STRUCTURE AND CHANGE IN BRONZE AGE BURIAL MOUNDS: AN ANTIQUARIAN EXCAVATION RE-EXAMINED USING AN INTEGRATED GEOPHYSICAL AND TOPOGRAPHICAL SURVEY AT CLANDON BARROW, DORSET

JOHN GALE, PAUL CHEETHAM AND HARRY MANLEY

The excavation of Clandon Barrow by the antiquarian Edward Cunnington in 1882 is most notable for a rich assemblage of artefacts recovered from within it. The artefacts have been described by Stuart Needham and Ann Woodward as …..″ the bringing together of the most cosmologically-charged materials of contemporary culture″.… by a local elite (Needham and Woodward, 2008, 44). The excavation itself and subsequently its interpretation has been at least partially compromised by the lack of clarity in the structural and contextual detail of the barrow mound recorded by Cunnington, made more difficult in the knowledge that the primary deposits of the monument were never reached. In an attempt to provide greater clarity upon the structural deposits through non-intrusive techniques the authors conducted a series of detailed topographic and geophysical surveys at the site in 2009 and 2011. The results provide additional data on the mounds composition including some clarity of the presence of a primary mound that was later 'aggrandised' by a secondary mound constructed above it. This secondary mound was slightly off-set to the original and the results of the survey confirms that its construction consists of layered strata (as implied in the excavation archive) although the time scale of such layering and its purpose remains speculative. The presence of a flint cairn lying atop the primary mound is further considered in the light of data recovered from the surveys which provides further insight into the continuing use and re-use of funerary monuments in the late 3rd millennium BC.

INTRODUCTION

In the late summer of 1882 the antiquarian Edward Cunnington undertook the excavation of a large and well preserved round barrow on the outskirts of Dorchester, Dorset, in the south of England. The barrow, known as the Clandon Barrow (Fig. 1), occupies a relatively isolated position on a knoll of an outlying ridge on the north side of the South Dorset Ridgeway – an area notable for its extremely dense concentration of round barrows (Woodward, P. 1991, 143–6; Needham and Woodward 2008, 1–6).

The findings from the excavation were not made public in Cunnington's lifetime, but were

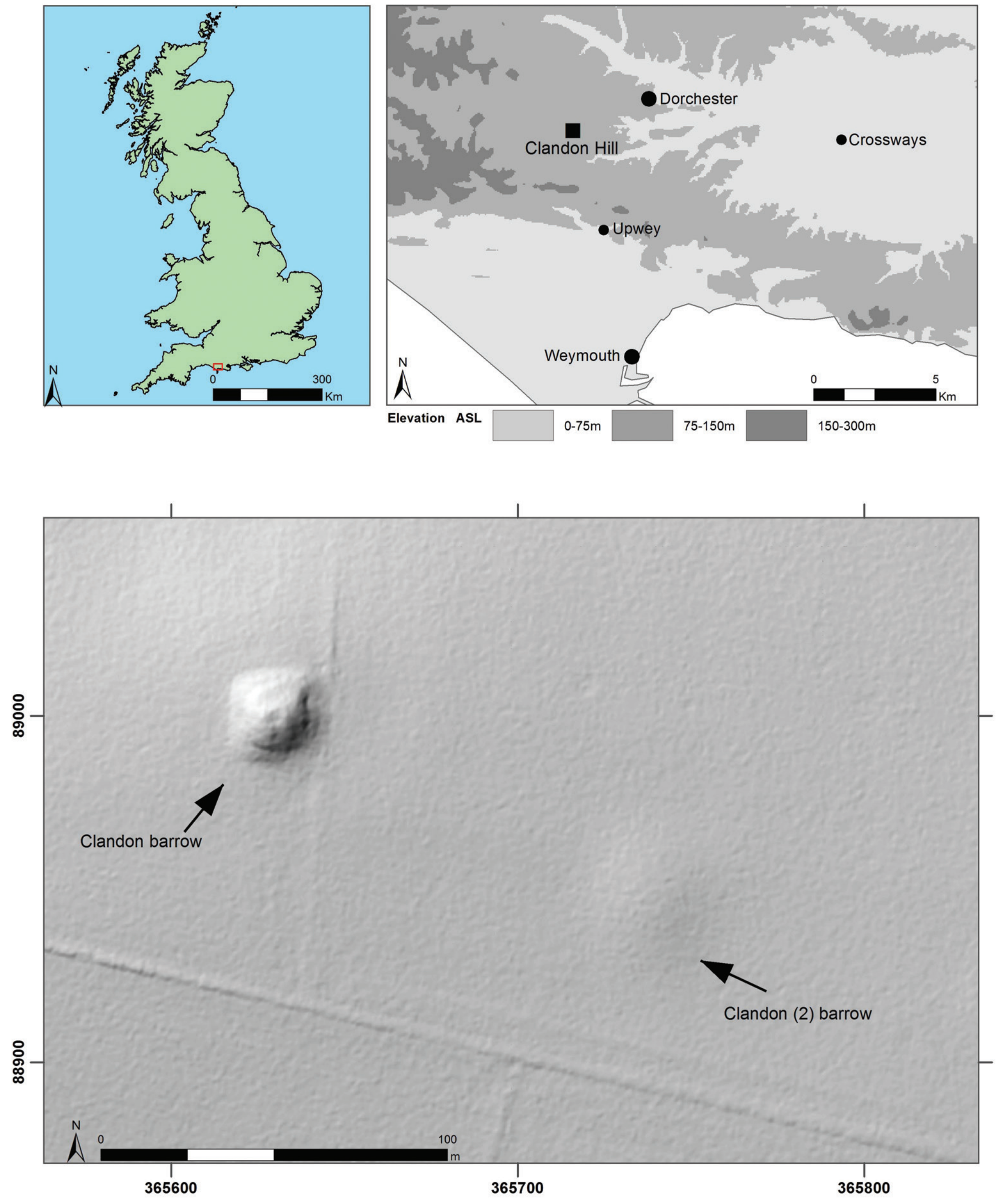

Figure 1 Location of Clandon Barrow.

subsequently published in 1936, alongside the results from a second barrow to the south (Drew and Piggott 1936, 18–25). Both as a result of that paper and work undertaken in association with it, the barrow at Clandon has become notable for the artefacts found within it rather than the burial mound itself. These included high status gold, jet and amber objects that were paralleled with artefacts recovered from Bush Barrow near Stonehenge, excavated by Cunnington's Great Grandfather, William, in 1808. The finery of the objects recovered from the mound were described by Piggott in the 1936 report and were included within a corpus of sites that led to his conceptualisation of a 'Wessex Culture' in 1938 (Piggott 1938). Although the assemblage recovered from the barrow and its identification as a definable cultural package has been recently challenged (Needham and Woodward 2008) it nonetheless remains an important exemplar of contemporary Bronze Age material culture with regard to aspects of wealth, exchange and status in the late second millennium BC.

For our purposes the most intriguing aspect of the barrow which was described by Cunnington in his excavation notebook and in the subsequent publications that were eventually to follow, was

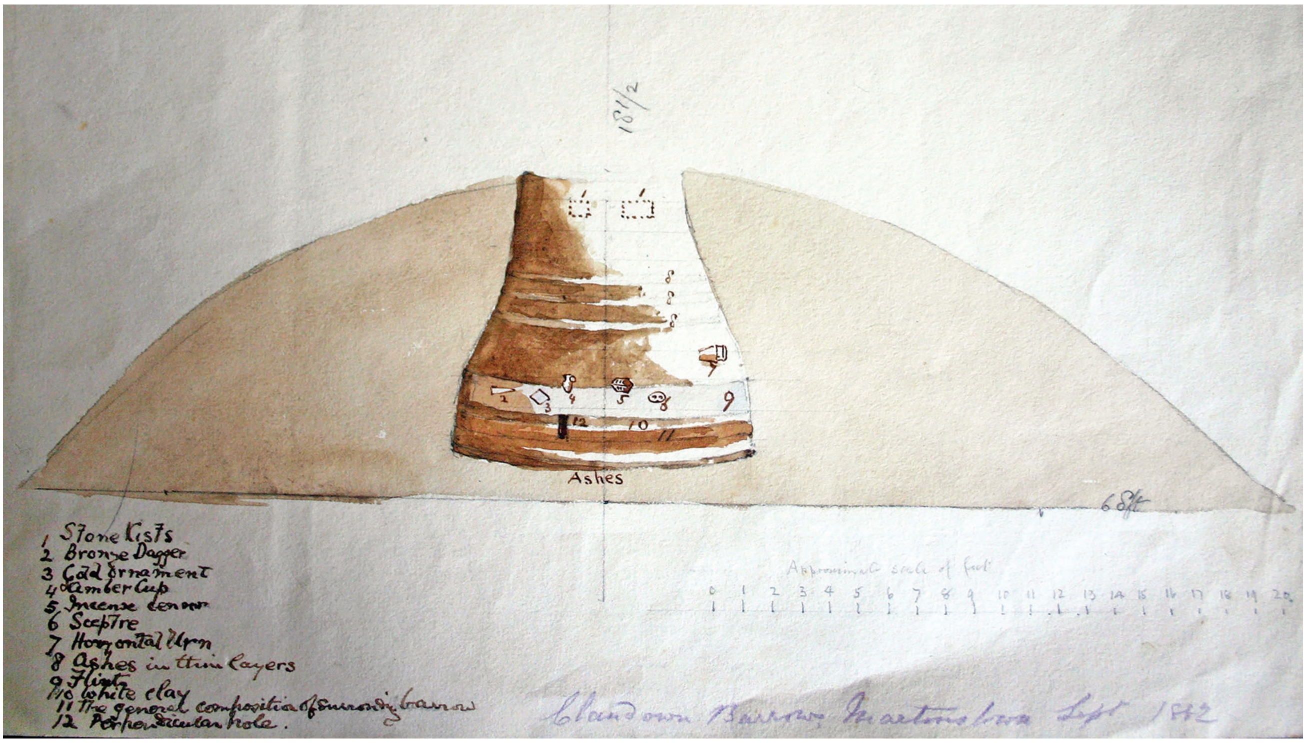

Figure 2 Contemporary watercolour from the Cunnington archive showing a sectional view of Clandon Barrow and the location of features and finds documented during the excavation. Reproduced courtesy of Dorset County Museum.

the structure of the barrow itself. Cunnington had entered the barrow from the apex of the mound, as was the standard approach at the time and proceeded to excavate a vertical shaft down towards the presumed goal of a central primary deposit, either on the pre-barrow ground surface or within a pit cut into it. Unfortunately he never reached the primary deposits having decided to curtail his diggings prematurely at a depth of approximately 9 feet 6 inches (2.95m). The combination of the discovery of a spectacular group of artefacts from within the body of the mound combined with what was clearly an unstable excavation shaft almost certainly led to his decision to stop, whilst safe in the knowledge that he had already made a significant discovery.

His contemporary account of the barrow's construction, which included a water colour sketch (Fig. 2) in addition to details of the excavation made in a manuscript notebook, suggest a layered structure of sands, clays and gravels; this was made more complex with the discovery of archaeological features that were not fully understood at the time, most notably a flint cairn (Cunnington layer 9) 7 feet (2.13m) below the top of the mound. Slight discrepancies between the notes and the water colour sketch regarding the deposits encountered further complicate the sequence of deposits, and subsequently interpretation particularly in the formation and function of the flint cairn is compromised. Drew's published section drawing of the excavation (1936, 19) although based upon the contemporary watercolour defers to the narrative from Cunnington's manuscript notebook when the two accounts differ (Fig. 3). The difference between Cunnington's records largely concerns the artefacts associated with the cairn and their placement. It is unclear as to when the notebook was completed as it is undated, but Woodward suggests it may have been 20–25 years later and possibly drawn up with reference to now lost field notes (2008, 3).

Subsequent to the publication of the Clandon material by Drew and Piggott in 1936, speculative interpretation of the context and form of the barrow has been somewhat surprisingly absent from the archaeological literature, with the notable exceptions of Woodward (2000, 40–1) and Needham & Woodward (2008, 1–52). Although the latter study was focussed primarily upon the material assemblage

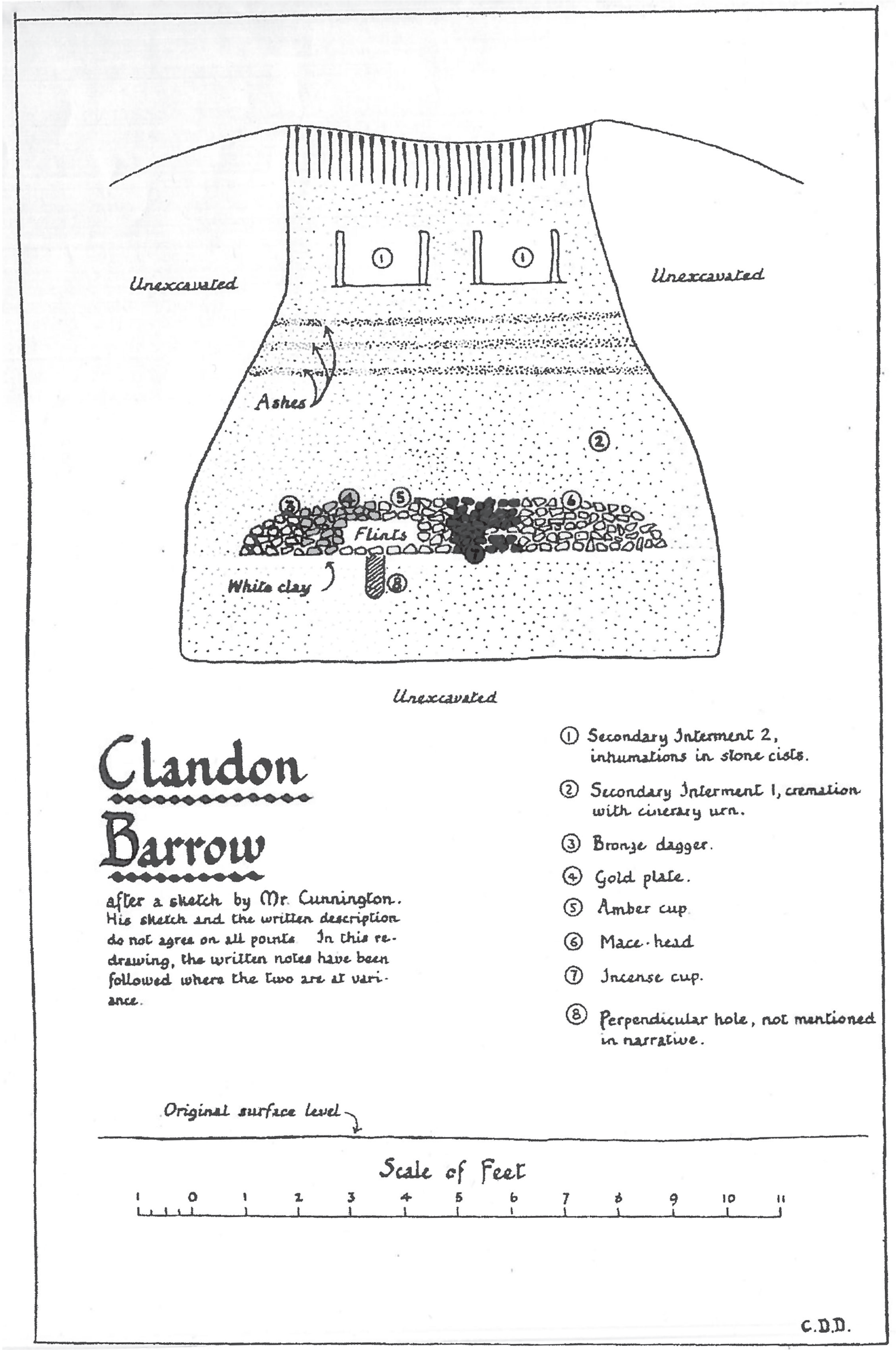

Figure 3 Charles Drew's published section of Clandon Barrow based upon Cunnington's original sketch and manuscript notebook. © Dorset Natural History and Archaeological Society.

and its social and economic context, it additionally revisited the morphological and structural evidence of the barrow itself, with a view to drawing more effective comparators both regionally and nationally. In the former we see aired the idea implicit in the section published in 1936 that the barrow had been enlarged or aggrandised from a more modest precursor. The intersection between these two phases of mound construction likely being the flint cairn discovered and recorded by Cunnington (Figs 2 and 3) with which all of the high status artefacts were somewhat associated. Interestingly at Clandon no burial is directly associated with the artefacts or the flint cairn (or at least none were recorded) which brings into question the otherwise implicit funerary association of the deposit. Similarly, it raises the question as to the potential wider purpose of such round mounds beyond their perceived functionality as simply receptacles or 'houses' for the dead. Such a view on the wider use of barrow mounds for social rituals linked to traditional belief systems, ancestor cults and contemporary perceptions of a cosmological order is not new (Barrett 1988, 30–41; Barrett 1990, 179–89), but archaeological evidence to support such ideas is still fairly limited.

For the most part evidence for structural change and variability in barrow architecture has been best viewed directly through archaeological excavation. Amongst numerous examples, probably the one that best illustrates enlargement that is likely to be broadly contemporaneous with Clandon, is that of Amesbury G71 in Wiltshire (Christie 1967; Barrett 1988). Here it was possible to define four phases of construction, of which two involved the erection of mounds – one on top of the other that seemed to represent activity, perhaps over several generations.

None of this was of course apparent prior to excavation taking place and our understanding of such monuments (both individually and collectively), which still dominate many prehistoric landscapes today, is consequently compromised. Whilst the answer may be to excavate more examples, current strategies and policies that concentrate on plough damaged and therefore incomplete sites are much less likely to further develop our understanding – a point first raised by John Barrett over a quarter of a century ago (1990, 184).

Alternative strategies for the investigation of extant archaeological earthworks using non-intrusive methods have been around for some time and the combination of topographic and geophysical techniques has been both commonplace and revelatory, providing data on previously unrecorded archaeological sites but also adding additional detail on known sites. For the most part such surveys and techniques provide information that enhances the two dimensional spatial content of sites rather than looking at phasing via the identification of stratified deposits. More recently however, the availability of such techniques as electrical resistivity imaging (ERI) and ground penetrating radar (GPR) that in particular has the ability to examine the geophysical properties of deposits via depth profiling, are making inroads into field archaeological investigations.

Investigations looking at the profiling of earth mounds through the application of ERI and GPR have been generally successful across a wide range of pedologies in various countries. The investigation of a mounded tomb in Ogaki, Japan with GPR revealed a burial pit and a stone chamber within the body of the mound (Kamei *et al* 2000, 225–30). Similarly the application of ERI was undertaken in the USA to examine the structure of Platform Mounds in Mississippi and was able to detect surfaces, middens and pits within the body of the mounds examined (Kassabaum *et al.* 2014, 27–37). In the UK ERI was successfully applied to a group of Roman Barrows at Bartlow in Cambridgeshire where it was particularly effective in the detection of antiquarian diggings in all four of the barrows but also identified the presence of revetments to the mounds construction previously unknown (Astin *et al.* 2007, 24–37). Furthermore, the collection of high resolution three dimensional spatial data through the application of Terrestrial Laser Scanning (TLS), survey grade Global Navigation Satellite Systems (GNSS), and more recently Airborne Laser Scanning (ALS; often referred to as LiDAR) has enabled archaeologists to identify and examine the micro-topography of earthworks.

With these factors in mind an integrated programme of topographical and geophysical survey was planned that was undertaken periodically between May 2009 and July 2011 with the overarching goal to better determine the constructional features of the Clandon barrow mound and to correlate results with the observations made in the 1882 excavation. In turn, the applicability of the resultant methodology could be tested to examine the potential for the determination of variation in barrow structure more generally.

METHOD AND RESULTS

A total of three non-intrusive techniques were employed during the field investigation of Clandon Barrow: Topographic survey – Global Navigation Satellite Systems (GNSS), Geophysical survey – Resistivity (Twin probe array and Earth Reisistivity Imaging (ERI)) and Ground Penetrating Radar (GPR), with each method and associated results described in turn below:

Topographic survey

High resolution Terrestrial Laser Scanning was initially considered as the primary method to collect the topographic data. However, the quantity and height of vegetation covering the barrow would have necessitated in a large amount of data filtering to reveal the "bare earth" barrow surface required for this research. Therefore topographic points were collected using a Leica GNSS Smart Rover together with a base station positioned over a Leica Smart Net-derived British National Grid control point. This system enabled a rapid process of acquiring topographic points in real-time corrected British National Grid coordinates with a three dimensional positional accuracy of ±0.03m. The GNSS antenna was mounted on a 2.0m detail pole to penetrate the vegetation growing on the barrow surface. Measurements were recorded automatically every 0.25m, although where sharp changes in gradient were identified, a finer sample resolution was triggered manually by the surveyor.

During two periods of surveying, over 6000 individual 3D points were collected within an area of approximately 0.35 hectares. The resultant data was subsequently processed into a Digital Terrain Model via Surfer v8 and ArcGIS v10.1.

Results

The results of the topographic survey are displayed in Figure 4 (A–E) and reveal a number of noticeable features. Overall, this round barrow is surprisingly roughly square in plan form with gently rounded corners. The northern edge curves slightly outwards, but the eastern, southern and western sides are fairly straight and are at right-angles to each other. The barrow footprint covers an area approximately 25m × 25m and rises to a height of 5m above the surrounding ground surface. On the southern edge of the barrow a shallow ditch-like depression is evident. Its widest point, in the SE corner of the barrow, is 5m but then tapers down to a width of 1.5m in the SW corner. The depth of the ditch is fairly uniform at around 0.25m but appears to gently fade out towards the SW corner. In the SE corner, the ditch ends abruptly at the modern fence line. There is no evidence of a ditch on the other sides of the barrow. The origin of this feature is unclear although it is apparently un-related to a quarry ditch identified in the geophysical data (see below) and probably post-dates the mound's construction.

Another noticeable topographic feature is a "C" shaped ridge located on the apex of the barrow. The ridge itself is approximately 1.7m wide and 6.0m in diameter, although a 2m opening can be seen around the southern side. The centre of the depression forming this feature is approximately 0.5m lower than the top of this ridge, and this level is maintained though this opening until it meets the sloping side the barrow. This hollow on the apex of the barrow is the vestigial remains of Cunnington's excavation trench from 1882.

On the eastern side of the barrow a large, 5.5m wide rectangular depression can be observed stretching from the ground surface to a height of approximately 2.5m and extends 2.5m horizontally into the barrow itself. The base of the depression gently slopes upwards, and two small ridges run parallel along the top of each side of the depression. The feature appears to be intrusive to the original form of the barrow and subsequently almost certainly post-dates the prehistoric use of the barrow mound. Its function is unclear although it is likely to be a singular episode, possibly the result of quarrying for gravel from what would have been an easily accessible source.

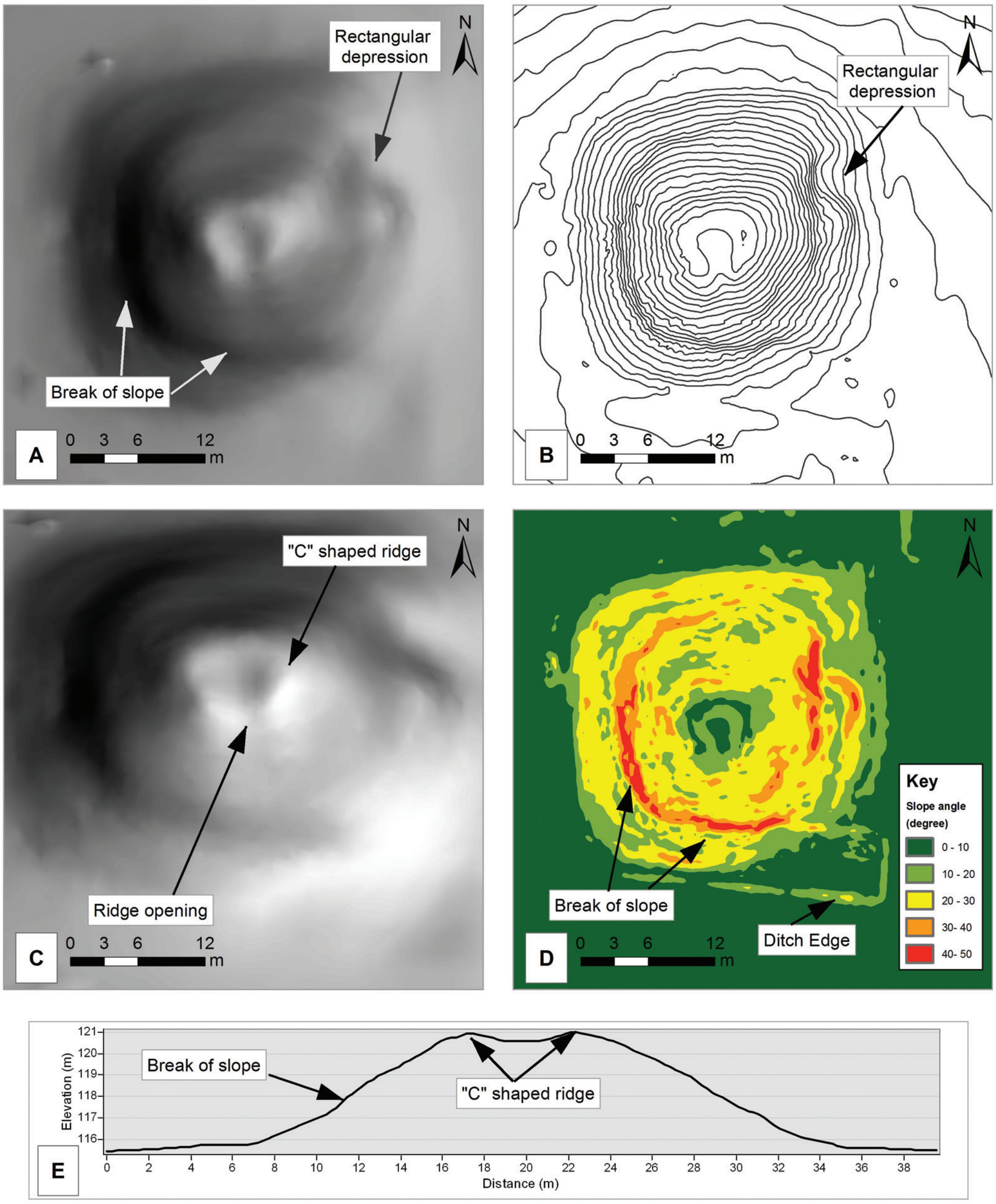

Figure 4 Results of topographic survey. A: Plan view of digital terrain model; B: Contour plot of digital terrain model (contour interval = 0.25m); C: Perspective view of digital terrain model; D: Slope angle change derived from digital terrain model; E: Elevation profile across Clandon Barrow (West to East).

On the southern and western sides of the barrow a sharp break in slope can be observed approximately 2.5m above the ground surface (Fig. 4D). Here, the slope angle of the barrow side increases from approximately 26° to approximately 45°. This change in slope angle continues for 2m horizontally, before the slope angle decreases to 30°– 35° and continues to the top of the barrow. Although this break in slope is most prominent on the western and southern sides of the barrow, it can also be seen to a lesser extent on the northern side. There appears to be limited evidence of it on the eastern side of the barrow. The break of slope revealed by the topographic survey is partially visible to the naked eye when the flora on the mound is low (Fig. 5). It appears as a step in the profile of the mound, most noticeable on the western flank of the mound. This feature would appear to represent the exposed interface between the primary mound and the 'aggrandised' mound raised above it. It is not visible on all flanks of the mound as the upper mound would appear to be slightly off-set from the primary mound probably obscuring it in places.

Figure 5 Photograph of the profile of Clandon barrow 2009 (viewed from the south) © John Gale.

Geophysical survey

Resistivity – Area Survey

Initial assessment at the site for the application of both area magnetometry and earth resistivity techniques indicated that earth resistivity was the more responsive of the two techniques, and subsequently the immediate environs of the mound were surveyed with the intent to identify the presence of an otherwise undetected ring ditch and any other related features.

A Geoscan RM15 Earth Resistivity Meter was used to survey approximately 3200sq metres around the base of the barrow mound. A twin probe array was chosen with a survey reading interval of 0.5m × 0.5m. Data was collected via 20m grids and processed in Terrasurveyor processing software, the results of which are presented in Figure 6C and described below:

Results

Area A (Fig. 6C) – Immediately to the north of the barrow mound a large area of high resistance was recorded. The form of this area is irregular and appears to be diminishing both north and west. Such a large irregular area of high resistivity is likely to be a response to a significant change in the underlying pedology/geology but it is unclear if this is a result of cultural or natural processes. It could represent the outcropping of the underlying chalk sub-strata where the topography of the hill begins to fall away quite steeply.

Anomaly B – Two curvilinear areas of low resistance running south and south east from the south-eastern foot of the barrow mound. The origin of these anomalies is unclear but both appear to inter-relate to Anomaly D (see below).

Anomaly C – Parallel banding of high and low resistance particularly noticeable on the southern extent of the plot but which extend two thirds up the surveyed area and conform to the articulation of the current field boundaries. Such effects are

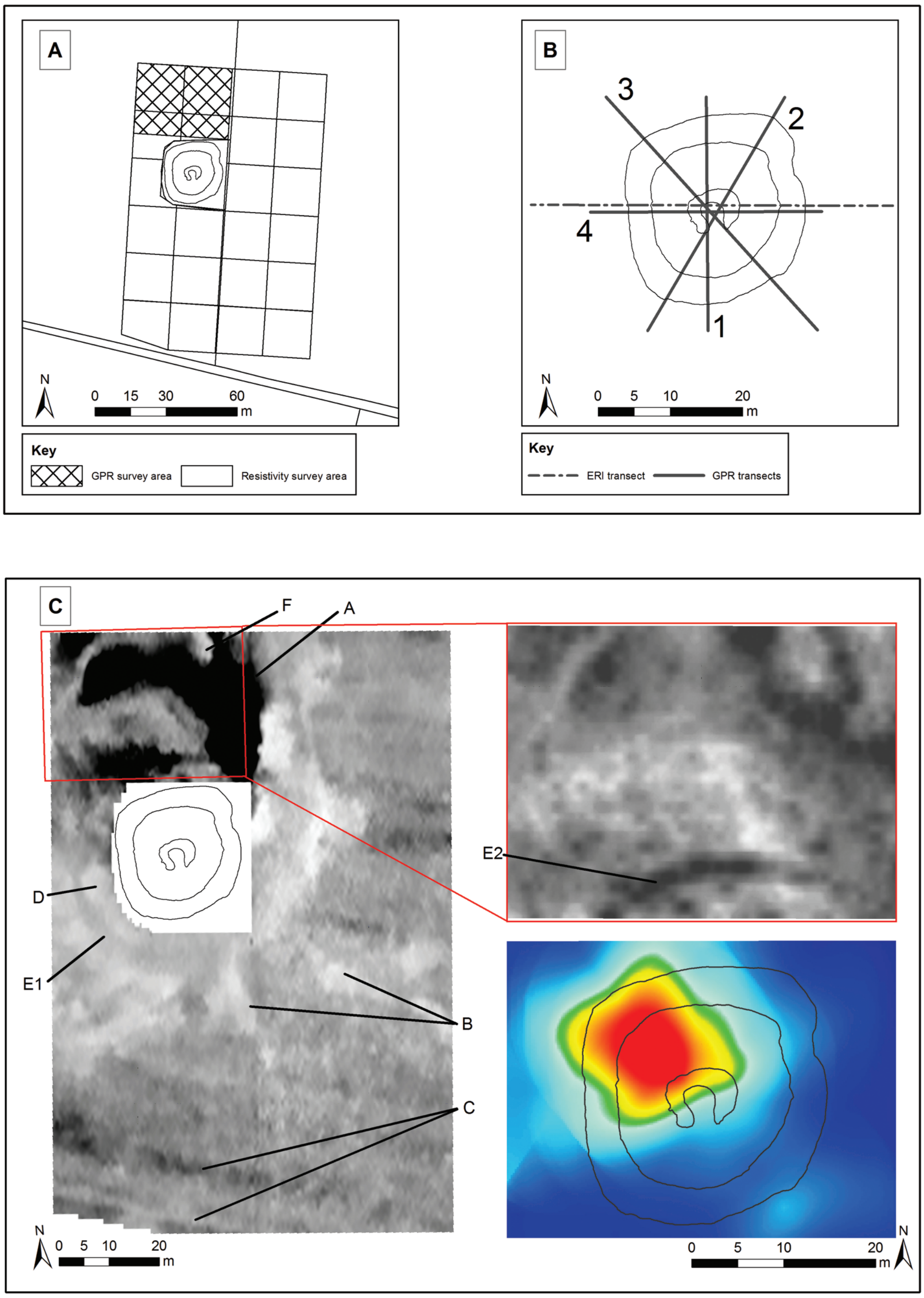

Figure 6 **A** = Location plan of geophysical area surveys. **B** = Location plan of ERI and GPR transects over the mound at Clandon. **C** = Plots of geophysical area surveys: left – Twin probe array resistivity survey with highlighted areas and anomalies (A–F) discussed in text, upper right GPR area survey showing the arc of the barrow ditch (E2) and the possible pit or quarry (F) in the top right of the image; lower right – GPR time slice interpolated plot from transects 1–4 showing highly reflective deposits in north west quadrant.

a common feature resulting from plough activity which appears to be the case here.

Anomaly D and E 1 – At the foot of the barrow mound and extending around most of its circumference (and generally concentric to it) is a circular anomaly of low resistance varying in width that appears to be related to the mound. This anomaly is likely to be a highly localised effect with moisture draining through and off the barrow into a slight hollow in which the mound sits. Within this anomaly to the western side of the mound and approximately 6–10m from it, there is a curvilinear feature of higher resistance which appears to be ditch-like

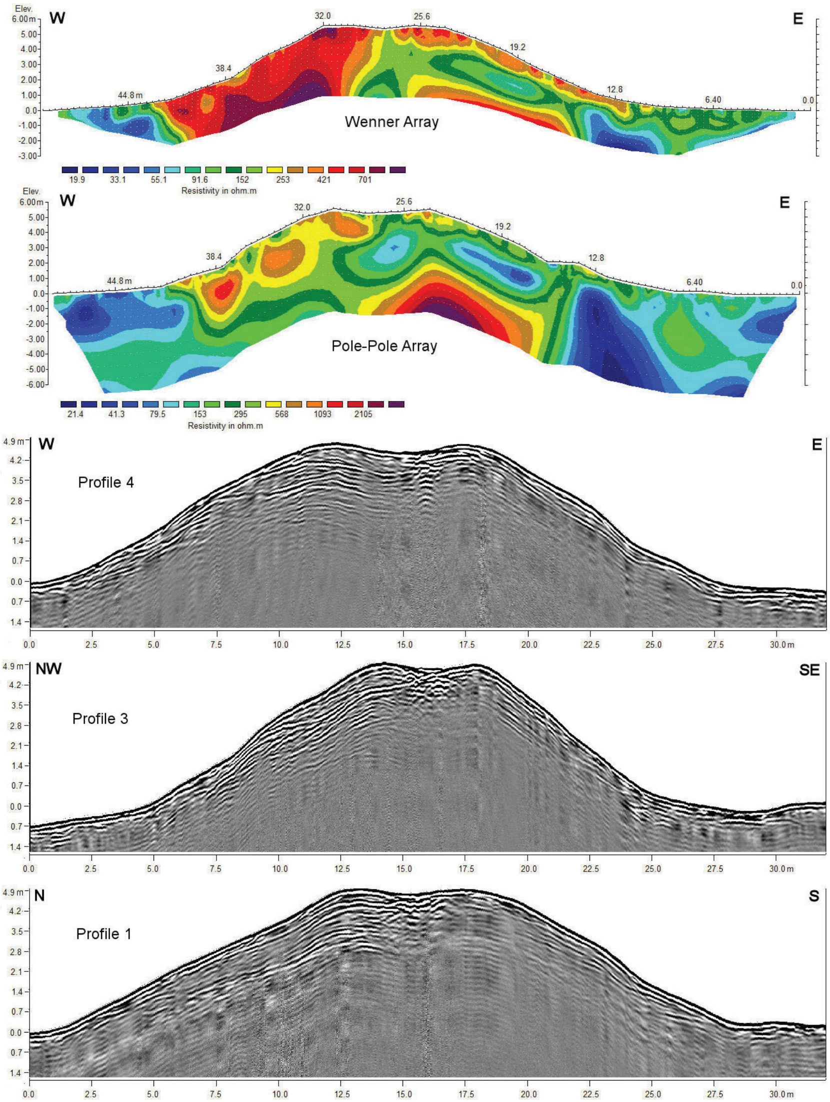

Figure 7 Electrical resistivity imaging (ERI) and 250 MHz ground penetrating radar (GPR) profiles. Both the Wenner and pole-pole array W-E profiles clearly demonstrate the heterogeneous nature of the mound structure, with higher resistivity deposits within the west of the mound, the latter array suggesting the higher resistance material is located fully within the up-cast mound structure. The comparable W-E GPR profile 4 also indicates more interfaces and layering of mound in the west suggesting a series of stony deposits and stratigraphic interfaces. Whilst this inhomogeneity is also visible in the N-S GPR profile 1, it is most clearly demonstrated in the NW-SE profile 3 which corresponds to the high reflectivity zone shown in figure 6. Whilst there are hints in the GPR profiles of an interface between the proposed upper part mound and original mound, most strongly evident in profile 1, signal attenuation has not allowed the depth of penetration to confirm clearly such an interface.

(E1). Further traces of this can also be traced at the northern foot of the mound (E2) also visible in the GPR data (Fig. 6C upper right). Combined the evidence would strongly suggest the presence of a quarry ditch concentric to the mound.

Electrical Resistivity Imaging (ERI)
A single transect (Fig. 7) 50 metres long was located across the barrow (east-west) and electrodes were placed at 80cm intervals across the length of the transect. Readings were taken using Wenner, and pole to pole configurations and the results are presented in Fig. 7.

Both of the arrays present a clear indication that the construction of the mound is not uniform throughout, and that the eastern and western halves of the mound present a different resistivity response. The interface between these differing responses was severely compromised by the access shaft dug by

Cunnington's team which is visible in the data, in the centre of both profiles. For the most part the data would seem to represent a resistivity response to the variant nature of the construction material used in the mound most likely in the upper or aggrandised mound. This lack of homogeneity across two sides of the barrow mound is perhaps surprising and suggests that construction material is drawn from at least two sources.

Ground Penetrating Radar

A total of 7 transects in 4 alignments were placed directly across the barrow (Fig. 6B) covering the footprint of the barrow mound with one transect (north–south) extended to explore the profile across a possible berm and ring ditch. All four transects were surveyed using both 250 MHz and 500 MHz antennae, with a sampling interval 0.05m. The result of these surveys is presented in the profiles for transects 1, 3 and 4 on the 250 MHz wave length (Fig. 7) and an interpolated data set from all of the 250 MHz traverses of the mound was compiled. The profiles all show a more complex stratigraphic composition to the north and west of the mound compared to the south and east. An interpolated time slice from this data set is superimposed over the plan of the barrow within Figure 6C bottom right, this further defines a highly reflective deposit or surfaces in the superstructure of the mound that is approximately 12m wide restricted to the north western quadrant. Unfortunately although there is some evidence to suggest the presence of deposits that may sit on top of an earlier mound the signal attenuation is weak and GPR alone cannot confirm this.

Additionally an area 500 MHz survey immediately north of the barrow mound was undertaken with traverses at 0.5m separation to further explore the anomalies highlighted in the earth resistivity survey. The resultant GPR grey scale image (Fig. 6C top right – E2) clearly shows the arc of the ditch around the northern foot of the barrow which is concentric with that evidenced on the area earth resistivity plot to the west and south of the mound (Fig. 6C left). The 'O' shaped feature also seen on the image appears (F) to be a pit or steep hollow consistent with a quarry or possibly a doline (sinkhole), a geological feature commonly found in the area and in association with round barrows (Gale, 2009, 199–205).

DISCUSSION AND CONCLUSIONS

Archaeological survey and excavation have frequently revealed that barrow mounds, especially round barrows, are both morphologically and structurally highly variable. Such differences are ultimately due a range of factors both natural and cultural which makes the on-going study of them continually necessary and worthwhile, but these inherent differences also make barrows difficult to interpret. The debate on barrow mounds being something more than simply places to inter the dead is now generally accepted in academia (Woodward, 2000, 16), but interpretation of *how* they continued to serve contemporary society *after* their initial construction requires consideration on a case by case basis. The excavation undertaken by Cunnington at Clandon suggested a constructional complexity compromised by an excavation technique not equipped to provide answers to questions that archaeologists might wish to address today:

- Is Clandon simply one barrow on top of another?
- Why was there no sign of a 'primary' deposit in the 'upper' mound/barrow if this was the case?
- Are the layers of ash, gravel and sand mentioned by Cunnington simply construction elements or do they hold greater significance to the mounds development and use?
- What was the flint cairn that was closely associated with the Clandon 'finery', and was it a discrete deposit on the apex on the then surface of the mound, or was it an integral part of either mounds construction?
- Was the funerary urn found above the flint cairn a secondary interment inserted into the mound or could its position be otherwise explained?

The results of the non-intrusive topographic and geophysical surveys described above provide some further insight into, and contextualisation of, the observations made by Cunnington, leading to the production of a more coherent narrative of the barrow's construction and subsequent use.

The topographic survey clearly indicates that the upper levels of the mound have a distinctive break in slope approximately 3m below the current apex (Fig. 4). This break of slope is most notable on the southern and western flanks of the barrow but can also be seen on parts of the eastern flank. The angular footprint of the barrow mound may have been accentuated by ploughing attrition over the years but this cannot be true of the upper parts of the mound. Therefore, it is apparent that the overall mound at Clandon would have had at least two distinct phases of construction.

Confirmation of the interface between an original lower mound and later mounded components can be referenced on the ground (Fig. 5), where a break of slope is very visible in the photograph on the left flank (west) of the photograph. However, the geophysical evidence from the surveys is not so clear cut. The presence of layering can be seen in the multiple reflections from the GPR profiles, particular for the north-western quadrant of the mound but it has not been possible to demonstrably identify if any of these are specifically indicative of the expected interface. Both the GPR and ERI profiles do however clearly indicate marked differences in the barrow's material composition which may be a product of a complex multiple phase construction.

The excavation archive is unclear as to whether or not the entirety of the flint cairn identified in 1882 was removed, although both Drew's section and Cunnington's water colour seem to imply that it was. Its presence cannot be definitively confirmed in the geophysical data which may suggest that it was completely removed at the time of the excavation. That this cairn functioned as an elevated platform atop the primary is an idea postulated previously by Woodward (2000, 140). Insight into the use of flint cairns as platforms used for funerary rituals in this period may be further evidenced by the nearby site of Litton Cheney (Catherall 1976, 81–100). Here on the summit of a low hill, a badly plough damaged site consisted of a circular ditched enclosure approximately 35 metres in diameter that contained an oval structure (9.8m × 9.0m) and a low flint cairn (3.2m × 3.9m). The flint cairn was 0.10–0.15m thick (although some material may have been removed by subsequent ploughing) and contained on it, within it and underneath it cremation deposits and the shattered remains of Collared Urn type vessels. The second phase of the adjacent oval structure also contained a cremation within a Collared Urn. Although the excavator considered the structure to be possibly domestic in origin it is possible that the whole complex could be funerary in character with the oval structure representing a mortuary structure. The similarity between the Litton Cheney flint cairn and its deposits and the Clandon flint cairn is striking and may suggest a common origin in elevated platforms forming part of contemporary funerary practice. It is also increasingly possible that the heightening of the mound was an on-going process with the formulation of successive deposits some of which were noted by Cunnington and for which the GPR profiles seems to further support (Fig. 7).

The geophysical surveys at Clandon have also provided some insight into the possible source of construction materials for the mound/s. The apparent lack of prior evidence for a quarry ditch for the mound can now be seen to be incorrect as the combined evidence from the earth resistivity and GPR surveys show a clear ditch surrounding the mound and concentric to it. The ditch would appear to be approximately 3m wide with a berm between its inner rim and the base of the mound of around 8–10m wide. The depth of this ditch is unknown. The material for the construction of the mound is therefore most likely to be comprised of the sands and gravels that cap the chalk on Clandon Hill, materials which are referred to in Cunnington's notes. One of the most unusual observations made in the excavation archive is the reference to a white clay layer underneath the flint cairn. This is unlikely to be a true clay deposit which is not to be found locally, but rather a layer of excavated and weathered chalk that may have been the final surface of the primary mound before the mound had the flint cairn erected on top of it. The source of this material is of course abundant in the area but it may have been exposed in the quarry ditch or alternatively found in the area immediately adjacent to the mound on its northern flank. The earth resistivity survey reveals an area of high resistance which may indicate an near surface deposit of the underlying chalk.

In conclusion, these non-intrusive surveys were designed to elucidate the observations made at the time of the 1882 excavation and enhance a narrative which began with Drew and Piggott's summation in 1936 and more recently by Woodward (2000) and Needham and Woodward (2008). The results generally confirm that the barrow is seemingly comprised of two mounds: one mound on top of another.

Of the primary mound there is still little that can be revealed beyond its basic dimensions and type. This mound was approximately 28m in diameter 2.2m high and was almost certainly constructed of sands and gravels from the immediate area. It is as yet unclear if this material was scraped up from the immediate vicinity or if it was extracted from a quarry ditch that is concentric to the barrow. It is likely however that a deposit of chalk lined this primary mound as a concluding action to the mound's construction, completing its initial design. One might assume that this mound was a funerary monument and is likely to contain a primary interment at its centre.

The construction of a platform (or cairn) of flint stones was the beginning of a new phase of the monument's use – no doubt related to rites and ceremonies already imbued into the monument. Using a combination of Cunnington's excavation archive and recent non-intrusive surveys, a more detailed picture of the construction and use of the secondary mound begins to emerge. There is no evidence for the formation of a soil over the top of the chalk lining of the primary mound, a detail unlikely to have been missed by Cunnington, suggesting that the flint cairn began to be laid down relatively quickly after the initial construction of the burial mound. The expression of 'finery' through the objects offered and placed on and within this cairn is made at this time, a gesture no doubt of great significance to the community that made it and one might assume this was associated with the interment of cremations. Following this a series of deposits are made consisting of sands and gravels sometimes interleaved with deposits of ash. It remains unclear if such deposits were made successively or over a more prolonged period. Certainly whilst the geophysics broadly concurs with the likely presence of layering it cannot address the composition or frequency of deposits. Perhaps the best clue to this process is found in the original archive where a crushed Collared Urn was found on a thin layer of ash and flints and in association with a cremation. This deposit was recorded as being "some way above the flint cairn". It is possible that this deposit was inserted into the mound as a secondary interment and that the hole for it was missed by Cunnington. It is of course equally possible for the interment to have been placed on the then surface of the mound which was then covered by further deposits of mound material. That three layers of ash were recorded in the rising levels of the mound may, as Woodward (2000, 140) has suggested, be related to ceremonies enacted on a platform possibly involving fire and smoke.

It is clear that the upper mound at Clandon was not simply one barrow on top of another. The aggrandisement of the original monument was almost certainly progressive, undertaken as a series of steps marking events in which the rites and ceremonies of a group or community were played out, presumably as part of a well-established set of cosmological beliefs.

Although these surveys have provided some confirmation and a rationale for further illumination as to the construction and development of this fascinating monument, particularly with reference to the original observations made or inferred from the 1882 excavation, it is clear that further advancement will require some level of intrusive investigation.

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Barrows on the South Dorset Ridgeway lies with Dr Ann Woodward and the late Peter Woodward and is here gratefully acknowledged.

For permission to access the Edward Cunnington archive at the Dorset County Museum we are indebted to the museum's Director Dr Jon Murden and his staff, and for kindly granting permission to reproduce Figure 2.

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The authors: John Gale, Senior Lecturer in Archaeology and Paul Cheetham, Senior Lecturer in Archaeological Science, Department of Archaeology and Anthropology, and Harry Manley, Demonstrator in Geoinformatics, Department of Life and Environmental Sciences, Faculty of Science and Technology. Bournemouth University. Poole, Dorset, BH12 5BB. U.K Correspondence: editor@dorsetcountymuseum.org