

RESEARCH ARTICLE



## Borum Eshøj Revisited – Bronze Age monumental burial traditions in eastern Jutland, Denmark

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### ABSTRACT

Borum Eshøj is one of the internationally most famous monuments from the Nordic Bronze Age, key to understanding burial customs, social identities and societies. Its uniqueness is reflected in its extraordinarily well-preserved oak log coffin burials, its landscape setting in a distinct barrow group and its complex monumental architecture. Since 1988, new investigations have been conducted at the barrow group, and in 2011, the remains of the classic Borum Eshøj were investigated. The new investigation reveals a monument with an extraordinarily long and complex use-life. It demonstrates a consecutive construction procedure with basic building principles which provide a basis for reinterpreting the barrow and suggesting an initial burial ground compounded beneath one large barrow construction phase. The kerbstones were constructed before the barrow was finished, and the barrow partly covers the kerbstone construction. In a larger perspective, the new investigations indicate that Borum Eshøj, with its construction, use history and kerbstones, stands apart from the investigated local barrows on the Eshøj plateau, and closer parallels barrows situated at much larger distance such as Hohøj in Mariager Fjord.

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## 1. Introduction

The Danish oak-log coffin burials represent some of the best-preserved archaeological evidence of burial practices as well as contact between different areas and individuals in the Early Bronze Age. Therefore, traditionally, scholars have typically focused on the preserved bodies and the grave goods rather than the context and construction of the mounds. However, unfortunately, thereby a rich and important range of evidence is missed which could potentially expand or challenge existing conceptual models.

Borum Eshøj, east Jutland, Denmark, represents with its three oak-log coffin burials one of these barrows often referred to. And although excavated in the nineteenth century, detailed information exists on its building principles. The validity of these results, however, remained unknown and left a number of critical questions to the interpretation of the construction and architecture of the monument. These questions formed the background for renewed investigations of the classic Borum Eshøj, carried out in the summer 2011 and excavations of the neighbouring mounds conducted since 1988.

The present paper provides detailed new information on the building principles as well as an account of how the new findings relate to previous interpretations, allowing us to present a revised suggestion to the size, the use-life and construction elements of the monument, including its kerbstone construction. Our findings confirm that (1) Borum Eshøj was planned as a large monument from the beginning; (2) based on observations of the kerbstone arrangement, this was probably constructed in the initial stages of the use-life of the barrow and finished before the barrow was fully completed and (3) based on stratigraphic observations of the turf laying, the barrow was erected during one continuous building sequence.

Furthermore, based on construction principles alone, the significance of Borum Eshøj is being compared with excavation results from three barrows in the immediate vicinity of Eshøj (Eshøj II, III and IV) and with present knowledge about exceptionally large barrows from Denmark, especially Hohøj in the Mariager Fjord area and Skelhøj near Kongeåen. A number of parallels can be

observed across these regions, suggesting very long-ranging personal relations and social networks during funeral activities and barrow-building events in the Early Bronze Age.

## 2. Research background

### Research history

Borum Eshøj (Eshøj I) was an imposing monument before it was demolished. The first accounts estimate its size to about 40 m in diameter and the height to around 9 m, and although this probably included considerable erosion deposits at the base of the mound, it still appears to have been among the largest mounds in east Jutland ([Figure 1](#)).

The majority of information about its construction derives from the excavations in 1875, carried out by the Danish National Museum ([Engelhardt 1877](#), [Boye 1986](#) [1896]). However, already ahead of these investigations, the gradual destruction of Borum Eshøj began. In the second half of the nineteenth century, kerbstones from the mound were used for road construction and its soil was used for fertilizing the fields. In 1854, Borum Eshøj was



**Figure 1.** The location of Borum Eshøj (Eshøj I) in eastern Jutland, Denmark. The figure was created using ArcGIS 10.4.1<sup>©</sup> ESRI. The spatial reference is UTM Zone 32, WGS 1984.

voluntarily scheduled due to the finding of a Late Bronze Age cremation burial, but unfortunately, this protection was not enforced and more of the mound was removed.

In 1871, this led to the first discovery of an oak log coffin containing a woman. The woman was buried with a bronze dagger and several ornaments including a neck ring, arm rings, spiral finger rings, a belt plate, tutuli and a cloth pin. Furthermore, a pottery vessel and organic artefacts, including a wooden box and a comb made of horn, are preserved ([Aner and Kersten 2014](#), No. 6928, p. 222f). Since the coffin was rummaged by the local farmers, it is no longer preserved.

The protection of the mound was annulled and, as mentioned, in 1875, antiquarian excavations were conducted in the central part of the mound, led by C. Engelhardt from the National Museum. This excavation uncovered a further two completely preserved oak log coffins with male inhumations, in addition to another two Late Bronze Age cremation burials and various stone settings ([Boye 1986](#) [1896], p. 49ff.).

The 'old man' reached the age of *c.* 50–60, and at the funeral, he was placed upon a cow skin and dressed in textiles made of wool, and he was also covered with a woollen blanket ([Jensen 1998](#)). The only artefact that was discovered, besides the textiles, was a wooden dress pin ([Aner and Kersten 2014](#), No. 6928, p. 221). The coffin is dated dendrochronologically to 1348 BC –10/+18 years ([Christensen 2006](#), p. 195).

The 'young man' reached the age of *c.* 20 and was also dressed in well-preserved woollen textiles and placed upon a cow skin. His grave goods included a bronze dagger in a wooden sword scabbard and several artefacts made of organic materials: a bark box, a horn comb, a dress pin made of bone and a double button made of wood ([Aner and Kersten 2014](#), No. 6928, p. 221f). The coffin is dated dendrochronologically to 1344 BC –11/+18 years ([Christensen 2006](#), p. 195).

In the 1890s, A. Reeh and G. Smith from Aarhus Museum conducted excavations in the southern remaining part of the mound, which did not reveal any burials, and unfortunately, no documentation was left either.

In 1904, a geodesic fixed point was placed in the remaining northern part of the mound. This fixed point preserved Borum Eshøj until it was finally protected by law in 1937. Today, the only thing that is left is this scheduled N–W peripheral

part of the mound with a ground plan of 15–20 m and a height of 5–6 m. Recently, a thorough juxtaposition of the research history and a presentation of all the finds from Borum Eshøj were published as part of the 'Die Funde' (Aner and Kersten 2014, No. 6928).

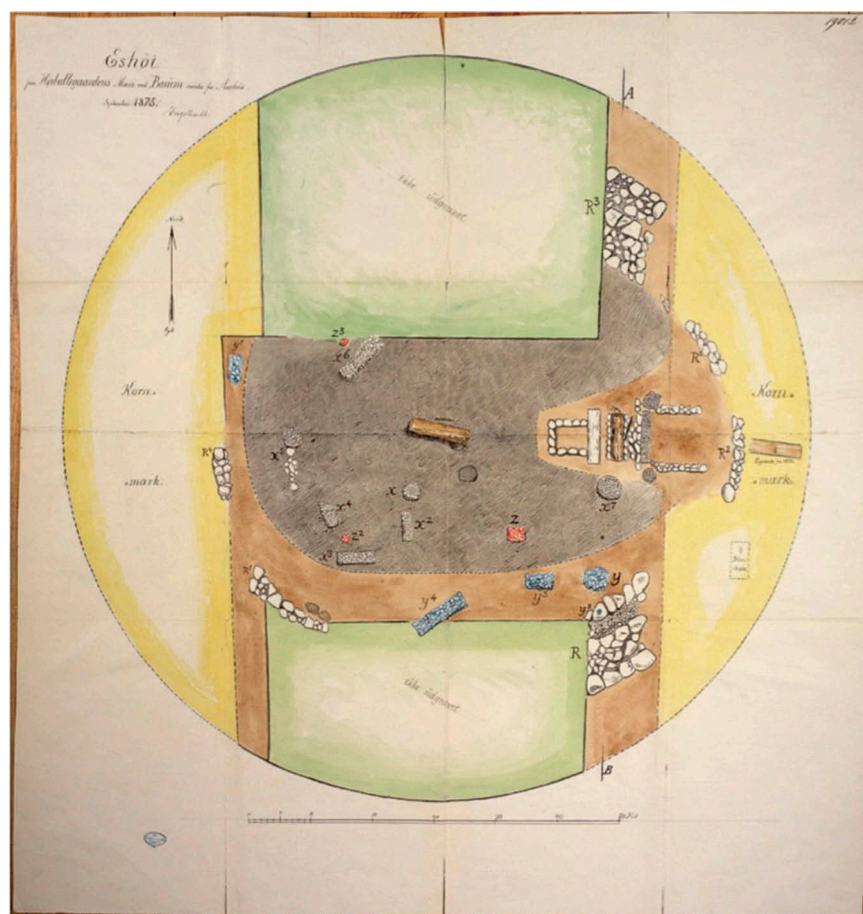
### The 1875 excavation

The original excavation drawings from 1875 suggest a complex picture of the barrow in terms of the use-life of the monument, the excavated area, the stage of preservation and its various components according to their character, age and placement within the mound (Figure 2). The inhumation of the 'old man' was placed at the centre of the barrow and finds of chips of wood show that the coffin was

carved from the oak trunk on the spot (Boye 1986 [1896], p. 56).

Besides the three famous inhumation graves, the excavation plan suggests a considerable complexity in terms of the history of the monument, the various activities and structures within the excavated area and the formation processes influencing the preservation.

According to Engelhardt's excavation, a number of structures were uncovered within and underneath the mound. The stone settings at base level are marked with blue. Furthermore, the three Late Bronze Age burials are marked with red on the 1875 plan (Z, Z<sup>2</sup> and Z<sup>3</sup>). Like the burials from the Early Bronze Age, the burial equipment from these secondary period IV burials found in the periphery of the mound was unusually rich, containing



**Figure 2.** Borum Eshøj (Eshøj I) based on the excavations in 1875 led by C. Engelhardt. The excavation plan was made by J. Magnus Petersen and dated 17 September 1875. 'E' refers to the waterlogged barrow core with turfs containing well-preserved plant remains and 'F' refers to the dry part of the barrow. The exact location of the woman's burial (marked with a C) is uncertain, as it was found before the antiquarian excavation. The burial of the 'old man' is marked with an A and the burial of the 'young man' is marked with a B. The yellow areas are cornfield. The green area at the bottom of the plan was excavated by A. Reeh and G. Smith from the museum in Aarhus in 1891. The northern green area is the peripheral remaining part of the original barrow which was scheduled in 1937. Drawing by Magnus Petersen.

different gold thread decorated bronze items (Engelhardt 1877, Boye 1986 [1896], p. 49, Aner and Kersten 2014, No. 6928, p. 223).

The identified structures at base level consist of various forms of stone paving and structures underneath the barrow, whose functions were generally unidentified during excavation. Judging from the size and shape, some of them may well have been unrecognized burials, while others may belong to other structures associated with the burial activities. This applies to the square stone structures which are situated in relation to the burial of the ‘young man’. Similar structures in the form of so-called cult houses have been found outside a number of barrows and are thought to be associated with secondary burials from the Late Bronze Age (Nielsen and Bech 2004, Hornstrup 2005). However, examples of comparable structures which are stratigraphically related to the Early Bronze Age barrows are known from Jægerspris (Lomborg 1957, Aner and Kersten 1973, No. 111, p. 28ff.) and Hüsby (Aner and Kersten 1978, No. 2362, p. 124ff., Rasmussen 2015). Furthermore, the massive kerbstone arrangement, which is partly shown on the excavation plan, gives the barrow a very characteristic look.

### **Issues of construction and use**

One hundred and forty years after the completion of the initial excavation, Borum Eshøj is still a key site for the understanding of Bronze Age people, communities, clothing and burial customs (e.g. Broholm and Hald 1940, Broholm 1943, p. 98, No. 789–91, Munksgaard 1974, Boye 1986 [1896], p. 49ff., Jensen 1998, Randsborg 2011, Bergerbrant *et al.* 2013). Its importance is based largely on the discovery of the three oak log coffins with their preserved garments and grave goods. The complex history of the monument has been given less attention but raises a number of particularly significant themes.

First, the excavations hint at a highly complex construction and use-life of the barrow. From the plan, it seems as if all the different features – the three coffins, the kerbstone arrangement and the wide range of stone settings – are situated at the old land surface level, indicating that a whole cemetery may have been covered in period II by the large barrow construction (Holst 2013a, p. 77). Furthermore, a Late Bronze Age phase is suggested by the presence of several secondary cremation graves. However, it is not exactly clear

where the Late Bronze Age burials were found vertically in the barrow, neither is it clear whether these graves belong to a separate phase in the construction of the barrow. The in many ways informative excavation plan therefore raises a series of questions in relation to the use-patterns and constructions.

Second, the extensive kerbstone arrangement, which according to the original documentation surrounds the barrow, is an unusual construction.

South Scandinavian Bronze Age barrows almost always have some kind of demarcation of their boundaries, which is often in the form of different kinds of kerbstone arrangements. The character and size of the kerbstones can vary considerably from one barrow to another – even among monuments that are closely situated (Holst 2013a, p. 69). The activities and functions of the kerbstone area are, however, relatively unexplored. At some barrows, the kerbstone arrangements were possibly erected as a kind of initial demarcation of the monument and the burial ground before the construction of the mound (Boye 1986 [1896], p. 49ff., Goldhahn 1999, p. 194ff., 2016, Bech 2003, p. 162ff., Holst 2013a, p. 69). This interpretation was also proposed for Borum Eshøj by V. Boye. In any case, the comprehensive kerbstone circle which, according to the original documents, originally surrounded the mound is an unusual design. This is due to the form of stone walls of large stones combined with stone pavings with smaller stones in between (Figure 2). However, the documentation seems to some degree idealized, and the actual character seems unclear.

In this way, the original drawings reflect a diachronic complexity which does not seem to be fully understood. The excavation was carried out at a time in which the attitudes within the discipline towards documentation and interpretation of Bronze Age objects had yet to come into its own. Furthermore, the primary focus of the first excavation on the site was on the discovery of material rather than context. These questions and uncertainties motivated the excavation of Borum Eshøj and its surrounding barrows, commencing in 1988 and finishing with the excavation in 2011, which will be presented in the following section.

### **3. The Eshøj plateau**

Borum Eshøj is situated near Højballegård in Borum parish west of Aarhus, in a typical east Jutlandic hilly terrain characterized by clayey Weichsel moraines.



The barrow is situated 104 m above sea level at the centre of a long 4 km<sup>2</sup> plateau, stretching in an N–S direction, enabling a more than 25 km panoramic view on a clear day.

Information from the Danish Sites and Monuments Register, combined with systematic reconnaissance and investigation of aerial photographs, has shown that the Eshøj plateau originally hosted at least 25–30 other barrows<sup>1</sup> forming a distinct barrow group. Today, the barrows have either been ploughed over or removed due to excavations. The known burials from the barrows at the Eshøj plateau are primarily from the Bronze Age, but Iron Age burials are also known (Aner and Kersten 2014, Nos. 6926 and 6927).

Several pollen samples were obtained in connection with the 2011 excavations, but due to the state of preservation on the outside of the mantel core, not all of the samples were analysable. Two of the samples were analysed in order to give an impression of the immediate landscape surrounding the monument. One of the two pollen samples was taken in the ditch under the modern dyke west of the excavation. The sample was obtained from an old surface beneath the eroded barrow soil and thereby represents the landscape from before the erection of the barrow. The analysis showed a rich combination of herbs and dwarf shrubs, indicating an open landscape with heather heath but no immediate indication of grazing. Another analysed pollen sample was taken directly beneath the iron pan in the upper level of the barrow and thereby represents the turfs directly used in the barrow construction. The analyses indicate that the turfs have been obtained from undrained pastures with a very significant indication of grazing. Such a landscape would not have immediately surrounded Borum Eshøj but have been found at some distance from the marked plateau (Enevold 2011).

Besides, the Eshøj plateau shows chronologically and spatially scattered activity traces, which have been obtained from various untargeted and random development-led excavations. They consequently give a very unsatisfactory picture of the area from before and after the erection of the monument. However, a house from the Late Neolithic has been discovered immediately east of the barrow. Traces of activity from the earliest Bronze Age, such as pits and postholes,<sup>2</sup> similarly appear within a few hundred metres of the monument (Figure 3a). These could be contemporary

with the barrow construction; however, the character of the archaeological traces has not been uncovered and registered sufficiently to establish any further connection. Furthermore, north of Borum Eshøj several concentrations of Early Iron Age activities have been discovered, primarily in the form of pits and concentrations of postholes with ceramic sherds dated to the pre-Roman Iron Age (500–1 BC). At the SE edge of the plateau in the forest of Vindskov, a Celtic field system, which could have been in use at the same time, is still observable on LiDAR images.

## 4. The new investigations

### *Eshøj II–IV*

#### *Aim*

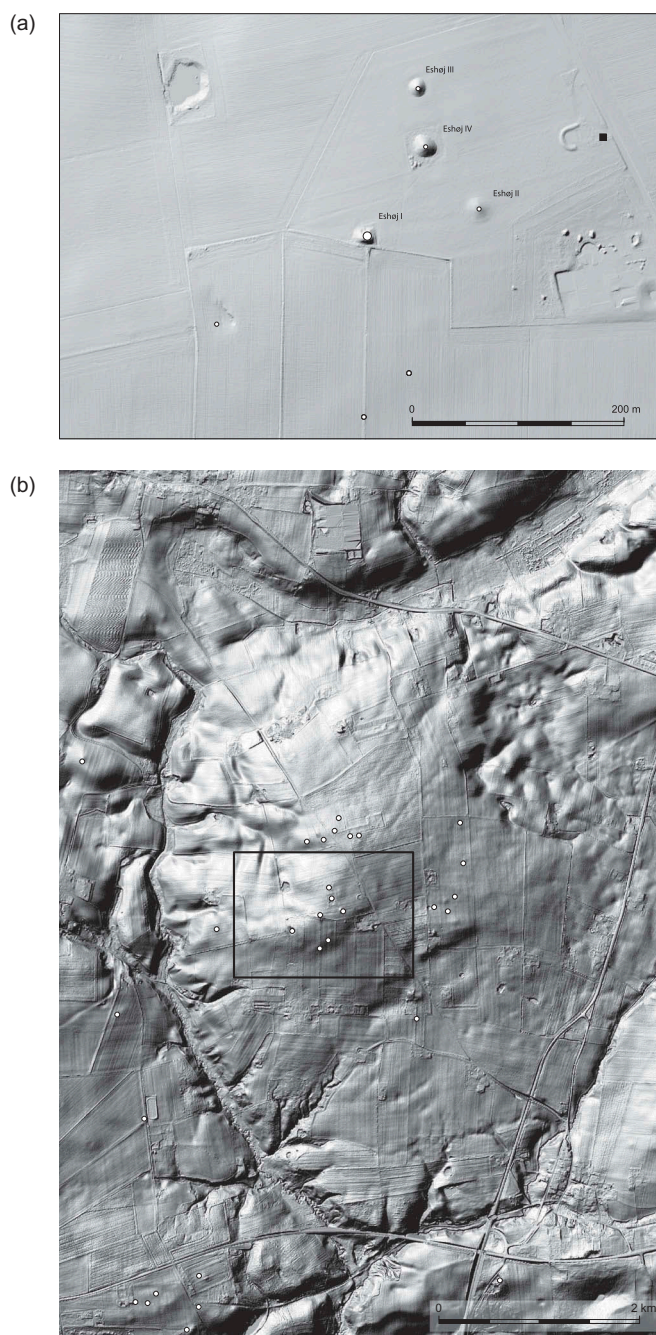
In 1988, Moesgård Museum commenced a research, training and communication project in relation to the group of ploughed-over barrows from EBA, which are located in close proximity to the scheduled Eshøj I (Borum Eshøj) (Figures 3a and 3b). The three barrows and Eshøj I are situated within a distance of about 300 m, and during the years 1988–1992, they were excavated under the names of Eshøj II (Aner and Kersten 2014, No. 6929, p. 224), III (Aner and Kersten 2014, No. 6931, p. 227) and IV (Aner and Kersten 2014, No. 6930, p. 226). The investigations were carried out primarily by volunteers and amateur archaeologists, attendees at archaeological courses and pupils from the local school in Sabro. The aim of the excavations was partly to obtain knowledge about the neighbouring barrows to Eshøj I, which were threatened by cultivation, and partly to be able to communicate the Eshøj I finds and the area in a more detailed way to the public.

#### *Method*

The whole barrow of Eshøj II, except the N–W quadrant, was investigated, whereas in the case of the other two, Eshøj III and IV, the entire barrows were excavated. Subsequently, all three barrows were reconstructed at the same spot using the fill from each, respectively.

#### *Results*

*Eshøj II.* In 1918, the diameter of this ploughed-over barrow was estimated at 27.5 m and the height at 1.90 m. It is situated approximately 100 m east of



**Figure 3.** (a) A detail of the Eshøj plateau showing the focus area of this paper (Eshøj I, II, III and IV). White dots refer to barrows that are registered in the Danish Sites and Monuments Register (Fund and Fortidsminder). The black square is referring to pits and postholes from the earliest Bronze Age. Graphics: Mette Løvschal and Casper Skaaning Andersen. (b) The Eshøj plateau. White dots refer to barrows that are registered in the Danish Sites and Monuments Register (Fund and Fortidsminder). Graphics: Mette Løvschal and Casper Skaaning Andersen.

Eshøj I and was a natural starting point for the investigations in 1988. Thus, already in 1959, a young school boy made some trenches in the barrow and found parts of a sword, a wooden scabbard, a belt hook ornamented with spirals (EBA Per. II) and a flanged axe (EBA Per. I) (Aner and Kersten 2014, No. 6929, p. 224f). The museum stopped the illicit

dig and in cooperation with the boy, the find places were marked, the trenches into the barrow were documented and covered and the artefacts were delivered to the museum.

The 1988–1991 excavation uncovered two inhumation graves from period II; one was found a bit south of the centre of the barrow at the finding place of the 1959

artefacts (Figure 4). The oak log coffins found in Eshøj I only had a few stones to support them. This burial, on the contrary, appeared as a comprehensive E–W-oriented stone packing (3.6 m long and 2 m wide), surrounding an empty burial pit (2 m × 0.6 m) where the dissolved coffin had originally been placed (Figure 4, grave A). Small pieces of enamel of teeth were the only remains of the buried individual, but the finding of more pieces of the sword and a fibula indicate (together with the belt hook) that a male was buried here.

The other inhumation grave (Figure 4, grave C) was found north of grave A and at a higher level (approximately 1 m above grave A). The burial appeared as an E–W stone packing of two parallel stone rows which presumably originally supported an oak log coffin. No traces of the buried person were left, except an armring indicating a female burial from per. II. The flanged axe found in 1959 at the N–W corner outside of the comprehensive stone packing of grave A (Figure 4, No. B) is typologically older than the artefacts found in the inhumation grave and might be interpreted as an older destroyed grave or as a kind of deposition in relation to grave A.

A Late Bronze Age urn grave (LBA Per. IV/V) (Figure 4, grave D) contained a small collection of burnt bones and indeterminable pieces of bronze. It was set in a stone frame and covered by a packing of smaller stones. A Late Bronze razor (LBA Per. IV/V) and another stone structure presumably also represent destroyed cremation graves (Grave E not marked on Figure 4 and No. F). The barrow was constructed upon a system of ard furrows; several flint artefacts (sickles, knives and daggers) and ceramics were found in the barrow fill (Aner and Kersten, No. 6929, p. 224 ff.).

The excavations did not reveal any identifiable traces of a demarcation by kerbstones (Aner and Kersten 2014, No. 6929, p. 224f). However, dispersed smaller stones in front of the barrow may be part of a destroyed stone paving, allowing an estimate of the original diameter of the mound of around 19–20 m.

*Eshøj III.* In 1918, the diameter of the ploughed-over barrow was 18.25 m and the height 1.20 m. The barrow is situated approximately 150 m N–E of Eshøj I, and the investigation of the barrow began in 1989 and

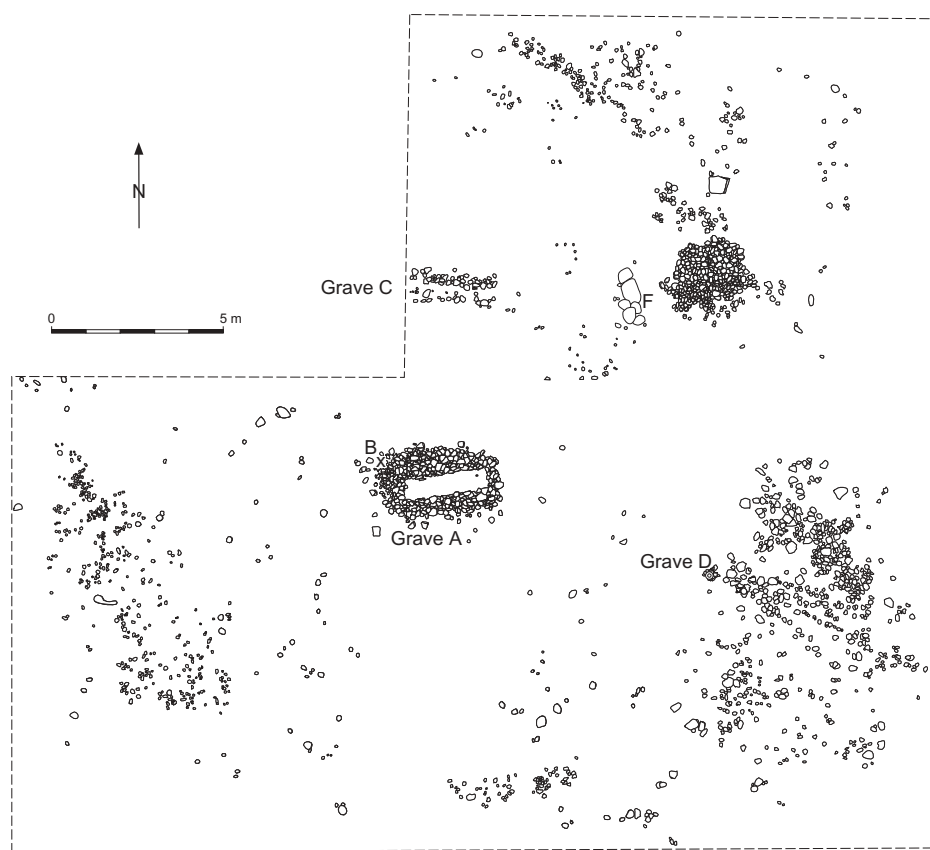


Figure 4. Eshøj II excavated in 1988–91 (from: Aner and Kersten 2014, 224, Abb. 163, with permission from Project Coordinator, Thomas Hjejle Bredsdorff, the National Museum, Copenhagen). Graphical changes made by Ea Rasmussen.

continued until 1992. The remains of one inhumation burial were found at the centre of the barrow (Figure 5, grave A), consisting of an E–W-oriented stone packing of two parallel stone rows, which originally was supporting an oak log coffin of which only vague traces were left. However, no traces of the buried individual or grave goods were found. Like Eshøj II, the barrow was constructed upon a system of ard furrows (Aner and Kersten, No. 6931, p. 227).

The demarcation at Eshøj III consisted of an almost intact surrounding wall of large kerbstones preserved in up to three layers. In front of this wall, the fragmentary remains of a possible two further rows of large stones, separated by an interval of up to 1.5 m, were uncovered (Aner and Kersten 2014, No. 6931, p. 227). The interior measure of the kerb was 20–22 m in diameter.

**Eshøj IV.** In 1918, the diameter of the ploughed-over barrow was 23.5 m and the height 2.20 m. The barrow is situated between Eshøj III and Eshøj II, approximately 125 m N–E of Eshøj I; the investigation of the barrow began in 1990 and continued until 1992.

The central part of the barrow had been disturbed by plundering. A few burnt bones were found in the disturbed fill, indicating a destroyed cremation grave. Otherwise, the traces of one inhumation burial were found a bit north of the centre of the barrow (Figure 6, grave A). Only a few stones supported the

oak log coffin of which a few centimetres were preserved. Neither trace of the buried individual nor grave goods were found. However, one wooden artefact (presumably a handbarrow) found in the barrow fill probably relates to the carrying of the turfs and in that way to the construction of the barrow.

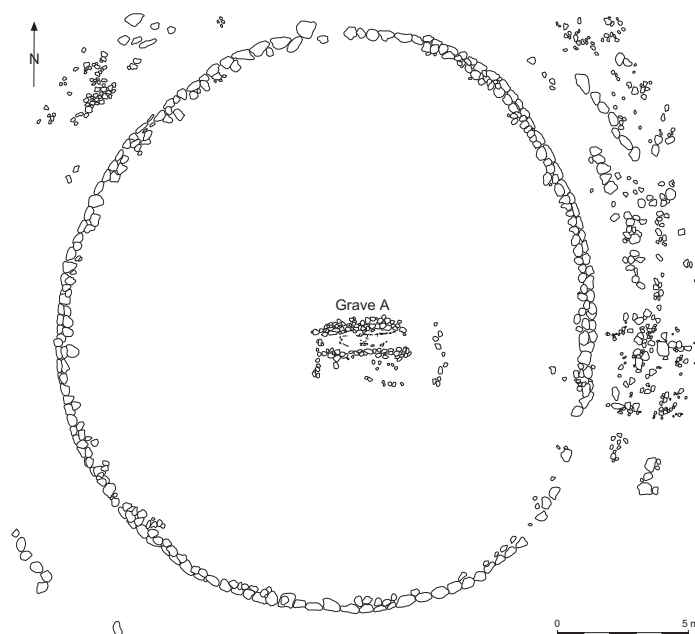
The northern part of the barrow was partially constructed upon a Late Neolithic two-aisled long-house measuring 19.4 × 6.5 m (2000 BC)<sup>3</sup> (Heinemeier 2002, p. 286) further; several presumably related cooking pits and scattered traces of ard furrows were observed.

The barrow is surrounded by a distinctive kerbstone arrangement which consists of a circle of large kerbstones and features a stone-paved collar-like platform with stones in 1–3 layers on the inside and a large stone paving up to 3 m wide in front. Some of the large kerbstones measure 60 × 40 cm. Furthermore, several stone settings appear to be placed on the outside of the foot of the barrow (Aner and Kersten 2014, No. 6930, p. 226f). The circle of large kerbstones measures 20–21 m in diameter.

### **Eshøj I (Borum Eshøj)**

#### **Aim**

In 2011, a new excavation was commenced of selected parts of the remains of Eshøj I (Borum Eshøj).<sup>4</sup> The aim of the 2011 excavation was to provide a better basis



**Figure 5.** Eshøj III excavated in 1989–92 (from: Aner and Kersten 2014, 226, Abb. 165, with permission from Project Coordinator, Thomas Hjejle Bredsdorff, the National Museum, Copenhagen). Graphical changes made by Ea Rasmussen.





**Figure 6.** Eshøj IV excavated in 1990–92 (from: Aner and Kersten 2014, 225, Abb. 164, with permission from Project Coordinator, Thomas Hjejle Bredsdorff, the National Museum, Copenhagen). Graphical changes made by Ea Rasmussen.

for the interpretation of the original documentation, including the location of the original excavation fields and the comparison of the nineteenth-century studies with modern, interdisciplinary analyses and detailed context documentation (Thrane 1984, Breuning-Madsen and Holst 1998, Holst *et al.* 2001, Bech 2003, Holst and Rasmussen 2013). As mentioned, the investigation was particularly focused on a series of specific questions relating to the history of construction and use of the monument. They were carried out as a collaboration between the section of Archaeology at Aarhus University, Moesgaard Museum and the Danish Agency for Culture – partly as a preliminary initiative in connection with the national project: ‘Danmarks Oldtid i Landskabet’,<sup>5</sup> partly as training excavations involving a team of BA students and later a team of PhD students from the Forging Identities project (Vandkilde 2015).

### Method

The intention with the new excavation was initially to use a mechanical excavator to make a diagonal removal of the bioturbation zone from the western part of the remaining barrow. However, it turned out

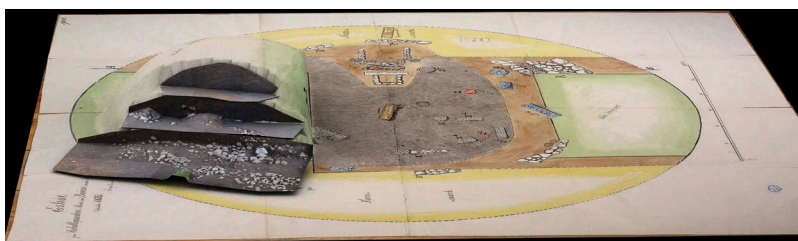
that this topsoil layer was thicker than expected and that the observation conditions were poor. Therefore, we decided to move directly on to a levelled, partly mechanical partly manual, removal of soil and to establishing different sections, plans and balks to be able to observe the turfs, the iron pan etc. from different angles (Figures 7 and 8). Furthermore, a narrow test trench was dug to the west of the barrow in order to be able to document the extent of the barrow as well as other elements from the different stages of the use-life of the barrow, such as ard marks, posts, stones, pits etc. An E–W-oriented cross-section was established at the southern side of this section. The main effort was aimed at sections and plans, and at the kerbstone arrangement. Subsequently, the removed fill was used to reconstruct the exposed parts of the barrow.

### Results

**Barrow construction.** The barrow was built of easily recognizable turfs and seems to represent the result of one continuous construction event (Figures 9–11). White water-deposited layers were found, indicating rainfall during the construction period. Still, there are no other indications, such



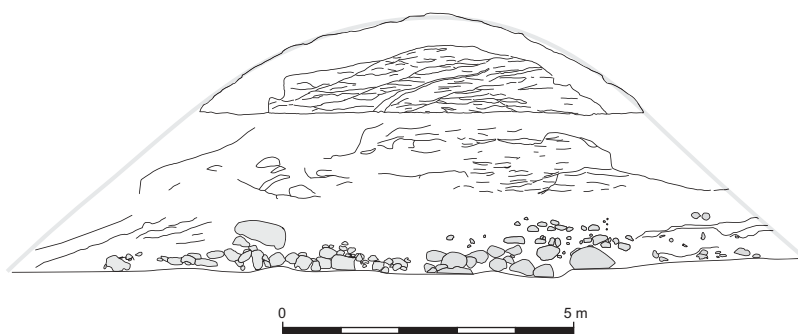
**Figure 7.** The excavation of Eshøj I documented in three steps. Photo: Mette Løvschal.



**Figure 8.** The 2011-excavation of Eshøj I situated in relation to Engelhardt's plan from 1875 (Figure 2) shown in 3D. Graphics: Peter Jensen.



**Figure 9.** The turf construction, upper level, in Eshøj I. Detail photo: Moesgaard Museum, Peter Jensen.



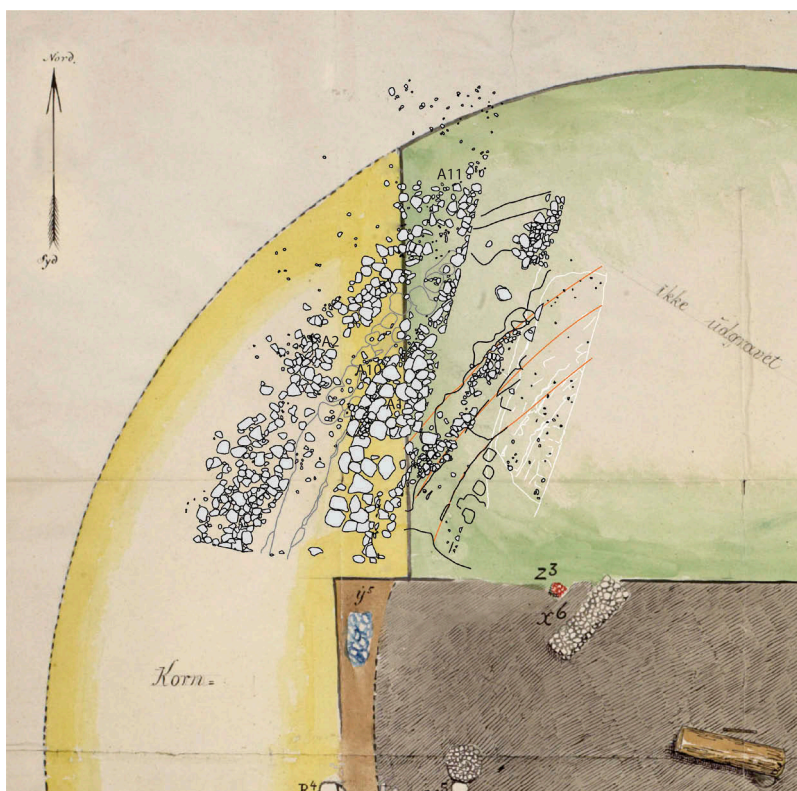
**Figure 10.** N-S section of the turfs and kerbstones in Eshøj I related to the three steps (upper, middle and lower). Graphics: Mads Kähler Holst and Casper Skaaning Andersen.



**Figure 11.** The southern part of the middle step in Eshøj I. The radial sector division (A6) is seen as a sudden shift in fill colour. Traces of the 1875 excavation are seen to the right. The stone row is referred to in the text as A3. Photo: Moesgaard Museum.

as new growth layers, of breaks of any considerable duration in the building process. No indications of barrow extensions that could be assigned to the Late Bronze Age secondary burials could be recognized. It is worth noting that the turf

construction of the mound extended past, and thereby covered parts of, the kerb construction. This can for example be observed from the surface documentation in the different steps of the barrow (Figure 12). However, since all the soil



**Figure 12.** The three steps in Eshøj I with a marking of the different A-numbers mentioned in the text. Graphics: Mads Kähler Holst, Casper Skaaning Andersen and Ea Rasmussen.



situated across the stone arrangements was disturbed, this could not be documented in the sections. The full structure of the kerb thus only appears to have been visible for an intermediate phase during and possibly before the construction of the mound.

As mentioned, the excavation was conducted in the western periphery of the remaining part of the barrow and characterized by many disturbances. However, colour differences in the fill and stratigraphic observations of the turf-laying principles actually made it possible to document that the barrow was constructed of several shells (Figure 11), which, at least in relation to large barrows, seems to be a widespread architectonic principle (Holst 2013b). Three construction stages (A4, A5 and A7) were identified, and seen in conjunction with the observations of the upper iron pan, it could be stated that the iron pan followed the course of the shells (Holst *et al.* 2015, p. 282). Hence, although the level of detail was much less than what was documented the excavated burial mound in Skelhøj near the Kongeå River in southern Denmark (Holst and Rasmussen 2013), this shows that the basic architectural composition of the Borum Eshøj barrow, with successive and encapsulating shells, corresponds to the results from the Skelhøj monument and other large barrows.

Based on the new estimates of the size of the Eshøj I and the average proportions of the turfs, the total turf consumption can be assessed to around 630.000 (Table 1).

Furthermore, one radial sector division (A6) was found, appearing as a boundary in the form of a sudden and distinct radial shift in the fill colour, indicating a shift in turf type. The shift could be followed up through the mound and was also visible in the main section. Radial sector divisions are another part of the organization of large barrow-building principles and might even reflect a division of builders into various working groups, each responsible for separate parts (Holst 2013b, p. 309).

The 1875 excavation was visible too through a sharply defined vertical shift in fill colour in the southern peripheral part of the mound (Figure 11).

Structures of smaller stones were observed in the mound fill near the southern edge of the mound, in the form of a stone row (A3) and a minor stone paving. The structures were embedded in the mound fill, and in this way, they appear to have been established during the construction of the mound. The significance of these structures is unknown, but they could be related to the activities at the kerb and may reflect a form of closing activities near the completion of the mound construction.

*The history of the kerbstone arrangement.* The observations at the 2011 excavation of the construction stages covering the kerbstones confirm Boye's assumption that the kerbstone arrangement was constructed in the initial stages of the use-life of the barrow and finished before the barrow was fully completed (Boye 1986 [1896], p. 62).

The new excavations also show that the comprehensive kerbstone arrangement had, at least, two different construction phases: a complex inner stone platform construction which was built up of several layers of stones, and an outer, younger stone pavement partly built of plane stones. In profile, it was observed how the stone paving had been built upon eroded soil accumulated at the foot of the outer kerbstones (A1) (Figure 13). Consequently, A2 must have been erected some time after A1, suggesting that the overall kerbstone area would have been replaced or extended.

Due to the disturbances, the kerbstone arrangements appeared at first to be anything but strictly organized. However, when removing all *ex situ* stones, as well as systematically registering traces of removed stones, the system in the layout was distinct. The structure of the inner kerbstones (A2) corresponds to the general structure of the 1875 plan with three rows of large stones filled up with smaller stones in between.

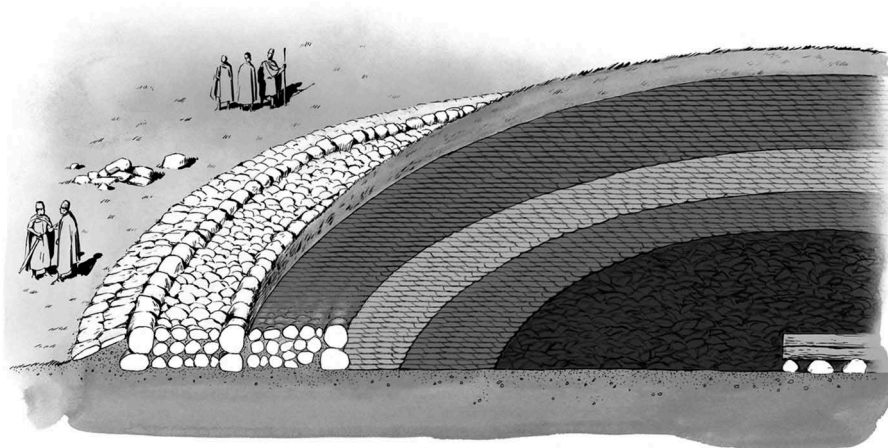
**Table 1.** Based on the average proportions of the turfs and the new estimates of the size of the Eshøj I, the total turf consumption can be assessed to c. 630,000 sods (calculations made by Mads Kähler Holst). Compared to diameters and heights of Eshøj II, III and IV.

No.	Name	Average diameter <sup>a</sup> (m)	Height (m)	Average sod thickness (m)	No. of sods <sup>b</sup>	Netto area of sod stripping (m <sup>2</sup> )
AK6928	Eshøj I	27	9	0.06	627.964	659.362
AK6929	Eshøj II	20	>2			
AK6931	Eshøj III	21	>1			
AK6930	Eshøj IV	20	>2			

<sup>a</sup>Estimation based on Eshøj I, WNW–ESE dia: 28.5 m, SSW–NNE dia: 26 m; Eshøj II, E–W dia: 1 m, N–S dia: 20.3 m; Borum III, E–W dia: 22 m, N–S dia: 21 m; Eshøj IV: WNW–ESE dia: 21 m, SSW–NNE dia: 20 m.

<sup>b</sup>Estimation based on an average size of 0.30 m × 0.35 m – pointed oval shape.





**Figure 13.** Reconstruction of the barrow based on the new excavations from 2011. Drawing: Sune Elskær and Slots-og Kulturstyrelsen.

The innermost row of large stones actually takes the form of a stone wall of up to three courses of stones. The stone paving in both the inner and the outer kerbstone arrangements appears to have been built in several courses, which in some places appear to have been held together or supported by smaller stones and subsoil material with a loamy-sandy texture.

There are different activity traces associated with both the inner and outer kerbstone area. As part of the inner kerbstone arrangement, a stone with a cup mark was found, and in connection with the outer kerbstone arrangement, a layer of burnt charcoal (A11) has been observed (Figure 12). This charcoal area was partly covered by the stone arrangement, indicating stratigraphically older activity in relation to the kerb area.

## 5. Discussion

### *The biography of the site*

Comparing the above observations from the new excavations with Engelhardt's drawing, a new picture of the construction elements and use patterns of the site and its immediate surroundings can be suggested (Figure 14).

The earliest identifiable activity in the area is the Neolithic house structure underneath Eshøj IV, which also appears to represent the latest settlement activity on the Eshøj plateau. This settlement phase was probably replaced by a phase in which the area was reworked to ploughing, evidenced by the buried A-horizon underneath Eshøj I. The chronological

relationship between the house and the cultivation layer is unknown; yet, it is not unlikely that ploughing took place shortly after the house was abandoned as part of a general use pattern where people utilized the fertile soil (Rasmussen 1995).

Next, an Early Bronze Age area of activity can be recognized, including a group of pits found east of the barrows.<sup>6</sup> The pits are situated at the periphery of the area of the Eshøj barrows (Figure 3a), and only a small part of this area has been thoroughly excavated. Therefore, it is not clear whether these features are related to a settlement area or if they might be more closely associated with the barrow-building and presumed rituals associated with it.

Pollen analysis from Eshøj I demonstrates that the landscape prior to the barrow-building was characterized by open vegetation dominated by heather and grassland (Enevold 2011).

The barrow-building related to Eshøj I represents an extremely complex construction. The full extent of the barrow was probably laid out at a very early stage, demarcated by the complex inner stone platform construction of the kerbstones, indicating that the barrow was planned to obtain its large dimensions from the very start.

According to the finds and the drawing from Engelhardt's excavation in 1875, Eshøj I is an example of a barrow erected over several burials during one continuous building sequence. The two dendrochronologically dated coffins (the two men) seem close together in time, while the dating and find circumstances of the woman's coffin are unknown. Moreover,

	Eshøj I	Eshøj II	Eshøj III	Eshøj IV
Late Neolithic		Ardmarks		Ardmarks House
Early Bronze Age	Kerbstones (A1) Burials Stone settings ↓ Barrow construction ↓ Kerbstones (A2)	Burials Barrow construction (stone settings)	Burials Barrow construction (kerbstones)	Burials Barrow construction (kerbstones)
Late Bronze Age	Burials	Burials		

**Figure 14.** Relative chronology of Eshøj I and its immediate surroundings. Graphics: Mette Løvschal and Ea Rasmussen.

the precise year of felling is not completely clear (Christensen 2006, p. 182f). However, due to the varying dates and the numerous activity traces in the form of stone structures, it seems likely that we are dealing with structures accumulated over some years. Hence, the extremely well-preserved Eshøj I burials must necessarily have been covered at least by some kind of shielding, possibly in the form of smaller mounds like the situation from the later Bronze Age barrow Lusehøj on Funen (Thrane 1984): see also examples from Sweden (Lundborg 1972, 67ff.).

The central burial (the old man) was presumably the initiating factor for the construction, and the remaining stone structures and burials may either have been there already or established during the construction of the mound.

Even if the construction of the covering barrow took place in a continuous sequence, the find situation therefore indicates a form of cemetery-like use pattern, having presumably for some years served this purpose in relation to the different burial activities and finally – still during period II – been covered by the barrow (Holst 2013a, 77ff.).

The covering mound was constructed as a series of turf-built shells which were added in a continuous workflow, and at present, nothing speaks against one complete construction phase. The adding of the shells

did not stop by the foot of the stone setting but partly covered it. Finally, maybe at the same time or maybe several years after, another narrow stone setting was added to the foot of the barrow, where traces of burning have also been discovered (Figures 12 and 13).

The exact chronological relationship between the different monuments in the barrow cluster of which Borum Eshøj forms part remains an open question. The oldest known burial is the period I burial in Eshøj II. Graves from Eshøj II have been dated to period II, and Eshøj III and IV could also have been established in period II. Hence, the barrows appear to have been constructed within the same 200-year period as Borum Eshøj.

Their close proximity in both time and space suggests that, in period II, a fairly large area became dedicated to barrows and the building of barrows after period I. Centuries later, the Borum Eshøj I was used as a repository for several LBA cremation graves. Late Bronze Age burials are also known from Eshøj II.

### **Barrow traditions near and far**

In a larger perspective, the construction of Borum Eshøj was part of a noticeable boom in the building of large round barrows in southern Scandinavia from c. 1450 BC, probably spanning one or two

centuries (Holst 2013a, 42ff.). The barrow-building events involved turfs stripped from several hectares of the immediate surroundings of the barrows and thus made an extensive visual and economic change of the landscape for the generations to come (cf. Doorenbosch 2013).

The barrow-building events also had wider social consequences (Holst and Rasmussen 2012). By participating in the barrow building, people were part of a dynamic platform which secured the recurring renegotiation and maintenance of new and existing labour divisions and social relations. These relations became physically elaborated and materialized in the highly segmented architecture of the barrow.

It has recently been suggested that people could have travelled extensive distances in order to participate in funeral activities and barrow construction events in the Early Bronze Age (Jockenhövel 1991, 2011, Bergerbrant 2007, p. 119ff., Holst and Rasmussen 2013). Considerations of long-distance funeral networks are most often based on studies of the material artefacts and exceptionally rich grave goods (Thrane 1984, p. 17).<sup>7</sup> Lately, similar suggestions have been made but on the basis of the efficient dissemination of barrow-building knowledge (Holst and Rasmussen 2015, p.127ff.). A successful barrow construction would have been determined by people's initial knowledge of physical and ideologically associated construction principles, a relatively precise and discursive definition of labour, knowledge of how to move around on the construction site. The barrows indexed a particular spatial structure and order through which different social segments and orders were regenerated. In this

way, the barrow itself became a physical manifestation of the long-distance networks and social ties associated with both the deceased and the people involved in the barrow-building event.

The 2011 excavation of Borum Eshøj provides further perspectives by adding the complex architecture and construction sequences as possible elements that linked together the exceptionally large barrows across long distances.

### *Hohøj in north-east Jutland*

Hohøj is considered to be the largest Early Bronze Age barrow in southern Scandinavia. It is situated east of Mariager in north-east Jutland, c. 48 km as the crow flies from Borum Eshøj. Hohøj is situated on a 110-m high hill and is considered to have been originally 12 m high and 72 m in diameter, including subsidence and erosion deposits around the base.<sup>8</sup> Similarly to Borum Eshøj, it has a long history of destruction but was partly excavated in 1997 (Bech 2003). The excavation revealed a number of similarities between the two barrows.

The original construction of Hohøj took place as several (six or seven) succeeding sequences of shell adding (Figure 15). The shells were each constructed with long strips of turf, which had been laid down systematically in horizontal sequences. Geoprospection investigations indicated the possible existence of two smaller mounds encapsulated by the barrow. The sequences of shell adding would have been interpreted as being part of one cohesive barrow-building event, which could have extended across a very long period without any significant standstills. In the earliest phase of Hohøj, a stone wall is believed to have been the first



**Figure 15.** East section of Hohøj, northeastern Jutland, Denmark. Graphics: Karsten Kristiansen.



**Figure 16.** Hohøj's kerbstone arrangement seen from North. Photo: Museum Østjylland.

fundament of the barrow and originally more than 1 m high. The stone wall was braced by an outer stone wedge, which would have supported the subsequent fill within the stone wall. Yet, another two stone rows of large stones encircled the foot of the barrow, c. 1 and 1.5 m from the stone wall. The two stone rows are separated by a kern ditch and had been added, partly, on top of the stone wedge (Figure 16). Furthermore, the adding of turfs can be observed as overlying the stone wall and wedge, thus entirely encapsulating the various stone constructions as is the case at Borum Eshøj.

In this way, there are certain conspicuous coincidences between the two exceptionally large Early Bronze Age barrows, Hohøj and Borum Eshøj, in their complex sequential construction and outer kerb ring construction. In both cases, the barrow-building event appears to have covered *one* coherent set of consecutive procedures. In both cases, an inner kerbstone setting and/or stone wall appear to have been used as the first marking of the burial area as well as a demarcation of the expected extent of the barrow. And in both cases, this has been succeeded by yet another stone arrangement which further increased the extent of the barrows. These characteristic elements did not only make the two barrows at Borum Eshøj and Hohøj extraordinary in size but also suggest that a very specific knowledge of components and procedures was coupled with a particular large-scale building tradition.

At the same time, their basic constructional elements differed in significant ways from other contemporary adjacent barrows. The three excavated barrows on the Eshøj plateau, Eshøj II–IV (cf. section: ‘The new

investigations’), were all constructed with kerbstone settings with remarkable deviations in layout (Figure 4–6). One was constructed of large stones (III); another was constructed with a clear kerbstone arrangement and stone pavement (IV); yet, another had no visible kerbstone demarcation, but several stone pavements. This again differs from Borum Eshøj, where the kerbstone setting was constructed as an inner kerbstone arrangement, built as a platform construction and an outer kerbstone arrangement with predominantly flat stones (cf. ‘The history of the kerbstone arrangement’). Thus, although the Eshøj barrows were situated on the same plateau, with very short distances between them, and probably all being built within a short period of time, their kerbstone constructions seem to have been significantly different and hence could refer to different traditions altogether.

Seen in this light, the kerbstone construction surrounding Borum Eshøj appears as a manifestation of a principle whose nearest counterpart is also constructed as an exceptionally large barrow, situated at a long distance from the Eshøj plateau. This suggests that the personal relations and social networks activated during funeral activities and barrow-building events in the Early Bronze Age could have been very long-ranging indeed. And that the barrow-building event and succeeding use played a vital part in the establishment, negotiation and maintenance of social relations (Goldhahn 2008, Holst and Rasmussen 2012). This is further emphasized by the complex construction and long use-life of Borum Eshøj. It would also entail the barrow obtaining the characteristics of a burial site in



the landscape, marked out from the beginning by a kerbstone setting with a significant ritual activity taking place on both inside the enclosure and in direct connection with its boundary before the final sealing. This would have allowed people to travel from afar in order to participate in the funeral activities.

## 6. Conclusion

In spite of serious disturbances of the barrow, the new investigations of Borum Eshøj have led to new detailed insight into its construction elements and use-life, as well as its surrounding landscape. The results have enabled a reassessment of the excavation plans from 1875 (Figure 2). Although it is unknown whether the stone setting on the old drawing is depicted as a signature, the drawing appears to represent a fairly reliable section of the excavation situation, and an equivalent distinct stone setting was rediscovered in 2011.

First, the new excavations provide the basis for a new interpretation regarding the number of building phases, demonstrating that the barrow was planned as a large monument from the beginning. The stratigraphic observations of the turf laying did not reveal any sign of more than one phase. Second, the new excavations provide new knowledge of the different building practices, which show parallels to Skelhøj in regard to the documentation of construction stages and a radial sector division. Especially the fact that the inner part of the kerbstone area was embedded in the barrow soil shows parallels to Hohøj. Moreover, it was documented that the kerbstone arrangement at Borum Eshøj had, at least, two different construction phases. Third, this indicates that particular connections could have existed between the exceptionally large barrows from the Bronze Age, not only related to equipment in the form of grave goods but also construction elements and practices. Fourth, Moesgaard Museum's previous excavations of other barrows in the vicinity enable the establishment of a comprehensive local context, which is rare in the Scandinavian Bronze Age. These barrows form part of a concentrated area dedicated to the building of barrows, yet displaying a very large dispersal regarding their construction elements.

## Notes

1. Aner and Kersten suggest that the number of barrows was rather 40 or more in this area (Aner and Kersten 2014, Tafel 216).
2. Moesgaard Museum, archive no. FHM3812 site number: 150101-60.
3. Sample: AMS-lab. Aarhus University, FHM3571, MS2, layer b. Charcoal (oak) from central posthole,  $3700 \pm 50$  14C-year BP. Cal. (Struiver *et al.* 1998): 2130–2045 BC/2195 1980 BC (Heinemeier 2002, 286).
4. Moesgaard Museum, archive no. FHM 5271 site number: 150101-12.
5. (<http://silks.dk/fortidsminder-diger/danmarks-oldtid-i-landskabet/om-danmarks-oldtid-i-landskabet>).
6. See note, number 2 (FHM3812).
7. For example, Lusehøj on SW Funen has been paralleled with the exceptionally rich central European graves because of its rich grave equipment and imported goods (Thrane 1984, Bergfjord *et al.* 2012).
8. In comparison, the famous *Thyra's Høj* from Viking Age Jelling is 8.5 m high and 65 m in diameter (Magnusson and Thomsen 1973 [1823], Krogh and Leth-Larsen 2007, p. 84).

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