations from this excavation, are the 'cruciform' layout; the use of chambers rather than stalls, and its implications for how the deposited remains would have been accessed (Sharples 1985, 71; Richards 1993, 151); the circular, rather than linear, concept of space within the tomb (Richards 1992); architectural details, such as the lack of portal stones; the angularity of the architecture only paralleled in Neolithic structures such as Structure 2 at Barnhouse (Richards 2005); the partially revealed structure on the Ness of Brodgar (Ballin Smith 2003) and some M–H type tombs; the above ground

construction as compared to the wholly or semi-subterranean of the rest of the Bookan grouping; and the associated Grooved Ware. Although not exhibiting either the overall size or high corbelled roof structure of the classic M–H grouping, these attributes would appear to link Bookan to the M–H grouping rather than the O–C group.

The validity and usefulness of classic tomb typology, however, based mainly on only one attribute, chamber morphology, in extending our understanding of chambered tombs, now seems problematic. Typology that has dominated the study of chambered tombs since Anderson (1886) seems less reliable with every new site that is discovered, excavated or reassessed. Ashmore (2000) summarizes many of the deficiencies of not only the classic tomb typologies but also the interrelated simplistic equation of pottery types equating with particular types of chambered cairn and settlement (cf Renfrew 1979, 214–17). The mutual exclusion of the two basic styles of Orcadian Neolithic pottery, Unstan Ware and Grooved Ware, the integrity of associated material culture and their associations with particular classic types of chambered tomb is no longer clear cut (Clarke 1983; 2003; Henshall 1983, 73; Ashmore 2000). The relationship between the two groupings now appears subtler than either the cultural (cf Renfrew 1979; Davidson & Henshall 1989, 64) or chronological (cf Hunter 2000) models suggest. This merging of the boundaries between the two classic groupings of Neolithic Orkney is further supported by the results from the Cuween–Wideford Project (Richards et al, forthcoming). The M–H type tombs, Wideford and Cuween, overlook the settlements of Wideford Hill and Stonehall, respectively. The Wideford Hill settlement's ceramic assemblage was dominated by 'classic' Unstan Ware while Stonehall had plain round-based bowls – both traditionally considered early Neolithic and associated with O–C tombs. Although there is no direct evidence to relate these settlements to the nearby tombs, this emphasizes the

variability in the possible relationships between settlement, tomb types and material culture. This complex of relationships is compounded by the accumulating evidence from absolute dates (Ashmore 2000; C Richards, pers comm) that show large chronological overlaps between the ‘classic’ groupings of material culture, tomb types and settlement. Such rich variation should not be surprising in light of Jones’ (2002) detailed study of Grooved Ware. This revealed the complexities of use of one element of material culture even within a single settlement, and its deposition in tombs geographically distant from the settlement where it originated (ibid, 154).

Typology can be a useful tool, although not as the sole basis for analysis. The complexities of many aspects of the Neolithic require more detailed and individual assessments than is possible with general typologies. Davidson & Henshall (1991, 21) recognized this shortcoming in their volume on the chambered cairns of Caithness. The rich diversity in tomb design (both cairn and chamber), contents and associations, even within more complex typologies, show such a wide variation that the ‘monument type’, the chambered tomb, seems no longer useful terminology in understanding them, and placing ‘tombs’ in their contemporary context.

Excavation is also showing that Neolithic burial structures were more diverse than previously considered, for instance the small mortuary structures at Setter, Eday (HY53 NE28; Downes, forthcoming). Recent dating evidence is also suggesting that the use of cists for burials, so long seen as characteristic of the Bronze Age in Orkney, had its origins in the Neolithic (Dallands 1999, 408–9). The variation of this type of burial structure is as diverse as the traditional chambered tomb, from the monumental nature of Sand Fiold (ibid) to the more typical sized cist at Howe, Harray (Downes, forthcoming).

Rather than looking for common denominators in the evidence and constructing typological and/or evolutionary models, each site should be assessed on its own merits before attempting wider interpretations. Similar misgivings, and the need for reassessment, have been expressed in the past by Stuart Piggott (1973) and Kinnes (1985, 31–7), and more recently by Ashmore (2000, 306–7) and Henshall (2004), in relation to chambered tombs. Clarke (2003, 90) has suggested a similar approach for the settlement evidence. This approach is particularly relevant to Orkney where the quality and quantity of the evidence of all aspects of Neolithic life is unsurpassed.

MORTUARY RITUAL

MORTUARY RITUAL

Due to the earlier investigations at Bookan and the lack of in situ deposits, the evidence for the nature of the mortuary rites is restricted. In his notebook Petrie recorded ‘portions of skulls and other bones of human skeletons’ (Petrie 1866) being recovered from the north-west, north and north-east side chambers – not the central or south-west chambers: ‘The pieces of skull were very thick and massive but extremely friable and decayed’ (ibid). This concurs with the state of the bone recovered from the north-west chamber during this excavation (see Lorimer above). The acidic nature of the soil (see Duncan above) may partially explain the state of the bone and its limited distribution within the chambers. Phosphate analysis of samples from the central chamber and the area of the south-east chamber indicate that bone was once present in both chambers. From this evidence and Petrie’s notes it seems that bone was originally present in all the chambers.

Excavation in the north-west chamber revealed a small discrete heap of human bones (SF 11) sitting on the floor slab (036). It is presumed that Farrer’s workmen had left this bone, not in situ but merely heaped up after excavation. Anna Ritchie encountered a similar scenario when she re-excavated the chambered tomb of the Holm of Papa Westray North, previously excavated by Petrie in 1854 (Ritchie

1995, 42). Petrie again had left most of the bone, apart from one skull. The fragmentary nature of the skulls at Bookan probably prevented their removal by Petrie. If Petrie's treatment of bone at Bookan was the same as on Papa Westray, it is therefore tempting to see the bone uncovered in the north-west chamber as representing the original amount of bone as found by Farrer and Petrie in this chamber. Although the fragments were few and small, the lack of duplication implies that a single individual, probably female, aged between 37 and 45, had been interned in this chamber (see Lorimer above). However, given the disturbance of the tomb prior to this excavation and general post-depositional processes, any apparent patterning within the tomb of both the bone and finds must be treated with extreme caution (Barber 1988, 57–62; 1997, 68–71; Henshall 2004). Overall, the bone assemblage from Bookan can add little to the debate concerning 'mortuary ritual' in the Neolithic (cf Phillips 2002, 29).

Other finds made by Farrer were restricted to the central chamber:

At the north end of the central chamber a rude flint lance head was found, with fragments of two rudely fashioned fire-baked clay cups or small vessel on its west side, and also fragments of one or more of the same kind of cups on its east side (Petrie 1871).

Petrie's original sketch plan of the site located the flint lance head centrally to the north side of the central chamber. The pottery lay on either side of the lance head in the north corners of the chamber. The flint scraper (SF 3; illus 17) recovered from the 19th-century backfill of the site may also relate to this phase. The red colour of the flint selected for this piece may be significant (Jones 1997). The discovery of flint implements finds parallels at many chambered tomb sites (Davidson & Henshall 1989, 78).

Although Unstan Ware pottery has been recovered from at least 17 chambered cairns (ibid, 64), the only other tomb to contain Grooved Ware was Quanterness (Henshall

1979); the Grooved Ware found at Quoyness, Sanday (Childe 1952) and Pierowall, Papa Westray (Sharples 1984) was found on the external platforms.

BLOCKING AND DESTRUCTION OF THE TOMB

The evidence for the blocking and/or destruction of certain tombs (Henshall 1963, 30–1, 98–101, 128–9; Davidson & Henshall 1989, 59–62) is often conflated into a single episode and interpreted as representing a chronologically coherent, 'culturally driven' phenomenon, reflecting for instance fundamental social reorganization in the Neolithic (eg Sharples 1984, 118–19; 1985, 72). This, and similar interpretations, were queried by Barber (1997, 7–8, 65), who suggested, with few exceptions, that these phenomena represented natural decay and collapse with subsequent stone robbing. The contemporaneity of these acts was also not supported by the dating evidence (ibid, 65).

At Bookan the interpretation of the 'blocking' of the passage as natural collapse appears to support Barber's argument. However, the recent evidence for deliberate blocking at Crantit (Ballin Smith 1998) appears conclusive in that particular case. The further reduction of the primary tomb at Bookan may be little more than the exploitation of the collapsed remains of the cairn perhaps for the construction of the later revetted monument. The dismantling of the south-east chamber, however, with the removal of orthostats, and presumably the flagged floor, appears more deliberate than informal robbing. It therefore seems possible that individual cases of deliberate destruction and/or blocking did occur but were not, on present dating evidence, chronologically linked. The life history of each 'tomb' seems site-specific. Perhaps as in the case of Barnhouse (Richards 2005), where the lifespan of several structures that were repeatedly demolished and replaced is considered to reflect the duration of a kinship group or family, the lifespan of chambered tombs was similarly limited. Again this emphasizes the importance

for individual site assessment prior to inclusion of the evidence in wider theories.

MONUMENTALITY AND THE LATER NEOLITHIC

Although no dates were obtained for the incorporation of the ‘tomb’ within the larger revetted/stepped cairn, it is assumed that this ‘monumentalization’ of the site dates to the later Neolithic. Later prehistoric alterations have been recognized on several Neolithic sites (Hingley 1996); however, at Bookan there was no evidence to suggest this occurred outwith the Neolithic. Although suspected by Davidson & Henshall (1989, 61), this excavation has proved that enlargement of the site was a distinct phase in the history of Bookan. This has implications for other sites where the relationship between the chambers and revetments seems unclear, for instance Pierowall (Sharples 1984) and Tresness (Ballin Smith 1983).

The proposed exposed nature of the revetments and the resultant stepped profile finds support in the proposed appearance of some chambered cairns. Both Sharples (1984, 115–16) and Barber (1997, 63–5; 2000, 186) argue that similar revetments would have been on view to produce a striking, stepped appearance. Childe (1952, 135), Renfrew (1979, 48) and Ashmore (1996, 63), however, consider that these revetments were only to provide internal stability and would have been covered by cairn material to produce a domed shape. The author would agree with the former scenario: the quality of the outer faces of the middle and inner revetments, the lack of any proper foundations to the middle revetment and the slight nature of the stonework of the inner and middle revetments supports this view. The outward appearance of the monument envisaged in this later phase should not be confused with the tower-like appearance predicted for some chambered tombs (Sharples 1984, 116). As noted above, the limited difference in the height of basal courses of the three revetments and their overall diameters (*c* 16m, 9m and 6.7m)

would suggest that the resultant structure was a low stepped ‘platform’. ‘Platforms’ have been noted as secondary additions/alterations to other Orcadian chambered cairns (Davidson & Henshall 1989, 62) and form an integral part of other late Neolithic structures, like Structure 8 at Barnhouse (Richards 2005). The emphasis on the exterior of the monument during this phase, in contrast to the internal closed space of the earlier tomb, is a phenomena Bradley (1998) has commented on in relation to other later Neolithic monuments. The material associations with this external activity (Sharples 1985, 69) may explain the location of some of the stone tools and human rib fragments (SF 13) within the later cairn material at Bookan.

Apart from the addition of platforms, other alterations to chambered cairns within the Neolithic have been suggested for other sites (Davidson & Henshall 1989, 61–2). Of the 14 chambered cairns excavated in Orkney since 1945, at least six exhibit secondary embellishments where revetting forms an element of the restructuring – Quoyness, Tresness, Isbister, Pierowall, Holm of Papa Westray North and Bookan. Although revetting forms an integral part of the primary construction of many tombs, its use in this context reflects the more widespread application of the technique in the late Neolithic. At Pool, Sanday (Hunter et al, forthcoming), Structure 8 had an internal diameter of 7m enclosed by a 4m thick wall. This wall comprised several concentric revetments, which the excavator considered ‘cosmetic rather than structural’ (Hunter 2000, 122). House 1 at Crossiecrown (Richards et al, forthcoming) was also encased in a thick partially revetted wall. The enclosing outer wall around Structure 8 at Barnhouse could also be seen as a symbolic outer revetment. All of these structures can be seen as part of a trend in the late Neolithic towards ever more complex, larger, and in some cases, composite structures where concentricity and monumentality appears the norm. The context of these developments have been explored by various authors (Sharples 1992; Richards

1993; 1996a; 1996b; 1998; 2004; Bradley 1998; Jones 1998; Garnham 2004; Loveday 2004). The monumentalization of Bookan may be viewed within these contexts. The lack of dates from Bookan, however, emphasizes that the contemporaneous nature often envisaged for these changes awaits confirmation through further secure dating evidence.

LANDSCAPE SETTING

The spatial analysis and landscape setting of chambered tombs in Orkney has attracted much speculation (eg Davidson 1979; Fraser 1983; Davidson & Henshall 1989, 9–18; Cummings & Pannett 2004). The validity of these studies is compromised by the fact that they are based on present distribution patterns that may bear little relationship to the original distribution of sites (Barber 1997, 4, 71; 2000). This view is supported in Orkney by recent research and historical sources of the mid 19th century. Prior to his involvement at Bookan, George Petrie noted in 1849 that hundreds of sites throughout Orkney were disappearing ‘without any attention being given to preserve a record of their construction and contents’ (Wilson Collection MS). More particularly, in Sandwick, Clouston (1851, 44) recorded over a hundred ‘barrows and tumuli’ of which fewer than 50 now survive.

The immediate environs of Bookan offers an unique opportunity to re-evaluate these studies and potentially view chambered cairns, not as separate monuments having almost a life of their own but as an integral part of their contemporary landscape and society. Until the discovery of the Neolithic settlement at Barnhouse, Bookan appeared to overlook a landscape devoid of contemporary settlement and dominated by a few isolated ritual monuments. A lithic scatter collected to the north of Bookan in the late 1920s (Callander 1931, 79) hinted that although settlement was present in the area, the Brodgar peninsula and the area towards Maes Howe seemed the reserve of ritual activity. Recent research, however, especially the World

Heritage Area Geophysics Programme (GSB 2002; 2003a; 2003b; 2004; OCGU 2004; 2005), has transformed this landscape, with several new Neolithic sites being discovered. Geophysical survey at Wasbister (GSB 2003b) at the base of the hill slope between Bookan and the Ring of Brodgar, revealed a large complex of anomalies covering several hectares. Although centred on a double Bronze Age house (HY21 SE18) there are elements that suggest a multi-period site containing Neolithic settlement. Further Neolithic settlement has been confirmed at the Ness of Brodgar (Ballin Smith 2003; Card 2004). Trial excavation, related to earlier geophysical survey results (GSB 2002), showed that much of this substantial mound is artificial, comprising structures, middens and deep midden-enhanced soils all dating to the Neolithic.

Five ‘new’ chambered cairns complement this new settlement evidence. Geophysical survey (Challands 2001) of the mound opposite the Standing Stones Hotel (HY31 SW24) appears to confirm its nature as a chambered cairn (Cochrane 1899, 88). The large cairn near the point of the Ness of Brodgar (HY31 SW20) is contained by a series of revetments, as revealed by geophysics (GSB 2002; Mackintosh & Damianoff 2003). Its interpretation as another possible chambered cairn, rather than a broch, seems reinforced by its apparent relationship with the deeply stratified Neolithic soils in this area (Card 2004). Barely 100m to the north-west of this site large masonry reminiscent of other cairns was revealed in a trial trench (*ibid*). This stonework is thought to relate to an adjacent large sub-oval anomaly revealed by resistance survey (Mackintosh & Damianoff 2003, site A12) and was interpreted as a chambered cairn. Although both Fresh Knowe and Salt Knowe (*illus* 1), two of the large mounds close to the Ring of Brodgar, are usually interpreted as Bronze Age monuments, their size and the elongated form of Fresh Knowe suggest they may also be Neolithic (Card 2005). Survey of these mounds in 2005 using ground-penetrating radar may confirm this interpretation.

Although ground-truthing of many of these results is required to explore relationships and contemporaneity, the proximity of both 'ritual' and domestic sites in this area supports an integrated view of secular and ritual aspects of Neolithic life. The apparent separation of landscapes of the living from those of the dead (Phillips 2002) appears applicable to central Orkney only at a very localized level. The settlement at Wasbister may prove to be the domestic site associated with Bookan, which dominates the skyline above it. However, the simplistic equation of the relationships between chambered cairn and settlement as originally proposed by Renfrew (1979, 214–17) seems problematic, as noted above in relation to the Cuween–Wideford Project (Richards et al, forthcoming).

The density and relative positioning of sites in the Brodgar–Stenness area may be a product of the importance of this area in the Neolithic. However, the number of known chambered cairns in Orkney overall is also increasing. New chambered cairns have been discovered at Crantit (HY40 NW17; Ballin Smith, 1998), Hurnip's Point (HY50 NW 58; Hunter 1993) and Setter (HY53 NE 28; Downes, forthcoming). The classification of the latter site prior to excavation as a Bronze Age cairn emphasizes the pitfalls of classic monument classification. The reassessment of other sites such as standing stones (eg HW20 NW4 and ND38 NW2) as the last vestiges of possible chambered cairns, also may add to this number.

The potential implications of these new discoveries on spatial analysis, site location and landscape studies (cf Fraser 1983) and their interpretation are self-evident. A full re-evaluation of this type of study is outwith the remit of this report.

CONCLUSION

Without full excavation and extensive conservation work the chambers and revetments were unsuitable for public display. At the end

of the excavation, upstanding masonry was supported with sandbags and the exposed areas covered in a geotextile membrane before backfilling. The long-term management of the site is presently being considered by Historic Scotland as part of an overall management strategy relating to the World Heritage Site.

Despite the obvious shortcomings of Farrer and Petrie's investigation, this excavation has shown that Petrie's plans were accurately executed, which has implications for the interpretation of other sites that Petrie recorded. The suspected idiosyncrasies of the site have also been shown to be real, thus allowing the re-evaluation of Bookan in the classic typological scheme. Although lacking the same scale of construction of other classic M-H type cairns, Bookan exhibits many attributes in common with this grouping. In particular, it is the circular concept of space within the tomb, rather than the linear use of space as in the O–C group, that sets Bookan apart from its traditional position in most typological schemes. The reassessment of Bookan as part of the M-H tradition, coupled with its association with a late form of Grooved Ware would seem to place Bookan late in the chronological model for chambered cairns. As note, however, the value of classic typology in forwarding our understanding of these monuments in their contemporary context generally requires reassessing. Despite the lack of dating evidence, the re-excavation of Bookan has revealed a sequence that should contribute to the understanding and interpretation of the evidence from other chambered cairns. Although limited in extent, these excavations emphasize the potential of previously investigated and damaged sites to still contain important evidence to aid our understanding.

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